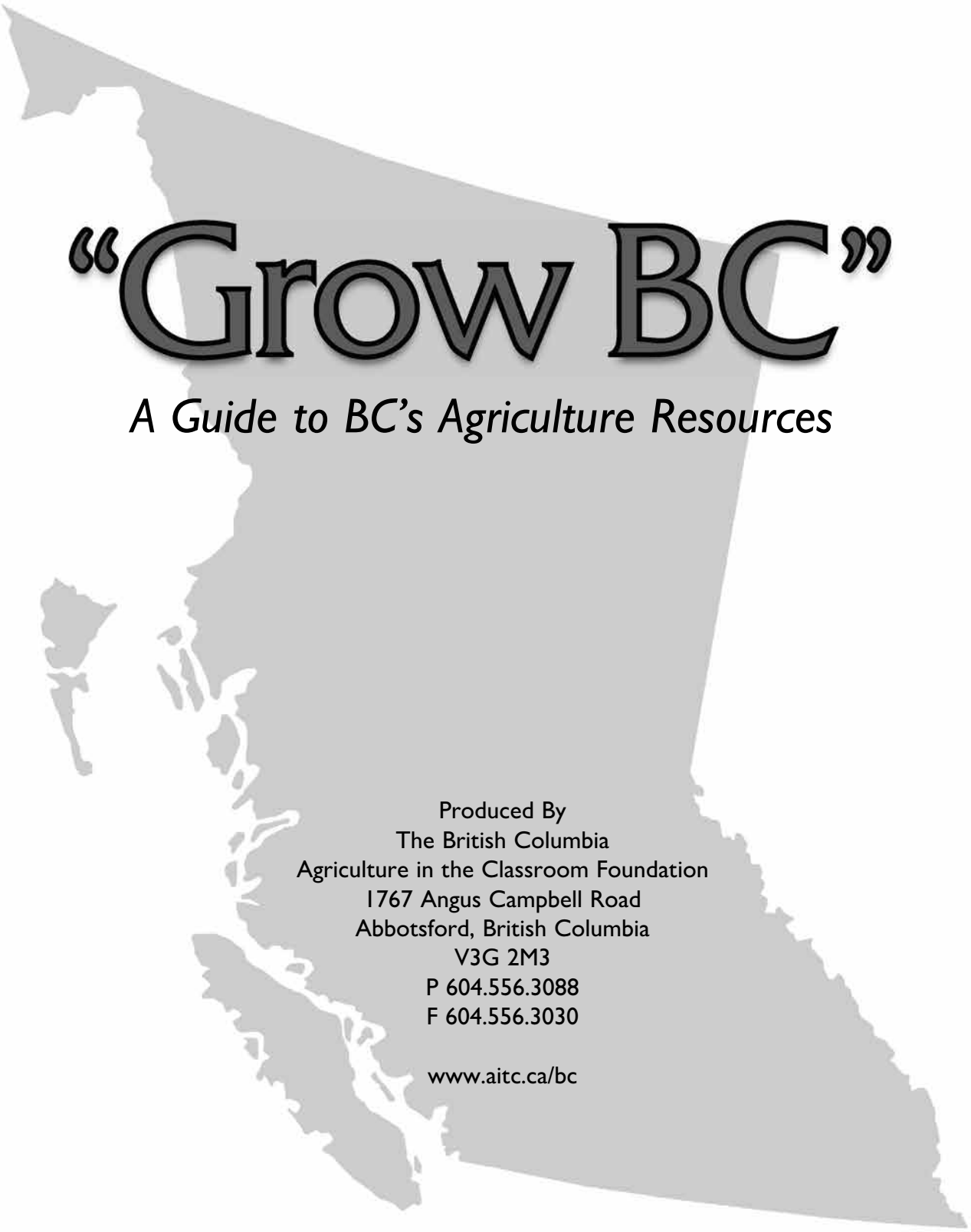
"Grow BC"

A Guide to BC's Agriculture Resources



Produced By
The British Columbia
Agriculture in the Classroom Foundation
1767 Angus Campbell Road
Abbotsford, British Columbia
V3G 2M3
P 604.556.3088
F 604.556.3030

www.aitc.ca/bc

Produced by:
British Columbia Agriculture in the Classroom Foundation
1767 Angus Campbell Road
Abbotsford, BC V3G 2M3
Phone: (604) 556-3088
Fax: (604) 556-3030

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BC Goat Breeders' Association
BC Llama and Alpaca Association
BC Ministry of Agriculture and Lands
BC Raspberry Growers' Association
BC Sheep Federation
BC Vegetable Marketing Commission
Horse Council of BC
Peace Country Reindeer Association
BC Asparagus Growers' Association
BC Blueberry Council
BC Christmas Tree Council
BC Fruit Growers' Association
BC Hog Marketing Commission
BC Milk Producers' Association
BC Mushroom Marketing Board
BC Seed Potato Growers' Association
BC Turkey Marketing Board
Fraser Valley Strawberry Growers' Association
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Information was used from many sources, including:

- BC Dietitians' and Nutritionists' Associations, BC Ministry of Health
- Alberta Agriculture in the Classroom publications
- Canadian Western Agribition Teacher's Handbook

This information was highly valuable and is gratefully acknowledged.

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Preface

Agriculture and Food in BC–What it means to BC students

Food is an essential, basic human need. Early humans were agrarians, having one major activity–to gather or cultivate food for themselves and their families. Early generations of British Columbians worked on farms or had direct connections to farming. The introduction of modern technology to agriculture increased food production and allowed for widespread distribution of food products. Today, our young people are at least one or more generations away from a farm or rural background. Too often, their understanding of where food comes from is minimal.

BC's global economy in many ways hinges on an operational and effective agriculture and food system. Critical food problems in many of the worlds countries are testament to the fundamental importance of this fact.

Future decision makers cannot take for granted this fundamental aspect of human life. The British Columbia Agriculture in the Classroom Foundation has an obligation to ensure that teachers have the tools to give students of all ages adequate information with which to gain an understanding and awareness of what sustains them–food.

For more information about materials specific to your classroom contact:
BC Agriculture in the Classroom Foundation
1767 Angus Campbell Road
Abbotsford, BC
V3G 2M3
Phone: 604.556.3088
Fax: 604.556.3030
www.aitc.ca/bc

Introduction

Using This Book in the Education System

This handbook is designed for teachers of all grades. It includes information and ideas for easy integration into existing curriculums.

The intent is to help our children–our future decision-makers–understand the origin of their food. The guide and accompanying map/poster will help teachers incorporate agri-food related topics while teaching their curriculum.

Teachers were directly involved in developing this resource to ensure its effective use in most curriculum areas.

Education Areas

Teachers will find that *Grow BC* and other resources provided by the BC Agriculture in the Classroom Foundation will help them meet learning outcomes provided in the BC Ministry of Education's Integrated Resource Packages.

Elementary: Kindergarten–Grade 7

Science, Language Arts, Social Studies, Math, Health and Career Education, and Fine Arts

Secondary: Grades 8–12

Science, Social Studies, Geography, Home Economics, and Health and Career Education

How To Use the Information

The large colour map/poster shows the range of commodities and products grown in various regions of the province. For space purposes, not all commodities are represented on the map.

The commodity profiles in this handbook generally coincide with the commodities or commodity groupings shown on the map. These profiles give interesting details about each commodity and contacts for further information. This gives teachers and students some basic information to draw upon in learning about that commodity or in doing more research for detailed projects.

The regional profiles are general descriptions of specific "development" regions of BC. This information is not detailed, but gives teachers and students basics in discussing the agriculture and food industry in communities and its impact on the local economy. These regions do not necessarily match specific agricultural regions or areas of production, but have been used in the past to describe BC's regional characteristics and economic indicators. More information is available from local agencies or government offices for detailed discussion and in-depth projects.

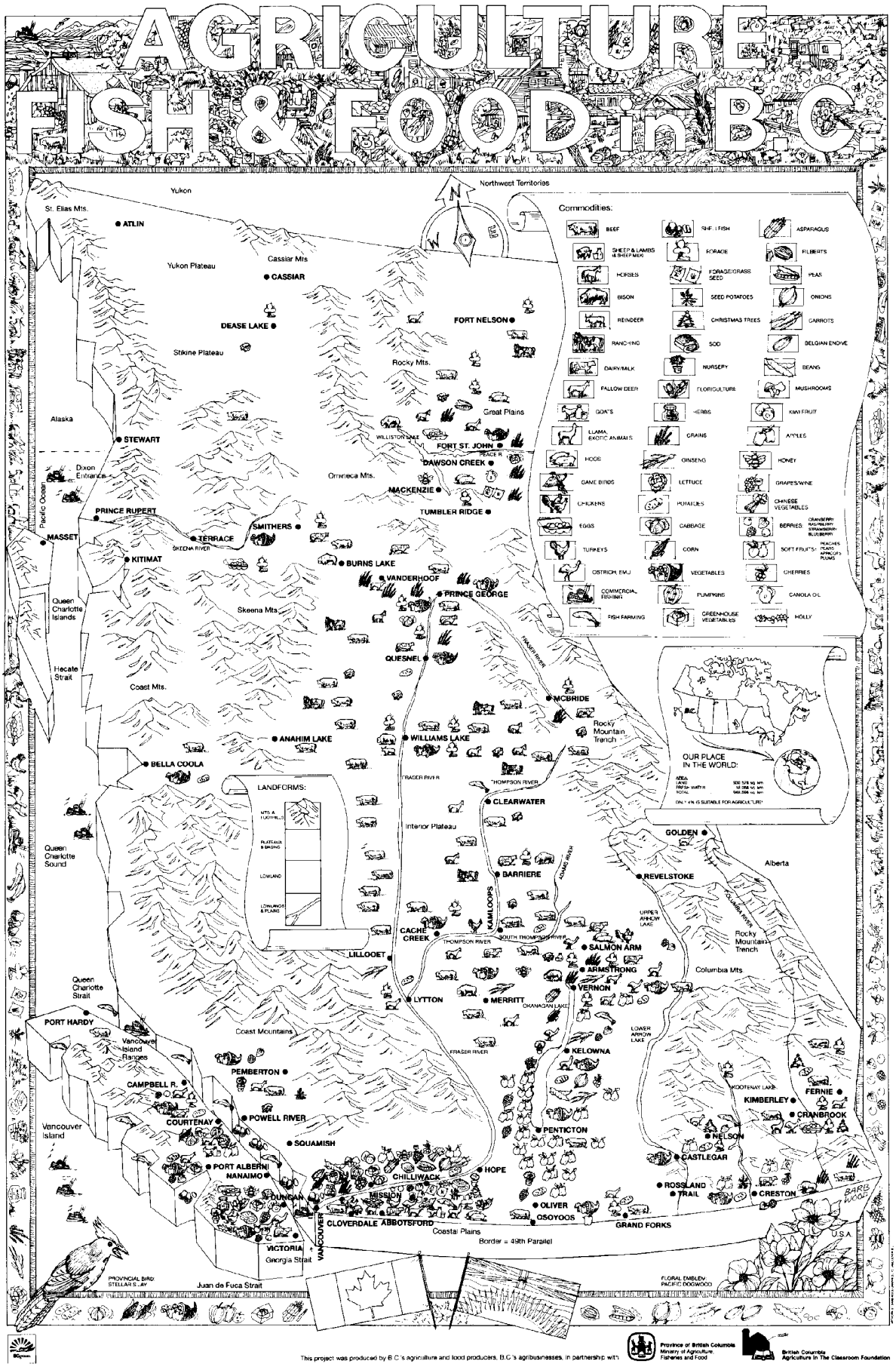
The following suggestions are intended to help teachers effectively use *Grow BC* and accompanying resources to incorporate agriculture themes in their classroom.

- Using a variety of categories including colours, alphabet, holidays, animals. . . ask students to name/draw BC agriculture commodities. Locate commodities on the map–use commodity profiles, regional profiles and the map.
- Have students illustrate the pathway a food product such as ice-cream or pizza travels from the farmer's barn or field to the consumer. Ask them to provide a list of careers that would be involved along the pathway–use commodity profiles and career section.
- Have students create a board game to represent the challenges that face farmers. Choose a commodity and brainstorm all the factors that hinder or help farmers such as: crop failure, new technology, climate conditions, bumper crops, pests.

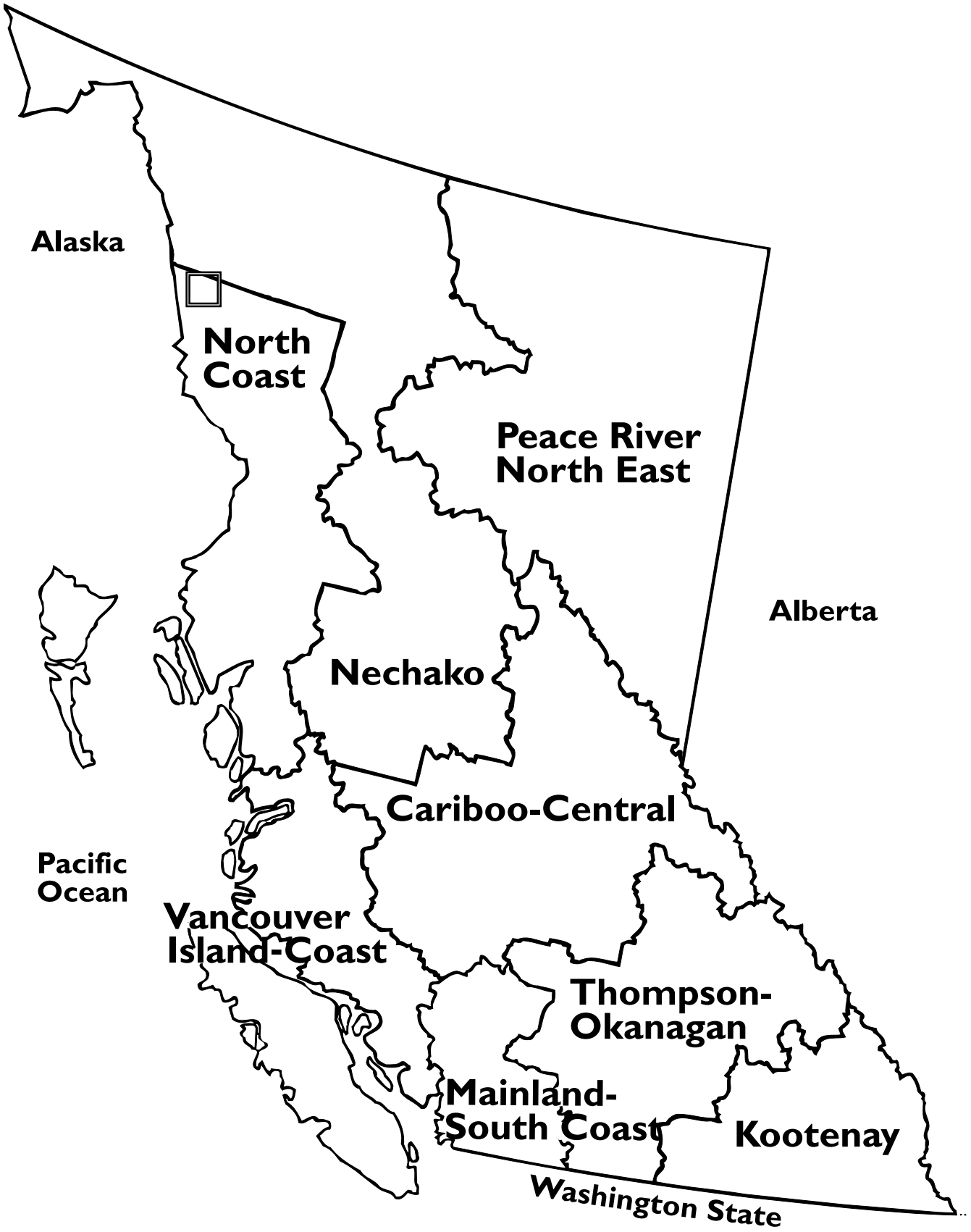
- Have students present the game to other grades or use as discussion generator–use commodity profiles and career section.
- Ask students to collect current agriculture media reports to be displayed in the classroom. Articles can be collected under specific themes such as global trade, biology, nutrition, genetics, technology, geography, health, environment, animal welfare, business and marketing, careers, consumer trends. Students should prepare and present their articles to the class——use handbook and map.
- Have students create a bulletin board on careers in the agriculture and food industry. The following headings could be used: Production, Processing, Transportation and Distribution and Marketing/Retail–use commodity profiles and career section.
- Have students investigate the climatic and topographic conditions of the Fraser River Delta and explain why it is an ideal location for both agriculture and wildlife habitat.
- Have students prepare a role-play that examines the current land use issues and concerns of the Fraser River Delta.
- Have students create a food label and/or marketing campaign for a BC commodity and prepare an oral presentation to the class–use commodity profiles and nutrition section.
- Have students investigate old and new technology in the agriculture and food industry. Have them create a new tool/technique used in production, processing, distribution or the retail sector of the agriculture and food industry and present it to the class–use commodity profiles and technology section.
- Have students lead discussions on ethical, economical and environmental issues that relate to technology application–use career and technology section.
- Have students choose a recipe to prepare for the class. Ask students to research the ingredients that are produced in BC. Have students prepare the food and present an oral and written description about the BC commodities–use commodity profiles.
- Have students analyze statistical data on agriculture commodities. Ask students to research and compare the top 10 agriculture commodities produced 25 years ago in BC to present day. Have students list the top 10 commodities they think will be popular in 25 years and give reasons why.
- Have students create a "Trivial Pursuit" game exploring BC's history, culture and geography with various categories including holiday commodities, recent consumer trends, greenhouse and berry crops, geography.
- Have students create models illustrating BC's diverse geographical features and relate it to agriculture production throughout BC using regional profiles
- Have students brainstorm and make a list of at least 10 reasons why they should shop locally–relate to economics and environmental sustainability

The following is a list of suggested learning expectations students (K—12) will have the opportunities to attain through active participation:

- knowledge of math and science skills
- mapping skills
- graphing skills
- debating techniques
- research skills
- predicting and hypothesizing
- oral communication skills (for a variety of purposes and specific audiences)
- statistical data analysis
- organizing and developing ideas and opinions
- designing experiments
- preparing information for demonstration
- evaluating information


AGRICULTURE FISH&FOOD in B.C.
Yukon
Northwest Territories
St. Elias Mts.
ATLIN
Yukon Plateau
Cassiar Mts
CASSIAR
DEASE LAKE
FORT NELSON
Stikine Plateau
Rocky Mts.
Great Plains
Alaska
STEWART
WILLISTON LAKE
FORT ST. JOHN
PEACE R.
DAWSON CREEK
Dixon Entrance
Ominieca Mts.
MACKENZIE
Pacific Ocean
PRINCE RUPERT
TUMBLER RIDGE
MASSET
SMITHERS
TERRACE
SKEENA RIVER
KITIMAT
BURNS LAKE
VANDERHOOF
PRINCE GEORGE
Queen Charlotte Islands
Skeena Mts.
QUESNEL
FRASER RIVER
Hecate Strait
Coast Mts.
MCBRIDE
Rocky Mountain Trench
ANAHIM LAKE
WILLIAMS LAKE
BELLA COOLA
FRASER RIVER
THOMPSON RIVER
CLEARWATER
Interior Plateau
Queen Charlotte Sound
BARRIERE
ADAMS RIVER
REVELSTOKE
GOLDEN
Alberta
KAMLOOPS
CACHE CREEK
THOMPSON RIVER
SOUTH THOMPSON RIVER
UPPER ARROW LAKE
COLUMBIA RIVER
Rocky Mountain Trench
LILLOOET
SALMON ARM
ARMSTRONG
Columbia Mts
Queen Charlotte Strait
VERNON
LYTTON
MERRITT
OKANAGAN LAKE
PORT HARDY
Coast Mountains
LOWER ARROW LAKE
Vancouver Island Ranges
KELOWNA
FRASER RIVER
PEMBERTON
KOOTENAY LAKE
FERNIE
CAMPBELL R.
KIMBERLEY
CRANBROOK
COURTENAY
POWELL RIVER
PENTICTON
Vancouver Island
NELSON
SQUAMISH
CASTLEGAR
PORT ALBERNI
NANAIMO
HOPE
CHILLIWACK
ROSSLAND
TRAIL
CRESTON
DUNCAN
MISSION
OLIVER
OSOYOOS
GRAND FORKS
CLOVERDALE
ABBOTSFORD
Coastal Plains
Border = 49th Parallel
VICTORIA
VANCOUVER
Georgia Strait
Juan de Fuca Strait
U.S.A.
PROVINCIAL BIRD: STELLAR'S JAY
FLORAL EMBLEM: PACIFIC DOGWOOD
Commodities:
BEEF
SHELLFISH
ASPARAGUS
SHEEP & LAMBS (& SHEEP MILK)
FORAGE
FILBERTS
HORSES
FORAGE/GRASS SEED
PEAS
BISON
SEED POTATOES
ONIONS
REINDEER
CHRISTMAS TREES
CARROTS
RANCHING
SOD
BELGIAN ENDIVE
DAIRY/MILK
NURSERY
BEANS
FALLOW DEER
FLORICULTURE
MUSHROOMS
GOATS
HERBS
KIWI FRUIT
LLAMA, EXOTIC ANIMALS
GRAINS
APPLES
HOGS
GINSENG
HONEY
GAME BIRDS
LETTUCE
GRAPES/WINE
CHICKENS
POTATOES
CHINESE VEGETABLES
EGGS
CABBAGE
BERRIES
TURKEYS
CORN
SOFT FRUITS
OSTRICH, EMU
VEGETABLES
CHERRIES
COMMERCIAL FISHING
PUMPKINS
CANOLA OIL
FISH FARMING
GREENHOUSE VEGETABLES
HOLLY
LANDFORMS:
MTS. & FOOTHILLS
PLATEAUS & UPLANDS
LOWLAND
LOWLANDS & PLAINS
OUR PLACE IN THE WORLD:
BC
ONLY 4% IS SUITABLE FOR AGRICULTURE
This project was produced by B.C.'s agriculture and food producers, B.C.'s agribusinesses, in partnership with:
Province of British Columbia Ministry of Agriculture, Fisheries and Food
British Columbia Agriculture In The Classroom Foundation

Map of the Agricultural Regions of British Columbia



Industry Profile

Because of the diverse landscape, climatic zones, geographical features and coastline of British Columbia the province boasts a diverse agriculture and food industry.

As a result, BC's major commodities are considered specialty products and are different than those of most other provinces in Canada.

Agriculture

Agriculture is an applied science that uses water, energy (heat and light) as well as soil nutrients to grow plants, raise animals and rear fish for food and other related products. Today's agriculture uses a combination of advanced technology and appropriate agricultural practices to provide fresh quality products to the consumer.

Only 5% of the total provincial land base is considered arable or potentially arable, although up to 30% of the province has some agricultural potential. Farm holdings (19,759 farms in 2011) cover 2.6 million hectares. Of this, 599,674 hectares are in crops and 1.61 million hectares are for pasture or grazing. An estimated 10 million hectares, of which over 8.5 million hectares are Crown lands, are classed as open or forested grazing land, used by the ranching industry.

All arable soils have been mapped and classified on the basis of quality, (Class 1 through Class 7 with Class 1 being the best suited for soil based agriculture and Class 7 being the least suited) and the best classes have been placed within the Agricultural Land Reserve (ALR) to be maintained for agricultural and related purposes. Slightly over 4.7 million hectares of land are in the ALR.

According to the 2011 Census of Agriculture, the average census farm had an area of 132 hectares. However, farm size varies greatly, depending on the type of activity, from thousands of hectares for grain or ranching enterprises to less than five hectares for mushroom, greenhouse, or poultry production.

Agriculture in British Columbia is distinguished by its diversity. Some of the activities carried out by provincial farmers include: dairy farming, cattle-ranching, and poultry-raising, as well as the growing of tree fruits, vegetables, berries, grapes, mushrooms, bulbs, ornamental flowers and shrubs. Agriculture is the province's third-largest primary industry, behind forestry and mining.

Livestock and Related Products

The largest single component of the agriculture industry, in terms of assets and annual revenues, is the dairy industry. Other livestock industries of key importance are beef cattle and poultry farming. Large dairy herds are concentrated in the Lower Mainland, southeastern Vancouver Island and the North Okanagan-Shuswap area. Smaller concentrations are found near Creston, Smithers, Vanderhoof, Prince George, Dawson Creek and Fort St. John.

Cattle ranching is carried out primarily on the rangelands of the Southern and Central Interior, the Peace River North East region and the Kootenays. However, beef cattle are raised throughout the province on large and small operations. Hog and poultry production remains concentrated near Greater Vancouver and Victoria, although most areas with larger populations have some hog and poultry production as well.

BC produces turkeys, chickens, eggs, sheep and lambs, wool, honey, furs, veal, game products such as bison, fallow deer and reindeer, and many other livestock-related products across the province.

Fruit, Vegetables and Field Crops

Crops of major importance to BC's agriculture in terms of annual value include floriculture and nursery crops, berries and grapes, and tree fruits. The Southern Interior, principally the Okanagan, is well suited to the production of tree fruits and grapes. The cooler and wetter climate of the lower Fraser Valley and southern Vancouver Island favour the production of berries and vegetables. Most of BC's potatoes, vegetables, mushrooms, berries, floriculture, and nursery crops are produced on the rich soils and flat terrain of the Fraser River Delta. This soil is considered to be among the richest soils in Canada. Ninety-five per cent of BC greenhouses are also located in this region. Most of the province's grain and oilseed crops are grown in the Peace River North East region although some grain is also produced in the Kootenay area. The Peace River North East region is an extension of the prairie-like terrain of Alberta and is well suited to grain and oilseed crops because of its topography and climate.

Seafood

The seafood industry is comprised of three principal economic components: commercial fishing, aquaculture and seafood processing. More than 80 species of finfish, shellfish and marine plants are grown, harvested, and marketed by British Columbia's seafood industry. The total value of the BC seafood harvest was $704 million in 2012, with finished processed products generating an estimated total of more than $1.1 billion wholesale.

Salmon is one of the most dominant and important commodities of the entire agri-food industry, usually accounting for about 50% of the total value of all BC seafood products. Following salmon are shellfish and groundfish species as well as herring.

The BC seafood industry provides full and part-time employment for 13,900 people. Commercial fishing provides 1,400 jobs, aquaculture contributes 1,700 jobs and seafood processing adds another 2,400 jobs.

Aquaculture

Aquaculture is the farming of finfish, shellfish and plants in marine or fresh water. With its climate, good water quality and sheltered bays, British Columbia's coastline is well suited for aquaculture. Aquaculture operations can be commercial or non-commercial. Commercial aquaculture involves the raising of species for sale, while non-commercial aquaculture involves raising species for one's own personal use. Aquaculture is a significant contributor to the provincial economy, and most aquaculture jobs are located in coastal communities. Thirty per cent of all fish and shellfish harvested in BC is produced in aquaculture facilities. In 2012, the farm gate value of the salmon, shellfish and trout sectors combined was $366 million and the wholesale value of processed aquaculture products was $464 million. Farmed salmon is BC's largest agricultural export.

Salmon farms are primarily located in and around the north-east and west coasts of Vancouver Island. Marine shellfish farms are primarily located on the west coast of Vancouver Island and around the Georgia Basin, with major concentrations in the Baynes Sound, Cortes Island and Okeover Inlet areas. The industry's freshwater trout farms and salmon hatcheries are located all around the province with major concentrations in the Lower Mainland and the Thompson-Okanagan areas.

Aquaculture provides opportunities for many small businesses. Manufacturers of nets, net pens, floats, anchors and other equipment have developed a strong service industry. Other related businesses include the supply of feed, broodstock development, disease management services and specialist consulting services. There are value added industries involved with fish farming such as those involved with transportation, processing and packaging.

British Columbia is the fourth largest producer of farmed salmon in the world after Norway, Chile, and the United Kingdom. The primary salmon species cultured in BC is Atlantic salmon. In 2011, 95% of the total provincial farmed salmon harvest by weight was Atlantic salmon. Pacific salmon species make up the remainder of the production with 5%.

The Pacific oyster and Manila clam are the predominant species of shellfish cultured in BC. Other species farmed in smaller quantities are scallops, mussels and geoduck clams.

Freshwater aquaculture consists of three different types of operations: fish hatcheries, fish ponds and

"u-catch-em" operations. The hatcheries provide the juvenile fish for both the fresh and saltwater fish farms; the ponds produce primarily rainbow trout for retail food market sales; the "u-catch-em" operations are privately-owned recreational trout fee-fishing sites. Other freshwater finfish species cultured in BC are Arctic char, carp and other trout.

Commercial Fishing

Commercial fishing is the fourth largest primary industry in British Columbia after forestry, mining and agriculture. More than 80 different species of finfish, shellfish and plants are harvested commercially. Salmon is again a dominant and important commodity in BC's commercial fishing sector. Second to the salmon are roe herring, groundfish such as halibut, and shellfish species including sea urchin, geoduck, and crab.

Harvesting is undertaken by vessels using seine or gillnets and by trawling, trolling or trapping. Other harvest methods include diving and hand picking. Many fisheries have become limited entry that provide for year-round harvesting, higher quality products and increased values to the fishers. Wild shellfish is the most important commercial fishery in terms of value to the harvester. High prices are realized primarily in the geoduck clam, crab and prawn fisheries. Groundfish species account for 68% of the commercial fishery harvest by volume. New and emerging fisheries are being developed to increase diversification of the harvesting sector while providing opportunities for enhancing the value of underutilized species.

Both federal and provincial authorities exercise control over the industry. The Federal Department of Fisheries and Oceans assumes responsibility for the protection and conservation of fisheries. The Aquaculture and Commercial Fisheries Branch of the British Columbia Ministry Agriculture, Food and Fisheries assumes control after the fish are caught and removed from the water.

The BC seafood industry provides full and part-time employment for more than 13,900 people. Seafood processing plants and aquaculture operations support approximately 2,400 and 1,700 jobs respectively. Some 6,435 personal commercial

fishing licenses are issued annually.

The seafood industry operates all over the British Columbia coast. The major concentrations of the over 200 seafood-processing plants are in the Lower Mainland, Vancouver Island and Prince Rupert areas. The fleet, excluding packers and floating processors, is made up of over 6,847 vessels, with about two-thirds of the harvesters operating outside the Lower Mainland.

Seafood Processing

Seafood processing occurs at 275 facilities located throughout the province. These plants are operated by 260 separate companies, many of which operate facilities in more than one area of the province so as to be close to fishing grounds or to distribution centres. Seafood processing occurs in three primary regions of BC–Prince Rupert on the north coast, and Vancouver Island and the Lower Mainland on the south coast. The wholesale value of BC.'s seafood products was more than $1.1 billion in 2012. Seafood is BC's number one food export as more than 85% of our fish and seafood products are shipped out of the country. BC seafood processors exported $903 million worth of fish and seafood products to more than 60 countries in 2013. More than 70% of all shipments are destined for the US and Japan. Seafood products derived from species other than salmon and herring are becoming increasingly important.

Food Processing

The BC food industry plays a significant role in the provincial manufacturing economy. It contributes about $1.7 billion to the provincial Gross Domestic Product (GDP), and is ranked the third highest among manufacturing industries.

The BC food industry is dominated by a large number of small and medium sized firms, which provide the industry with operational flexibility by responding to shifts in consumer tastes and preferences.

Each firm has less than 500 employees. The diversity of BC's primary production–200 major agricultural and 73 seafood commodities–provides a broad foundation. This enables the BC food industry to specialize and produce a wide selection of products for domestic and export markets.

The fish, dairy, poultry, meat and beverage sectors have historically represented the largest share of the total value of manufactured shipments of the BC food industry. Other smaller sectors are contributing an increasing proportion with the production of specialty food products.

57% of all food processing firms are located in the Greater Vancouver area and the nearby Fraser Valley. Another 37% of food processing firms are located in the Okanagan Valley and the coastal regions. The majority of food processors are located in close proximity to the population and raw material supplies and are well-positioned geographically to benefit from new marketing opportunities in the U.S. and Pacific Rim markets.

At about 60% of the value of food production, raw materials and supplies (including packaging) comprise the most significant component of input cost in the food industry. The wages and salaries category averages about 12%, the energy category 3%, and the rest 25%.

Labour productivity in the BC food industry is generally higher than in the Canadian food industry and substantially higher than in most manufacturing industries in BC. The hourly wage rate for labour in the BC food industry is higher by approximately 15% compared to Canada.

The BC food industry is well positioned to substantially increase and exploit its domestic and export market's potential. Such potential is due to its excellent transportation and communication infrastructure; established supporting industries; abundant energy, water and other natural resources; a diversified agricultural base; and its strategic location on the Pacific Rim–one of the fastest growing market regions in the world. It can also play an important role in the movement of commodity and food products from other parts of Canada to the world market.

Industry Significance

Agriculture and food production are important economic contributors to the British Columbia economy. There are many people in BC involved in producing food and non-food products for both local and global markets.

Agriculture, Fish and Food Production

- British Columbia's agricultural products generate receipts to farmers of more than $2.8 billion each year.
- More than 200 different commodities are produced on about 20,000 agricultural farms.
- The annual ocean fish catch is valued at over $811 million.
- Aquaculture production is about $510 million yearly.
- Aquaculture farms grow more than 10 different species of fish and marine plants.
- Since 1984, the number of salmon farms operating on the BC coast has increased from 10 to about 121
- Salmon is one of the most dominant and important products of BC's entire agriculture and food industry.

Food Processing and Retail Sales

- Food retail sales in British Columbia are estimated to be over $15.7 billion each year.
- Some 1516 food processors in BC take the raw product and produce a wide variety of foods and beverages for the marketplace.
- The activities of processing, transporting, storage, distribution and retailing increase the value of BC's primary food products by about 3 to 4 times, to about $8 billion each year.
- The food industry generates about 330,000 jobs for British Columbians, this constitutes, nearly 17% of the employed labour force of the province. The agriculture labour force is more than just farmers. Truckers, equipment dealers, machinery manufacturers, scientists, carton/package suppliers, restaurant workers, food store workers and many others are all involved in the food industry.

BC's Products are Sold to Other Provinces and Countries

- Agricultural and fish products valued at over $2.7 billion are exported to over 140 countries around the world.

Taking Care of British Columbia's Land and Water…Everybody's Responsibility

We have a total of 89.3 million hectares of land in BC's borders (provincial land area). That's larger than many countries in the world. But less than 5% of that is suited to agricultural production. We must make sure we make the best use of every available hectare and ensure its' preservation to produce food and other agricultural products for future generations.

British Columbia's land suited to agriculture and food production is included in the Agricultural Land Reserve (ALR). This includes land that is privately owned, and owned by the government (Crown land). The Agricultural Land Commission ensures that land best suited to agriculture may not be developed or used for other purposes, and therefore, provides some guarantee that it will be available for food production for future generations.

Farmers today are using advanced techniques to make the best use of their land by:

- Using fewer chemicals to control weeds and pests by using a program called Integrated Pest Management

- Using controlled methods to apply exact amounts of fertilizers needed to grow healthy crops and thus reducing waste.
- Formulating feed for all types of livestock and fish to ensure proper growth and reduced waste.

Computers are becoming more common as a tool to not only operate sophisticated machines and livestock feeding equipment, but also to help farmers manage their businesses and make marketing decisions.

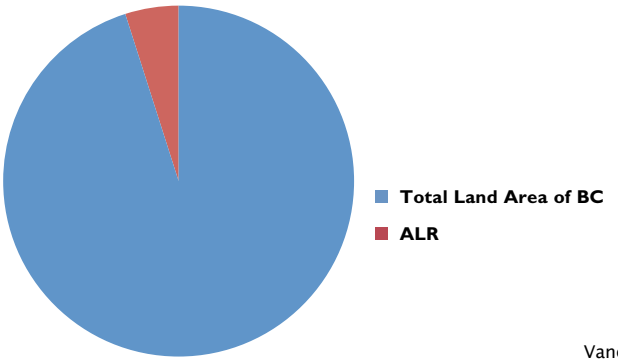
These sophisticated, modern techniques being used by today's farmers and processors are giving each of us some of the best and highest quality food and agricultural products in the world.

General Statistics

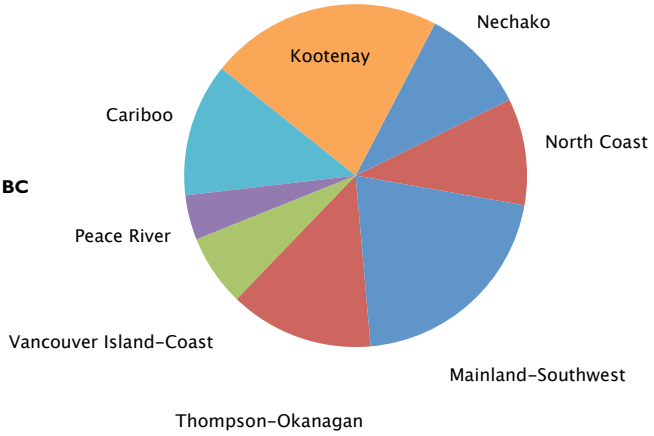
Based on 2011 Census Data

Total population of British Columbia 4,113,487

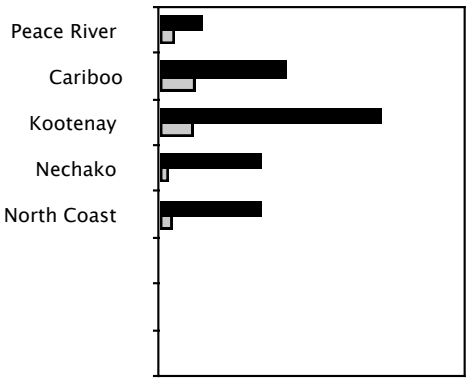
Total Land Area (hectares)



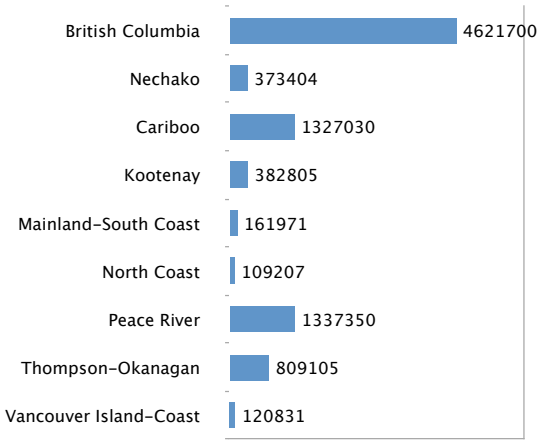
Total Land Area (by region)



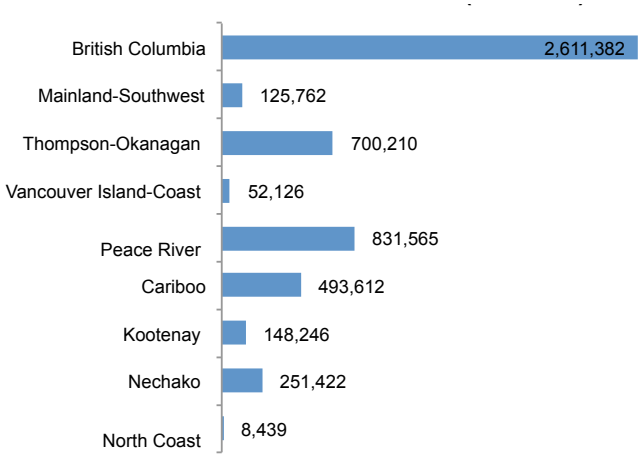
Total Land & Population (by region)



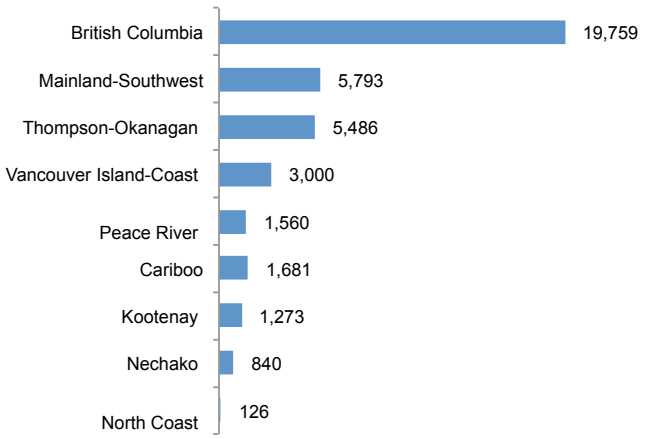
Total Land in ALR (hectares by region)



Total Area of Farms (hectares)



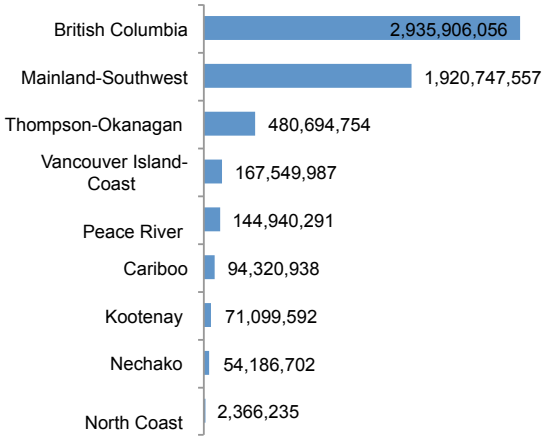
Total Number of Farms



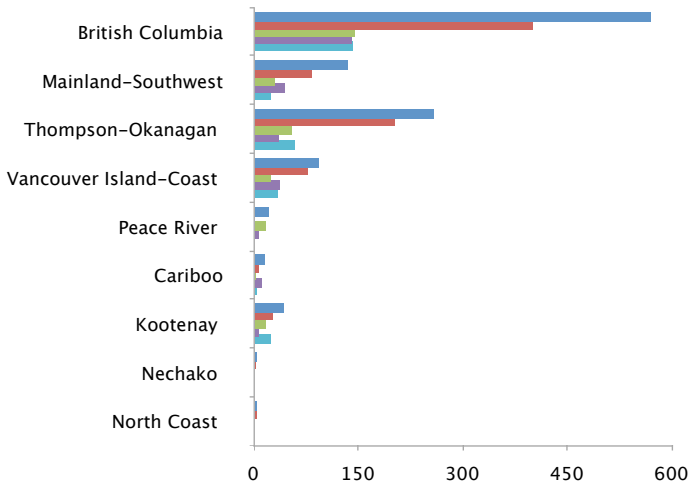
Classification by Total Gross Farm Receipts

	Total # of farms	Under $10,000	$10,000 - $24,999	$25,000 - $49,999	$50,000 - $99,999	$100,000 - $249,999	$250,000 - $499,999	$500,000 - $999,999	$1,000,000 - $1,999,999	$2,000,000 and Over
British Columbia	19,844	9,466	3,194	2,037	1,592	1,536	889	618	328	184
Nechako	886	360	176	133	102	66	39	6	1	3
Cariboo	1,781	785	395	225	175	127	49	12	10	3
Kootenay	1,349	736	257	119	102	89	28	11	4	3
Lower Mainland-Southwest	5,410	2,299	650	407	370	472	436	400	233	143
North Coast	134	76	31	13	11	1	2	-	-	-
Peace River	1,729	620	353	257	197	189	75	24	9	5
Thompson-Okanagan	5,700	2,756	913	665	512	481	196	116	41	20
Vancouver Island-Coast	2,855	1,834	419	218	123	111	64	49	30	7

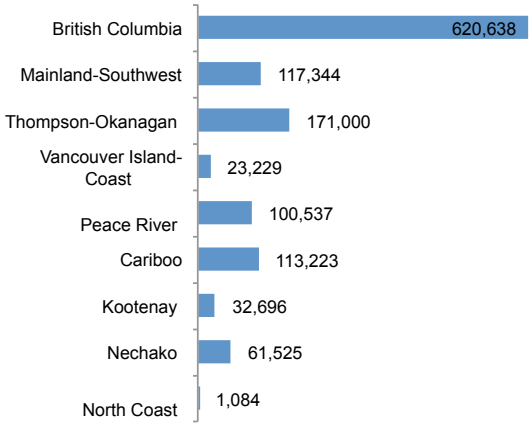
Total Gross Farm Receipts ($)



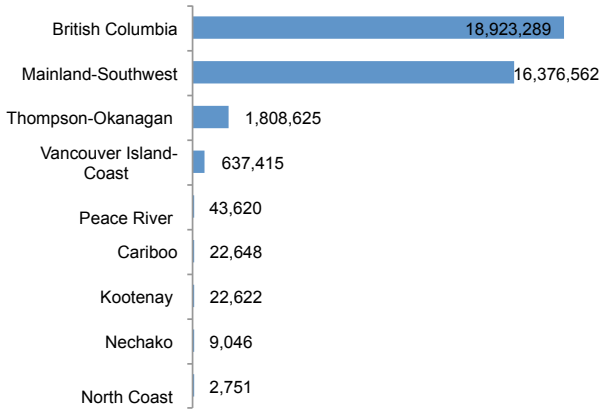
Farms classified by Certified Organic Products



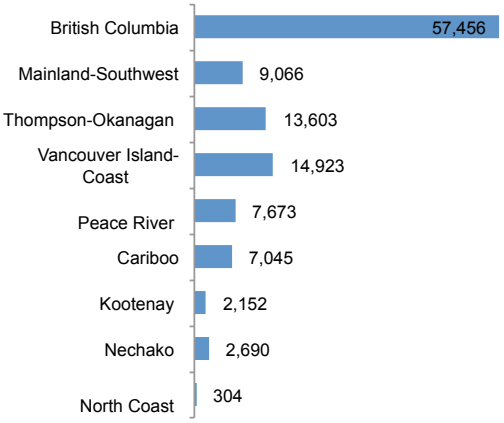
Total number of Cattle and Calves



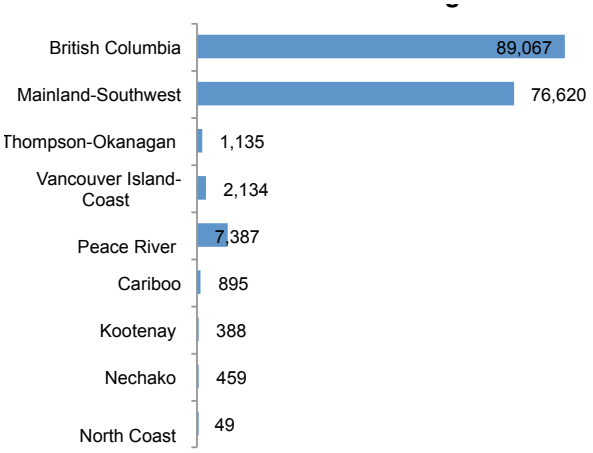
Total number of Hens and Chickens



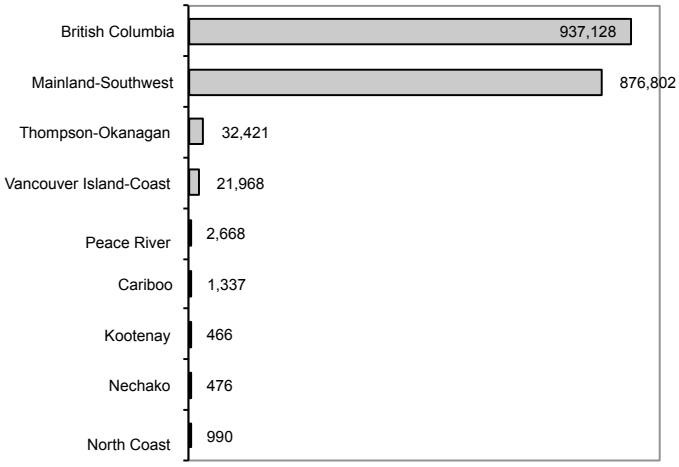
Total number of Sheep and Lambs



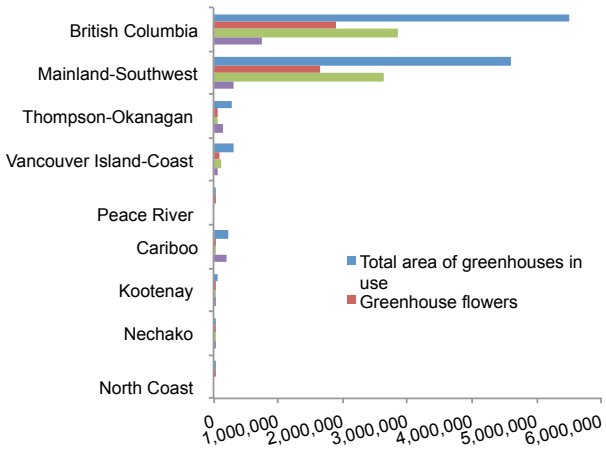
Total number of Pigs



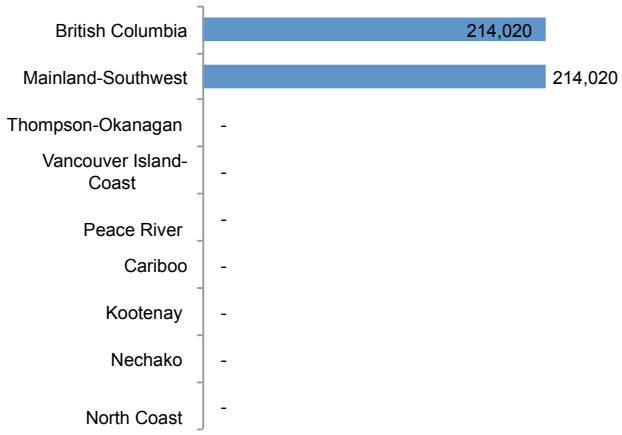
Total number of Turkeys



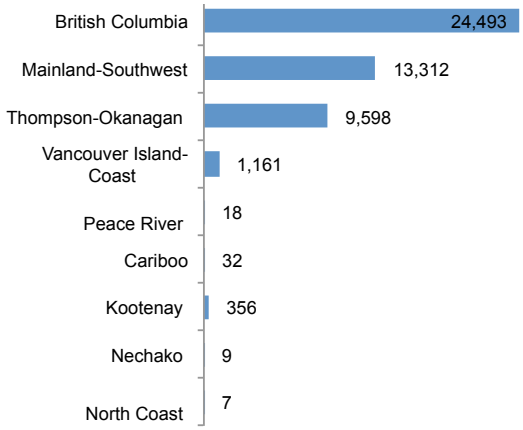
Total Greenhouse Production (m^2)



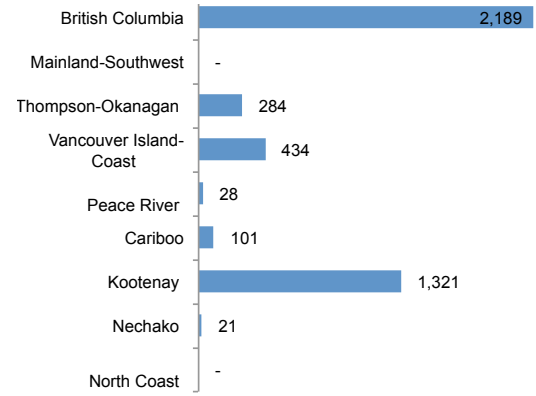
Total Mushroom Production (m^2)



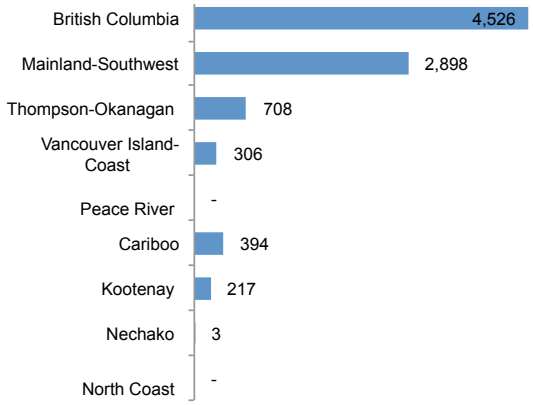
Total Area of Fruit, Berry and Nuts (hectares)



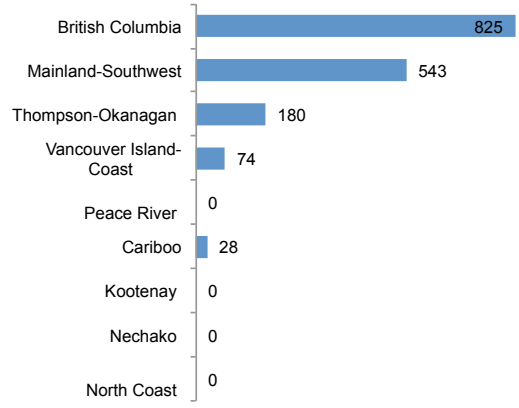
Total Area of Christmas Trees Grown for Sale (hectares)



Total Area of Nursery Products Grown for Sale (hectares)



Total Area of Sod Under Cultivation (hectares)



Total Area of Berries, Grapes, Tree Fruits and Nuts (hectares)

	British Columbia	Nechako	Cariboo	Kootenay	Lower Mainland-Southwest	North Coast	Peace River	Thompson-Okanagan	Vancouver Island-Coast
Total	24,493	9	32	356	13,312	7	18	9,598	1161
Strawberries	363	1	1	12	254	0	2	34	59
Raspberries	1,746	4	3	10	1,603	1	3	33	89
Grapes	3,711	x	x	50	107	x	-	3,331	223
Blueberries	8,442	1	6	7	8,192	1	0	30	205
Cranberries	2,634	x	x	0	2,553	0	x	x	81
Other berries	876	1	15	22	439	x	x	178	221
Apples	3,902	1	5	48	79	x	x	3,567	202
Pears	260	x	x	6	31	0	0	197	26
Plums	190	x	0	6	22	x	0	134	28
Cherries (sweet)	1,690	0	x	186	21	x	x	1,463	20
Cherries (sour)	37	x	0	x	4	0	0	31	2
Peaches	504	0	x	x	5	0	0	494	5
Apricots	92	0	x	x	1	0	0	90	1

Total Vegetables Grown for Harvest (hectares)

	British Columbia	Nechako	Cariboo	Kootenay	Lower Mainland-Southwest	North Coast	Peace River	Thompson-Okanagan	Vancouver Island-Coast
Total	6,952	21	90	157	4,711	11	16	886	700
Asparagus	71	x	x	x	5	x	x	50	16
Beets	158	1	2	5	106	0	1	21	22
Broccoli	332	1	1	2	305	0	0	6	17
Brussels Sprouts	309	0	x	x	299	x	x	3	7
Cabbage	271	1	4	2	212	0	0	6	46
Carrots	296	1	11	9	189	1	1	37	47
Cauliflower	71	0	1	2	53	0	0	4	11
Celery	8	x	0	x	3	x	x	2	3
Chinese Cabbage	157	x	0	x	154	x	x	1	2
Cucumbers	103	0	2	3	61	0	1	23	13
Dry Onions	123	1	1	4	8	0	0	92	17
Green Onions and Shallots	53	0	0	x	32	x	0	14	7
Green Beans	748	0	2	2	704	0	0	16	24
Green Peas	312	1	3	3	272	2	6	10	15
Lettuce	238	2	2	3	184	0	0	9	38
Peppers	148	x	x	4	59	0	x	74	11
Pumpkins	368	x	1	x	263	x	x	53	51
Radishes	41	0	0	x	33	x	0	4	4
Spinach	68	0	1	2	51	x	x	6	8
Squash & Zucchini	413	1	2	6	288	1	0	63	52
Sweet Corn	1,258	0	x	14	947	x	1	147	149
Tomatoes	135	1	2	4	16	1	0	88	23
Turnips and Rutabagas	117	4	1	2	102	x	x	3	5
Other Vegetables	687	6	9	37	366	2	2	153	112

The Beginning

BC's Recorded Agriculture Industry

Fur traders introduced agriculture to British Columbia in the first quarter of the 19th century in order to reduce their dependence on distant and costly sources of food. Grain, vegetables and fruit crops were grown, and dairy cattle and horses were kept at many trading posts. Demand for agricultural products increased considerably with the influx of gold seekers. Commercial farming and interior cattle ranching began during the mining booms. Activity expanded with the settlement of lands opened by the railways. Irrigation projects in the Okanagan and Kootenays, and land reclamation programs in the Lower Fraser Valley and at Creston, provided rich new productive land. After the turn of the century settlers planted grain and seed crops in the Peace River North East region.

All of this activity, needed some structure, therefore in 1873, a portfolio for agriculture was included with that of the Minister of Finance. But it was not until 18 years later, in 1891, that the government appointed its first permanent official to an agricultural position. The "First Annual Report" of the Department of Agriculture (for 1891) was printed in 1892.

In 1891, the Census for Canada placed the total population of British Columbia at 98,173, with an estimated farm population of 22,000 located on 6,500 farms. Although these farms were scattered over various areas, most were located on Vancouver Island, the Lower Mainland and in the Okanagan and Kootenay Valleys. Today, there are about 19,759 census farms in BC, generating over $2.9 billion in revenues.

As districts became organized farmers came together with The Farmer's Institute movement. The Department of Agriculture used a number of prominent local people to deliver addresses on important subjects. This was the beginning of agricultural extension—an advisory service for farmers.

Today the government operates a Ministry of Agriculture and Lands, with about 34 legislative acts and about 360 employees. It supports the industry on the production, marketing and processing of BC products.

Nutrition

Ideas for Educators, Dietitians, Nutritionists and Food Service Professionals

•Talk and write about the availability and advantages of local foods.
•Incorporate local foods into menus and vending machines at workplaces, schools, day cares, and other places where food is served.
•Serve BC foods at meetings and conferences.
•Use examples of BC foods in counselling advice and nutrition education materials.
•Feature BC foods in posters and presentations.
•Explore options of community supported agriculture, food co-ops and buying clubs that promote BC foods.
•Encourage local restaurants to use local foods.
•Develop policies that support local food supply.
•Work with suppliers to ensure the availability of BC foods.
•Have a seasonal menu, allowing for flexibility in substitutions of foods in season.
•When seasonal foods are limited, choose frozen, canned or dried BC food products.
•Advocate for more farmer's markets and community gardens.
•Support the agricultural land reserve and other policies the promote, support and protect the local food supply.

Ideas for Consumers

•Ask grocery managers to stock local BC foods.
•Talk to grocers about posting signs that identify where the food is from. Tell them that you want to buy BC foods.
•Instead of imported foods, choose BC foods.
•Explore the taste of BC foods. For example, BC produces many varieties of pears, apples and potatoes.
Look for:

- BC Kiwi fruit as an alternative to citrus fruits.
- BC Apples and Pears as an alternative to imported apples and pears.
- BC Peaches/Tree fruits as an alternative to bananas
- BC Hazelnuts as an alternative to almonds
- BC Apple, Cranberry or Blueberry Juice as an alternative to orange juice.

BC produces products within each of the four major food groups recognized by Canada's Food Guide for Healthy Eating.

Choose from a variety of food groups every day.

Vegetables and Fruit

VEGETABLES

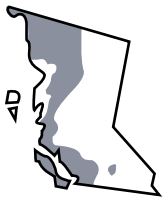
Asparagus
Beans
Beets
Broccoli
Brussels sprouts
Cabbage
Carrots
Cauliflower
Celery
Chinese vegetables
  Bok choy
  Gai lan
  Lo bok
  Snow peas
  Sui choy
Cilantro
Corn
Cucumber
Eggplant
Fennel
Green onions
Leeks
Lettuce
Mushrooms
Onions
Parsley
Parsnips
Peas
Peppers
Potatoes
Rutabagas
Spinach
Sprouts
  Alfalfa
  Bean
  Radish
Squash
  Summer

- Winter
- Pumpkin

Tomatoes
Watercress

FRUIT

Apples
Apricots
Berries
Cherries
Cantaloupes and other muskmelons
Grapes
Kiwis
Nectarines
Peaches
Pears
Plums
Prunes
Rhubarb
Watermelons



Milk Products

MILK

Skim
1%
2%
Homogenized
Goat milk
Lactose reduced milk
Skim milk powder

CHEESE

Cheddar
Colby
Edam
Feta
Farmer's
Goat milk cheese
- Cheddar
- Feta
- Gouda
- Mozzarella

Gouda
Monterey jack
Mozzarella
Parmesan
Sheep milk cheese
- Brie
- Feta

Unripened cheese
- Cottage cheese
- Quark
- Ricotta

CULTURED PRODUCTS

Acidophilus milk
Buttermilk
Yogurt

FROZEN DESSERTS

Frozen yogurt
Ice cream
Ice milk

Meat and Alternatives

LEGUMES

Lentils
Split peas

FISH

Cod
Halibut
Ling cod
Perch
Rockfish
Salmon
Snapper
Sole
Trout

SEAFOOD

Clams
Crabs
Oysters
Prawns
Shrimp

POULTRY

Chicken
Duck
Goose
Turkey

MEAT

Beef
Lamb
Pork
Rabbit
Veal

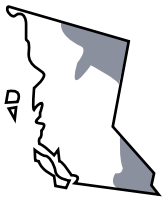
FARMED GAME

Bison
Deer
Reindeer

EGGS

NUTS

Filberts/Hazelnuts



Grain Products

FLOUR

Corn
Graham
Oat
Roti
Rye
Triticale
Wheat
Whole wheat

BREAD

Bagels
Buns
Pita
Rolls

FLAT BREAD

Crackers
Crispbread
Roti/Chapati
Tortillas

PASTA

Lasagna
Macaroni
Noodles
Spaghetti

OTHER GRAIN PRODUCTS

Barley
Cornmeal
Muffins
Oatmeal

Food Safety and Quality on the Farm

Is our food safe to eat?

The farmers in British Columbia are subject to both federal and provincial laws that require them to produce raw food products (of animal and plant origin) that are of the highest quality and are safe for human consumption.

Are there on farm controls to ensure safe food?

The food we eat is subject to rigorous Canadian inspection standards for food safety. Governments, both federal and provincial, through their legislation and activities ensure that food remains safe to eat. Through regular programs, foods are monitored for chemical (i.e. pesticides and antibiotics), physical (ie. glass) and biological (i.e. bacterial) hazards. In the dairy industry for example, every farm is inspected and certified to meet food safety standards before milk can be produced for sale.

Farmers recognize that they must meet the highest production standards–for both safety and quality–to meet public demand. For that reason, Canadian farmer associations, in close collaboration with government and local farmer associations, are dedicated to developing national quality assurance programs using standards created under the HACCP (Hazard Analysis Critical Control Point) model. To be part of a HACCP program, farmers, food processors, transporters (everyone handling food) and their practices will be regularly monitored to meet recognized standards and guidelines.

Who is involved in keeping food safe and of high quality?

- Farmers who produce the food–anyone who harvests crops or feeds animals.
- Service people that support every aspect of the farming, processing and retail industry. In the farming community that would include: veterinarians, equipment suppliers, nutritionists (animal and human), feed and fertilizer service representatives, researchers, auditors, etc.
- Drivers who transport the food from the farm to the processors, brokers, and stores.
- Processing plant workers who manufacture the raw food components into such things as bagged salad, pizza, chocolate milk or hamburger patties.
- Retailers and restaurant workers who cook and serve food.
- Consumers who keep food safe by practicing proper hygiene whenever preparing and serving food.

How can consumers be part of keeping food safe and of high quality?

Once food is purchased it is up to consumers to continue with the safe food handling practices already followed by the industry.

Keep foods cold.

- Chill or refrigerate food promptly. All meat, milk products and perishables should be stored in the refrigerator.
- Avoid leaving perishables exposed to warm temperatures or sunlight.
- Refrigeration temperatures should be below 4°C.

Cleanliness and food handling.

- Thoroughly wash hands, utensils, cutting boards and work surfaces before, during and after handling raw meat, fish or poultry.
- Thoroughly wash fresh produce (fruits and

vegetables) under running water to remove dirt and residue.
- Scrub produce that has firm surfaces such as oranges, melons, potatoes and carrots.
- Cut away any damaged or bruised areas on produce as bacteria can thrive in these places.

Additional Information

- Canadian Partnership For Consumer Food Safety Education http://www.canfightbac.org/english/indexe.shtml
- Agriculture in the Classroom links across Canada, http://www.aitc.ca/

Careers

There are many careers connected to on-farm food safety with the following representing only a sample:

- Farm manager/owner/herds person/worker
- Quality control officer/supervisor /manager/advisor
- Quality Assurance Program/trainer
- Safety/Quality Auditor/Inspector
- On-Farm Food Quality Commodity Program Coordinator (provincial and national level)
- Veterinarian
- Plant/Animal/Food scientist
- Nutritionist (animal and human)
- Laboratory technician

What is Agriculture?

Agriculture is another word for farming.

What is farming?

Farming is using land or water to grow crops and raise animals, birds or fish for food and other products.

What are crops?

When food plants are grown in large amounts they are called crops. Food plants can be raised to feed the animals on the farm or they can be raised to make into food for us to eat.

- **Examples of food plants for animals are corn and grass.**
- **Examples of food crops for people are strawberries, carrots and cucumbers.**

What animals, birds and fish give us food and other products?

Some types of cows are raised to give us milk—these are called dairy cows.
Some types of cows are raised to give us meat and leather—these are called beef cows.
Chickens can be raised for eggs or meat.
Sheep can be raised for their wool or their meat.

What is a farm?

Farming takes place on large areas of land or water called farms. Farms on land will have fields for crops and large buildings called barns to house the animals or birds. Farms on water will have large pens to hold the fish.

What is the agriculture industry?

When you put together all of the people in all of the businesses that work to bring us safe food to eat then you have the agriculture industry.

Created by: BC Agriculture in the Classroom Foundation

The Commodities

The following section gives interesting facts about each of the major commodities or groups of commodities produced in British Columbia. This is only a partial list of all the commodities grown in BC. It was grouped in this way simply for space considerations. For more details on each, contact the agencies noted.

Animal

Meat

Dairy

Poultry

Fish

Fish Farming

Shellfish

Commercial Fishing

Plant

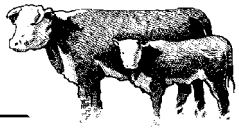
Fruits

Vegetables

Nuts

Flowers

Grains



Beef Cattle Ranching

Interesting Facts

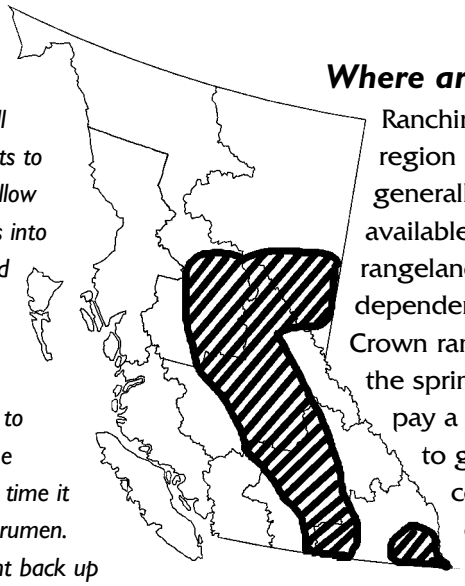
Beef animals are ruminants and like all ruminants they have four compartments to their "stomach". When ruminants swallow grass or other vegetation the feed goes into the first section of the "stomach" called the rumen. Here it is broken down by billions of micro-organisms.
It is this feature that allows ruminants to digest tough cellulose and convert it to usable food. When the rumen is full the animal will lie down to rest During this time it will burp up portions of food from the rumen. These portions called "cud" are brought back up into the mouth, chewed into a pulp and swallowed again. The chewed food goes on through the other three "stomachs" where it is digested. Other ruminant animals are dairy cattle, sheep, goats and bison.

What is cattle ranching?

Cattle ranching is the raising of cattle for beef. A cattle herd is made up of calves (singular-calf, newborn male or female); heifers (female adult animals that have not yet calved); cows (female animals that have had a calf); and bulls (adult males); steers (castrated male animals).

These groups of cattle are separated during certain months. The cow herd is usually kept at the ranch headquarters during the winter months. The rancher feeds the herd stored feed that has been produced the previous summer. On most ranches in BC, the cows have their calves in the early part of the year. Once the grass begins to grow in the spring the cows and their calves are turned out on to pastures to graze. In many parts of British Columbia the cows and calves are moved onto forested rangelands for the summer months.

Where are the ranches in BC?



Ranching takes place primarily in the Interior region of British Columbia. Cattle ranching generally is in areas where rangeland is available. Cattle harvest the grass of the rangeland. In BC, cattle producers are dependent on roughly 8.5 million hectares of Crown rangeland where cattle graze during the spring, summer and fall. The ranchers pay a fee to the government for the cattle to graze on Crown land. The rangelands complement the ranchers' deeded land of approximately 1.5 million hectares. An individual rancher's deeded land would include the ranch home and buildings, calving areas and hay and crop producing lands.

How many beef cattle do we produce?

In BC, there are approximately 195,000 beef cows. Adding the annual calf crop, yearlings, and bulls there are approximately 621,000 head of beef cattle in the province at any time.

How are beef cattle produced?

It takes from 18 to 30 months for a beef animal to reach market weight. Often different producers are involved in the different stages of raising cattle: the cow-calf operator initially raises the calves; the backgrounder raises weaned calves on mainly forage diets; and the feedlot operator feeds calves a high energy grain diet until they reach market weights. There are many different combinations of these stages and not all animals follow the same path to reach market weights.

Cow-calf operations are the most common beef operations in BC. Cow-calf operators maintain cow herds and raise their calves from birth to weaning.

Each year a cow is expected to produce one calf. The cows are bred usually in late spring or early summer. A cow is pregnant for nine months. Newborn calves nurse their mothers and as they grow, they graze on pasture or rangeland with their mothers. When the calves are six to eight months old, they are weaned and moved to a backgrounding operation. The heavier calves may go directly to a feedlot.

Cow-calf and backgrounding operations are often combined. The backgrounding operations raise calves after six months of age, to take them to the feedlot stage. Backgrounders harvest hay and make silage for winter feeding. Rangeland and pastures provide forage for the other months. Backgrounded cattle go to the feedlot when their desired weight is achieved.

What happens when the beef cattle leave the ranch?

Cattle that have been backgrounded are sold to feedlots to be finished before processing. Traditionally, animals are transported by truck or rail to be sold, most commonly through public livestock auctions. At the auction, the auctioneer sells the cattle to the highest bidder. In recent years, new marketing techniques have been developed including computer and satellite auctions where the cattle buyer bidding on the cattle may be hundreds or thousands of miles away from the cattle.

What challenges do ranchers face?

One challenge that ranchers face is competition for the use of Crown-owned rangeland and water resources. Land and water uses which can conflict with ranching operations include domestic water needs, mineral extraction, native land claims, outdoor recreation, parks, subdivisions, timber production, wilderness areas, wildlife management areas and wildlife ranges. With good range management, cattle grazing is compatible with many of these other uses and usually improves the range for other uses. The ranching industry is active in land-use planning and works to co-operate with other resource users for present and future needs.

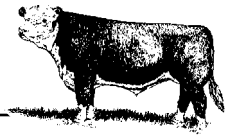
Who's involved in producing beef?

- Ranchers/cow-calf operators
- Backgrounding operators
- Feedlot operators
- Veterinarians
- Machinery dealers
- Feed and fertilizer sales persons
- Auctioneers
- Truckers
- Packing plant workers
- Meat graders/inspectors/butchers

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Cattlemen's Association

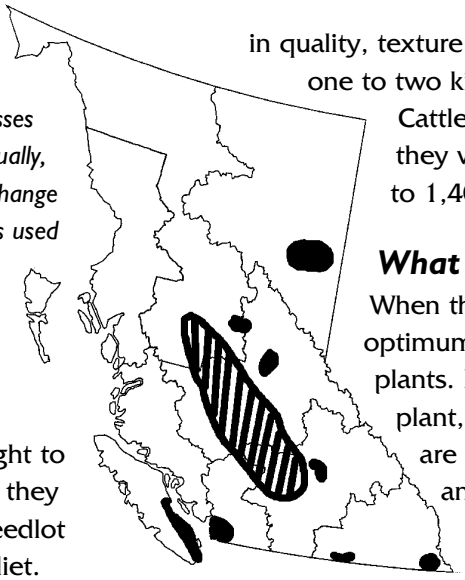
Photo by: Neil MacDonald



Beef Feedlot Finishing

Interesting Facts

Beef cattle are ruminants, which means they are best suited to digest forages (grasses and legume). If their feed is changed gradually, the microbes in the rumen(stomach) will change so that they can digest grain diets. Grain is used in beef-finishing diets because it has higher energy values than forage, and cattle gain weight more efficiently.



What is a feedlot?

When calves are anywhere from eight to 20 months old, depending on how they have been fed, they are sent to a feedlot where they are fed a high-energy diet.

Where are the feedlots in BC?

Most of BC's feedlots are located in the Interior Regions, with many in the Okanagan Valley. Feedlots in BC vary in capacity size from 500 head to 7,000 head of cattle. BC cattle are also sent to Alberta for finishing in large feedlots.

What happens at the feedlot?

The cattle are kept in large, comfortably bedded pens. They are given a controlled diet that assures they will gain just the right proportions of muscle and fat. The resulting beef product will be consistent in quality, texture and taste. The cattle gain from one to two kilograms of body weight per day. Cattle are ready for processing when they weigh 550 to 640 kilograms (1,200 to 1,400 pounds).

What happens next?

When the cattle have reached their optimum weight, they are sent to packing plants. In a federally-inspected packing plant, the animals, and then carcasses, are inspected to ensure that the animals are healthy and the beef is wholesome. After inspection, the carcasses are graded based on the ages of the animals, the quality of the meat and the meat yield. In Canada, there are three A grades, based on the level of marbling (amount of fat laced through the meat). AAA has the highest amount of marbling. The carcasses are cut in two, and the sides of beef are sold to grocery stores and butcher shops. In some cases the sides are further processed and cut into portions that fit into a box. This is called "boxed beef". Many of the large grocery stores and restaurants receive their beef in this form. The by-products, such as bones and hides, are sent for further processing.

Grading Stamp

Inspection Stamp

What products come from beef cattle?

Processed cattle give us many products. Among the food items produced are steaks, roasts, hamburger, organ meats, sausages and gelatin. Beef products are high in vitamins, iron, zinc, and other minerals. The hides from the cattle are tanned and used for leather products (shoes, belts, and sports equipment). Medicines made from cattle

by-products include insulin (for diabetics), heparin (an anticoagulant) and epinephrine (for allergies). Other by-products are used in making soap, cosmetics, buttons, photographic film, sandpaper, violin strings and explosives.

All segments of the beef cattle industry work toward bringing consumers beef that is tasty and safe. They are very careful to treat their cattle humanely by keeping them healthy and well fed. Producers educate themselves about new and better feeding methods, safer ways of handling cattle and up-to-date health practices.

Who's involved in producing beef?

- Ranchers/cow-calf operators
- Backgrounding operators
- Feedlot operators
- Veterinarians
- Machinery dealers
- Feed and fertilizer sales persons
- Auctioneers
- Truckers
- Packing plant workers
- Meat graders/inspectors
- Butchers

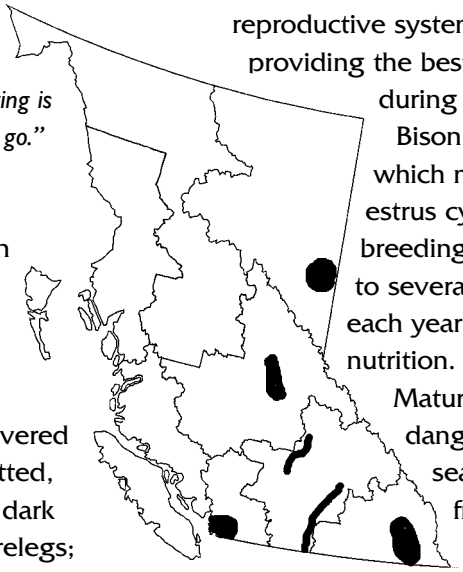
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Cattlemen's Association
Beef Information Centre

Bison

Interesting Facts

Bison can easily jump over 2m fences. They can go almost anywhere and a common saying is "You can lead a bison anywhere it wants to go."



What are bison?

Bison are large mammals with a keen sense of smell and excellent eyesight. They have a reputation for hardiness and have strong herding instincts. They are curious, wary and easily frightened. Their bodies are covered in long, coarse guard hairs and a matted, woolly undercoat. A shaggy, woolly dark brown mane covers the head and forelegs; the coat on the hindquarters is short, straight and coloured coppery brown; the head and beard are almost black. As with beef cattle, there are cows (female), calves (young) and bulls (male) in the herd.

Where are bison produced in BC?

Forty-six per cent of bison farms are located in the Peace River North East region, 27% in the Thompson-Okanagan, 17% in the Cariboo-Central-Chilcotin area, 4% in the Kootenays, and 3% in the Lower Mainland.

How many bison do we produce?

There are approximately 71 bison farms in BC. The total population of bison averages 7,800.

How are bison produced?

As bison are wild animals, they are classified as game animals. Their reproductive systems react to the availability of food. When good food is available bison will breed. If good food is not available they may not breed. Farmers can make a bison's reproductive system believe forage is plentiful by providing the best pasture six weeks prior to and during breeding season.

Bison cows are seasonally polyestrus which means they have more than one estrus cycle characterized by a distinct breeding or rutting season lasting from 2 to several months. To ensure a cow cycles each year, farmers must maintain top herd nutrition.

Mature bulls are hard to handle and dangerous during the breeding season (rut). Rutting bulls bellow frequently and increase grooming activity by pawing, wallowing and horning. Trees are jabbed, rubbed, debarked, thrashed and even uprooted.

The rut reaches its peak in late July to mid August, waning by the end of September. Most of the breeding activity happens during the cooler times of the day, such as dawn and dusk. Optimum breeding occurs in July or August with calving in April and May.

The gestation period is just over nine months, or between 270 to 285 days. Usually one calf, weighing 20 to 25kg, is born. At two and a half years a bull can weigh 550 to 650kg and are generally slaughtered for meat at this age. Bison are fully mature at 8 years and live for 12 to 25 years. They can, however, become very cantankerous after 5 years of age.

How is bison used?

Bison are raised for their meat and for their hide. Game meat is lean and low in cholesterol. It is in demand by restaurants and is exported to Europe and the United States. The fur hides are made into jackets, coats, hats, and car seats.

What happens after the bison leaves the farm?

When bison are ready for market they are transported to processing facilities where the animals are slaughtered and processed. The product is distributed by various means to retail stores, restaurants and novelty shops.

What challenges do bison producers face?

Bison can jump several times higher than any domesticated farm animal. Game farmers must, therefore, construct very strong, high fences to ensure their animals remain inside the farm. A good knowledge of bison behaviour will result in better management and prevent problems of escape and damage to facilities.

Who's involved in the bison industry?

- Game farmers
- Processors at the slaughterhouse
- Specialty wholesalers
- Truckers/transporters
- Restaurant chefs

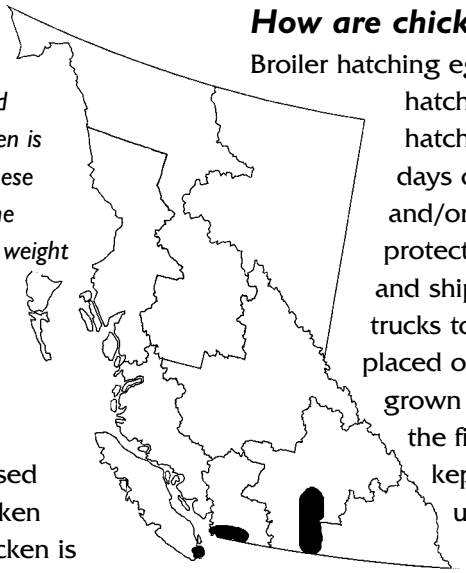
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Bison Association

Chickens

Interesting Facts

Chickens do not chew their food. The food is moistened in the throat and ground up in an organ called the gizzard. A chicken is fed grit-hard particles like small stones. These particles lodge in the gizzard and aid in the grinding process. Chickens convert feed to weight gain very efficiently. That is why a chicken will use as little as 1.67kg of feed per kg of body weight gain.



What are chickens?

Chickens are domesticated fowl raised for their meat or eggs. A male chicken is called a rooster and a female chicken is called a hen. Young chickens are called chicks. Chickens are categorized into meat chickens and egg layers. This profile discusses meat chickens.

Where are chickens produced in BC?

Over 86% of the production of chickens is located in the Fraser Valley while 3% is produced on Vancouver Island and 10% in the Interior.

How many chickens do we produce?

BC has over 311 commercial chicken producers. They produce over 97 million chickens, weighing a total of 154 million kilograms (after evisceration), with a farm gate value of $350 million and a retail value of $644 million.

There are 59 producers who specialize in breeding hens which lay fertilized eggs to be hatched into broiler chicks. They produce about 112 million hatching eggs.

Another 15 million eggs to be hatched are imported. Hatcheries in the province incubate, or set, these eggs until they hatch.

How are chickens produced?

Broiler hatching eggs are produced on broiler hatching farms. The eggs are sent to hatcheries. The eggs hatch after 21 days of incubation. The hatching eggs and/or chicks are vaccinated for disease protection, sometimes sorted into sexes, and shipped in temperature-controlled trucks to production farms. They are placed on litter (usually sawdust) and grown to 2.2kg in 39 to 42 days. During the first few weeks of growth, they are kept under brooders, devices that are used to keep the chicks warm. The temperature is lowered each week until the birds are adequately feathered to maintain their own body heat. These birds consume approximately 1.85kg of feed per kg of body weight produced over the 42-day period (industry average).

How is chicken used?

Chicken meat is sold either fresh or frozen, whole or half birds, or cut into various pieces such as breast, thighs, drumsticks or wings. Chicken can be fried, roasted or broiled. It is sold in nugget form and made into other processed products. It is included in soups and stews.

What happens after the chickens leave the farm?

The chickens are loaded into cages on a truck and taken to the processing plant. At the processing plant they are placed on shackles which move through the plant. The birds are electrically stunned prior to slaughter to minimize suffering. The feathers and internal viscera are removed and the birds are

inspected to ensure that they are healthy and safe for human consumption. Qualified federal inspection staff carry out the inspection.

What challenges do chicken producers face?

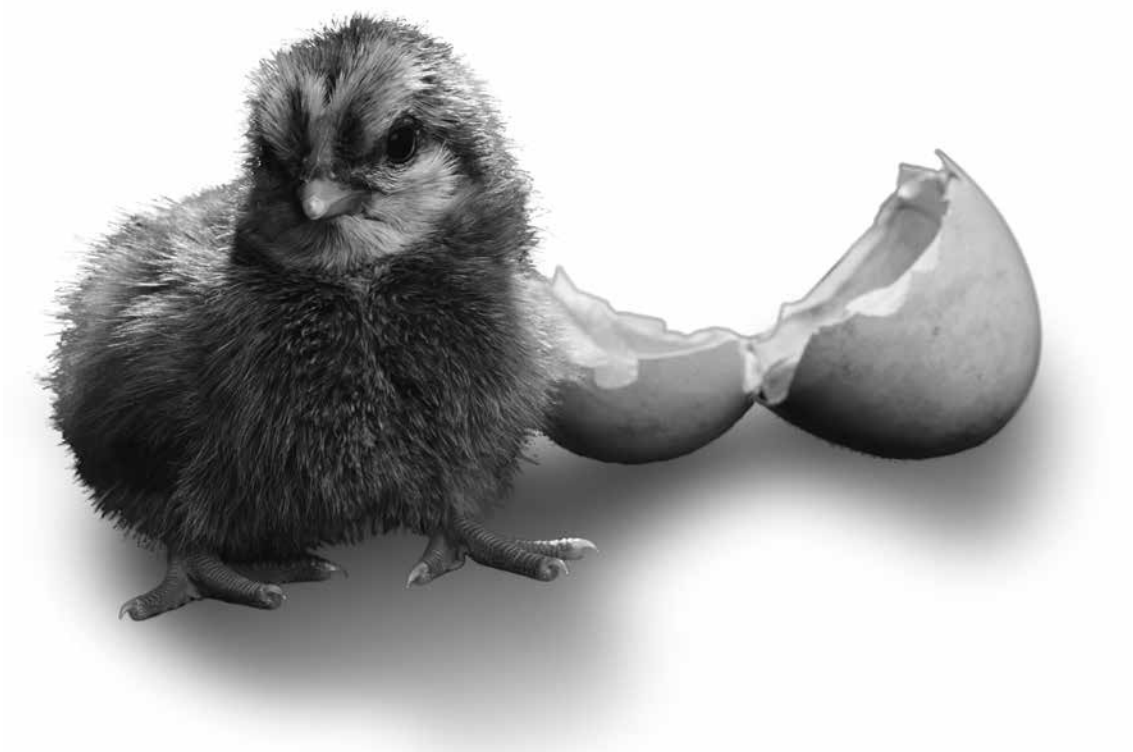
BC chicken producers have faced declining prices and competition from eastern Canada. To maximize production efficiency they have applied sophisticated computer technology to control the environment in the barns, and to assist them in managing their operations. Major investment in new buildings and equipment is required in order to meet market demand.

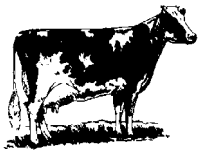
Who's involved in producing chickens?

- Broiler breeder producers
- Hatchers
- Veterinarians
- Chicken producers
- Equipment suppliers
- Trucking companies
- Processors
- Government inspectors
- Restaurants, hotels, institutions, retailers, fast food outlets
- Pharmaceutical companies
- Feed company nutritionists and fieldworkers
- BC Avian Monitoring Laboratory

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Chicken Marketing Board
BC Chicken Growers' Association
BC Broiler Hatching Egg Commission
BC Sustainable Poultry Farming Group

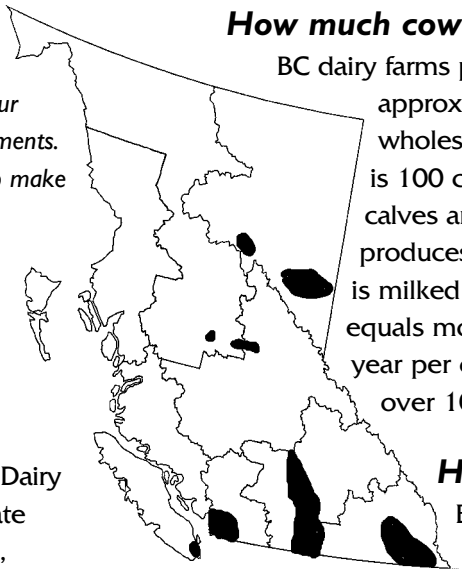




Dairy (Milk)

Interesting Facts

The udder of the dairy cow is divided into four compartments and thus the need for four teats. Goats and sheep have just 2 compartments. Dairy cows use the energy from their feed to make milk rather than excessive body fat.



What makes up a dairy herd?

Herds of dairy cows (females) are raised for the production of milk. As mammals they produce milk for their young. Fortunately for us a dairy cow produces more than her calf requires. Dairy bulls (males) may be housed in separate facilities or occasionally with the cows, however breeding is usually done artificially. The most common dairy breed is the Holstein, the black and white cows often seen in pastures. Other breeds are the Ayrshire (red and white), Jersey (tan and black), Brown Swiss (brown and black) and Guernsey (golden white). Recently there has been an increase in goat and sheep milk production in BC.

Where is milk produced in BC?

Location	Number and Type of Dairy Farm		
	Goat	Sheep	Cattle
Fraser Valley	9		324
Thompson-Okanagan	5	6	119
Kootenay			27
Cariboo			17
Vancouver Island	1	1	82
Nechako			33
Peace River			39
Total (BC)	15	7	736

*2006 data

How much cow's milk do we produce?

BC dairy farms produce an annual volume of approximately 656 million litres of fresh wholesome milk. The average herd size is 100 cows plus additional replacement calves and heifers. The average cow produces 30 litres of milk each day and is milked for 10 months each year. This equals more than 9,432 litres of milk per year per cow. That's an average of just over 100 glasses of milk per day.

How is milk produced?

Before any cow produces milk, she must first become a mother. When a dairy cow reaches about 15 months in age she is bred, usually by artificial insemination. After 9 months she has a calf and produces milk. The cow can produce milk for the next 10 months.

A cow that is being milked can eat up to 40kg of grass, forage and hay a day and drink up to 170L of water a day. That's almost a bathtub full. A cow's diet is supplemented with feed, such as barley, wheat, soybean and canola meal. These are formulated and fed according to the energy, protein and other nutritional needs of the animal.

At milking time the cows go into a milking barn. When a cow is standing ready to be milked, her udder and four teats are rubbed and cleaned. An extension of the milking machine is attached to each teat. The action of the machine simulates the suckling action of a nursing calf. The milking machine draws the milk from the cow and collects the milk in a holding tank. The milk is then quickly cooled.

Cows are milked twice and sometimes three times a day, usually at the same times each day.

All equipment used for milking is thoroughly cleaned and sanitized before and after each use.

Dairy farmers use computers to keep track of how much each cow eats, how much milk each cow produces, and even to match a particular cow with a particular bull for breeding. They also use computers for financial accounting and to find information on the Internet.

Quality Checks on Every BC Dairy Farm

From the farm to the store there are a number of quality checks that milk must pass before it reaches your table.

- The farm is inspected and certified before it can produce milk.
- Farms are inspected regularly to ensure they meet the provincial standards for quality milk production and premises. Everywhere the cows go and all of the equipment used in the handling and storage of milk must be kept clean and well maintained.
- Cows are monitored and tested regularly to ensure good health.
- Growth hormones (used to increase milk production) such as BST or rBGH are not legal in Canada and therefore not permitted for use with dairy cows.
- As soon as milk leaves the cow it is cooled and is kept cold at all times.
- Before milk can be picked up it must be inspected and graded by a licensed bulk milk tank grader. It is the grader's responsibility to ensure the milk is cold (below 4°C), smells fresh and looks clean.
- A milk sample is taken from every farm tank when milk is picked up. This milk sample is then taken to a certified lab where it is tested.
- Milk is transported to the dairy in stainless steel tanker trucks. These trucks are also certified before they can carry milk.

What does milk look like when I use it?

We drink fresh milk (whole, 2%, 1%, skim and chocolate) and use milk products such as cheese, yogurt, sour cream, whipping cream, cottage cheese, evaporated milk, sweetened condensed milk and skim milk powder.

BC produces many types of cheese from cow's milk, including: cheddar, mozzarella, parmesan, blue and white mold varieties, colby, gouda, edam, monterey jack, feta, cottage cheese, paneer, fresh curds and ricotta cheese. There are many new small businesses in BC hand-crafting cheeses from BC milk.

Milk is made of 89% water and 11% solids. Key nutrients in milk are: calcium, riboflavin, vitamin A and protein. Milk, cheese and yogurt are easy ways for most people to get the amount of dietary calcium recommended by Health Canada.

A 250 ml glass of milk provides most of the recommended daily allowance of vitamins and minerals: 25% vitamin D, 15% vitamin B-12, 17% protein, 29% calcium, 23% phosphorus and 23% riboflavin.

What happens after the milk leaves the farm?

Milk is picked up at the farm by a certified tanker truck, which delivers it to a dairy plant. At the dairy plant, the fat is separated from the milk so that skim, 1% and 2% milk can be made. Homogenized milk contains 3.25% butterfat. After separation, milk is pasteurized and homogenized. Pasteurization is the process of quickly heating milk to 72°C and rapidly cooling it to 4°C. This kills any harmful bacteria and keeps milk fresher longer. Homogenization is the process of breaking the fat into tiny globules so that it doesn't separate out from the milk. During all these steps, quality control ensures milk is safe and clean.

The majority of milk produced in BC is sold as fluid milk, while the rest is manufactured into semi-fluid products and sold as cheese, ice cream, yogurt and cottage cheese.

Quality Checks At Every BC Dairy Processing Plant

There are a number of quality checks that are done at the processing plant.

- Before the truckload of milk is unloaded at the dairy it is tested for antibiotics. This ensures that all products meet the strict standards of no antibiotics in milk. If antibiotics are found, the farmer who contaminated the load may be held responsible for the entire load.
- The milk is also tested for temperature, acidity

and odour before it is accepted.
- Other tests are done regularly for bacteria, water contamination and somatic cell counts. Somatic cells are an indicator of animal health and milk quality.
- Milk is natural—nothing is added except Vitamins A and D, which is required by law.
- All dairies are inspected regularly for cleanliness, handling procedures and equipment standards. All milk equipment is cleaned and sanitized on a daily basis.
- All fluid milk sold in Canada must be pasteurized. This is the law. It is necessary to kill any harmful bacteria that may find its way into milk. Pasteurization also destroys spoilage organisms.
- Milk is packaged quickly—usually within 24 hours of arriving at a dairy plant.
- Packaged dairy products are also required to be regularly tested by a certified lab to ensure they meet the strict standards for composition and potential contaminants such as bacteria and antibiotics.

Quality Checks At Every BC Grocery Store

- Dairy products must be held at 4°C during transport and display to ensure their safety and quality.
- All dairy products are code dated to ensure they are purchased at their highest quality. Dairy products not sold before their "Best Before Date" are removed from sale.

Quality Checks at Home

As food safety is a responsibility of everyone, there are some Quality Checks to do at home.

- Keep milk cold—pick it up last when shopping and avoid leaving it exposed to warm temperatures or sunlight in your car.
- Check the temperature of your refrigerator to ensure it is below 4°C.
- Keep milk containers out of the fridge just long enough to serve. Return the milk to the fridge as soon as possible.
- Rotate milk and other products: use older products first.
- Leave dairy products in original containers. They can pick up the odours and flavours from other foods in the fridge if left open.

BC has some of the highest standards for milk production, transport and processing found anywhere in the world. Extensive quality checks and testing unique to the dairy industry ensure that BC consumers can always purchase high quality, safe and nutritious dairy products.

What challenges do dairy producers face?

Dairy farmers must meet many challenges in order to remain sustainable–both environmentally and economically.

Dairy farms are truly environmentally sustainable. The majority of feed that cows eat is produced on BC farms and the cows' manure is recycled by incorporating it back into the fields where the feed is grown. Manure is very useful to farmers because it adds nutrients and organic matter, which help sustain and build the quality of the soil.

Canadian dairy producers work hard to ensure consumers receive quality dairy products at reasonable prices. What many people don't realize is what a small share of the consumer dollar dairy producers actually receive for their products. For example, take a look at the cost of a glass of milk and a pizza at a restaurant. An 8 ounce glass of milk in a restaurant will typically cost $1.50. Of that $1.50, 16.3 cents goes to the milk producer (who feeds the cows, milks the cows, transports the milk, etc.); 8.9 cents goes to the processor (who pasteurizes, processes and packages the milk); and $1.25 goes to the restaurant, where the milk is simply poured into a glass and carried to a table. Similarly, surveys indicate that a medium pizza (with three toppings) in a restaurant is typically $11.46. The dairy producer receives only 54 cents for the cheese on that pizza.

Further challenges facing today's dairy producers include:

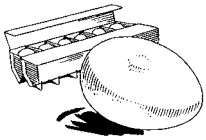
- Meeting evolving environmental, food safety, and animal welfare requirements.
- Surviving a market that is increasingly competitive on a global scale.
- Increasing input costs for such things as feed (grain), equipment and labour, with decreasing revenue.
- Dealing with increasing competition for land use (i.e., urban push, increasing land values.)

Who's involved in getting the milk from the farm to the table?

- Dairy farm owners, managers and staff (milkers, herdsmen, field personnel)
- Breed associations
- Artificial insemination technicians
- Dairy herd improvement advisors
- Veterinarians
- Milking equipment, farm equipment, building and facility suppliers
- Feed producers and nutritionists
- Dairy processor field representatives
- Government inspectors and advisors
- Government and university researchers
- Milk tank truck drivers
- Milk product deliverers
- Store employees

Contacts and other resources:

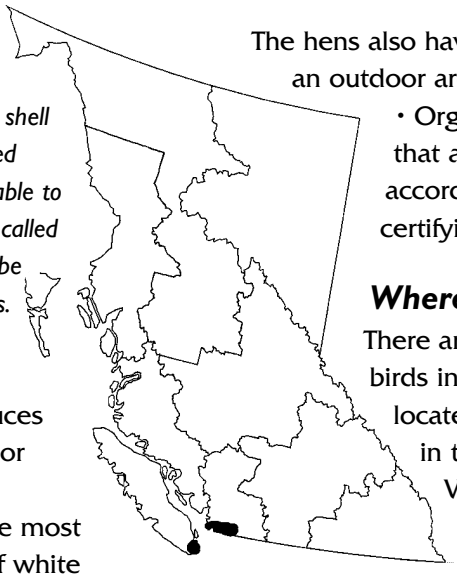
BC Ministry of Agriculture and Lands
BC Dairy Foundation
BC Agricultural Council
BC Milk Producers' Association
BC Milk Marketing Board
BC Dairy Council



Eggs

Interesting Facts

The egg contains its own immune system to guard it against bacterial infection. The shell of the egg is a complex structure composed mainly of calcium carbonate. The shell is able to breathe yet is covered by a thin wax coat called a cuticle. The composition of the egg can be altered when the hen is fed different feeds.



What are eggs?

A "layer," or female chicken, produces shell eggs. These eggs have white or brown shells, depending upon the breed of chicken that laid them. The most popular breed for the production of white eggs is the White Leghorn. Several breeds of layers have been developed for commercial brown egg production. The colour of the shell does not affect the nutritional value of the egg. BC egg producers also supply eggs from hens raised in various flock management systems that specify housing and feed requirements. These eggs are called BC Fresh Specialty Eggs and are as follows:.

- Omega 3 Enhanced: Eggs from layers that are fed an all-vegetarian based diet that includes significant amounts of flax seed. As a result, these eggs are a source of Omega 3 fatty acids.
- Vitamin E Enhanced: Eggs from layers that are fed an all-vegetarian based diet that has been enhanced with extra Vitamin E. As a result, these eggs are an excellent source of Vitamin E.
- Free Run: Brown eggs from layers that are housed on litter and/or slotted floors. The hens are free to move around the floor of the barn.
- Free Range: Brown eggs from layers that are housed on litter and/or slotted floors and have free movement on the floor of the barn. The hens also have access (weather permitting) to an outdoor area with vegetation.
- Organic: Brown eggs from layers that are fed organic feed and raised in accordance with guidelines issued by certifying organizations.

Where are eggs produced in BC?

There are 2.63 million commercial laying birds in BC, 1.8 million of those are located in the Fraser Valley, 273,000 in the Interior and 253,000 on Vancouver Island. There are approximately 4,500 small flocks located throughout BC, most of which contain under 200 birds, with a few containing up to 500 birds.

How many eggs do we produce?

The 13 commercial egg producers in BC produce 79 million dozen eggs annually valued at $117 million. The industry imports an additional 3.6 million dozen and exports 580,000 dozen annually. These producers are responsible for 95 to 98% of BC egg production, with the balance coming from the small backyard flocks.

The average flock size for the commercial producers is 15,000, with the largest flock having 55,000 birds.

How are eggs produced?

Layers start to produce eggs when they are 18 to 21 weeks of age. A layer lays approximately 290 eggs per year.

Most of the laying birds in BC are kept in cages indoors, to ensure proper nutrition, temperature control, protection from disease, freedom from predation, and for maximization of production.

The hen house is lighted artificially because layers lay more eggs with increased hours of daylight. Eggs that are laid in the cage roll down a sloped floor onto a conveyer belt and are automatically collected and immediately cooled.

After 12 to 14 months of production, the hen's egg production and egg quality declines. The hens are sold to a processing plant as "spent fowl," for use in production of soups and boneless canned meats or as chicken meat additives for several oriental foods, such as chicken chow mein.

How are eggs used?

Table eggs can be eaten by themselves–fried, boiled, poached or scrambled. They can be used in drinks such as eggnog, or added to baking. Eggs are an excellent source of protein, vitamins, iron and minerals.

Eggs are also decorated at Easter time. Ukrainian Easter eggs, some of the most elaborately decorated eggs, are called pysanky.

What happens after the eggs leave the farm?

From the farm, a refrigerated truck takes the eggs to a grading station where they are cleaned, graded and packed. The eggs are washed and sanitized in a tunnel washer and given a light oil coating to replace the natural oil coating that is removed. They are passed over a bright light, which reveals the interior. This process is called candling because originally the light used was a candle. The eggs are graded according to size and quality. Eggs that do not meet Grade A requirements are removed from the grading line and sorted for other uses. A Grade A large egg weights 56g or more. They are packed into 15 dozen cartons or cases of 30 dozen, and trucked to grocery stores or restaurants.

Eggs should be stored in a cool place and used within 3 weeks of being laid. Eggs generally reach the retail market within 4 to 7 days of being laid.

About 86% of the BC egg production goes to the table egg market. The remaining 14% go to a "breaker plant" where the eggs are broken to make liquid whole egg, or separated into component parts.

Common products of this further processing of eggs are liquid, frozen or dried egg. An enzyme called lysozyme is separated from the egg during the breaking process. Lysozyme is used for medicines and as a food preservative. It is a very valuable by-product of egg processing. Hotels, restaurants, bakeries and institutions, such as hospitals and homes for seniors, use the processed egg products.

What challenges do egg producers face?

The egg industry needs to satisfy the growing demand for eggs from chickens that are reared on the floor or outside on range. Many people are becoming concerned about the cruelty of keeping the layers in cages. The egg industry needs to educate the public as to the positive animal welfare benefits that cage rearing provides the birds. They need to inform the public of the advantages of producing eggs under intensive cage production in order to keep the costs down and to meet the demand for inexpensive, good-quality food.

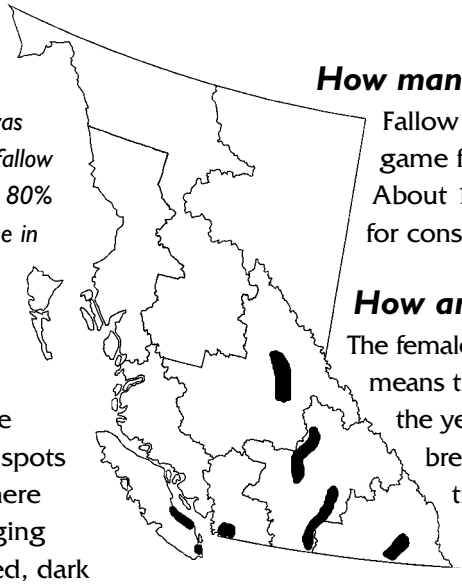
Who's involved in producing eggs?

- Egg producers
- Hatchery operators
- Equipment suppliers
- Trucking companies
- Grading stations
- Breaker stations
- Avian Monitoring Laboratories
- Federal government inspectors

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Egg Marketing Board

Fallow Deer



Interesting Facts

In 1990, the bulk of venison sold in BC was imported from New Zealand. Today, BC fallow deer producers are serving approximately 80% of the market. There has been an increase in the number of restaurants and stores serving or selling venison.

What are fallow deer?

Fallow deer are mammals that have longer tails than other deer, white spots and a prominent Adam's apple. There are up to 14 colour variations, ranging from white to butterscotch, light red, dark red, reddish brown, brown, dark brown and black. They are all born with white spots which, along with the colour of their coat, they retain for life.

Females (does), look light, smooth and fragile. They tend to be about 6cm higher at the hips than at the shoulders. Their height at the shoulders (withers) is between 50 to 100cm. Their body length is 130 to 175cm.

Males, or bucks, have a heavy, or stocky, appearance. Bucks have "pot bellies," and at maturity they stand about 90cm, weighing 73 to 90kg. Only males grow antlers. These antlers are shed and regrown annually.

Where are fallow deer produced in BC?

Fallow deer are very adaptable to most conditions, except for those found in very high mountain regions. In BC, there are about 19 fallow deer farms that have approximately 831 animals. These animals are found throughout the province, with a higher concentration in the Thompson-Okanagan region.

How many fallow deer do we produce?

Fallow deer farms make up 35% of the game farm industry in British Columbia. About 1000 deer are processed each year for consumption.

How are fallow deer produced?

The females, are seasonally polyestrus, which means they will cycle only at a certain time of the year. They are referred to as short day breeders, as breeding occurs in the fall, triggered by environmental factors, mainly fewer daylight hours in a 24-hour period. During the rut, or breeding season, the bucks spend more time establishing their territories than they do feeding. This combined with the physical demands of courtship and breeding can cause dramatic weight loss.

The gestation period is between seven and a half and eight months. Fawns are born during June or July when climate and feed normally favour survival. The average birthweights for farmed fallow deer are 3.9 to 4.8kg for males and 3.5 to 4.0kg for females.

How are fallow deer used?

Final products include meat (venison), antler velvet and shavings, and deer fur and hide. The skin is used for rugs and clothing. Consumers are demanding more game-farmed venison than ever before. Farmed venison has significantly lower fat and cholesterol content than most other red meat.

Antler velvet and shavings are exported to various countries. Asian countries purchase antler shavings for medicinal purposes to increase vitality, energy and the overall health of a person. Some people take it as a health tonic.

What happens after the fallow deer leave the farm?

Fallow deer are transported to processing facilities where the animals are slaughtered and processed. Producers or wholesalers distribute the product to retail stores, restaurants and novelty shops.

What challenges do fallow deer producers face?

One challenge that fallow deer farmers face is the perception that venison should be eaten only in autumn and winter. Some restaurants, for example, remove venison from their menus when the weather warms. To counter this, there is a need for increased promotion and education to improve the year-round market for venison.

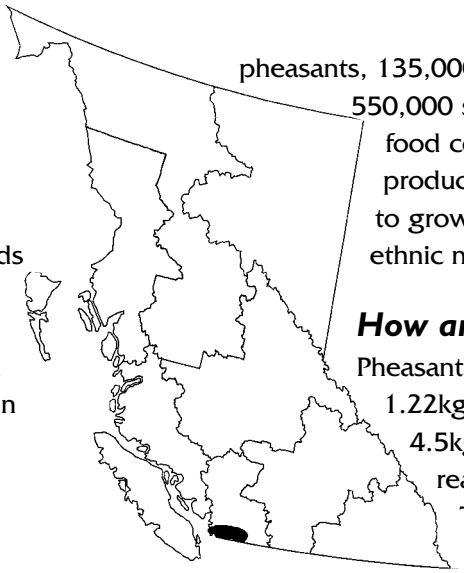
Who's involved in producing fallow deer?

- Game farmers
- Slaughterhouses (processors)
- Transporters/truckers
- Meat packers
- Butchers

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Fallow Deer Association

Game Birds



Interesting Facts

A quail egg can be 1/3 the weight of the laying hen's body.

What are game birds?

Game birds are traditionally wild birds that are raised in captivity for food consumption. Pheasants, quail, partridge, squab (baby pigeons) and silkies (bantam chickens) are raised in BC.

Where are game birds produced in BC?

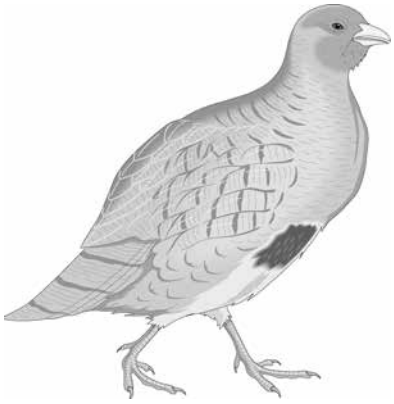
Most game birds for commercial sale are raised in the Fraser Valley close to the only processing plant in the province.

How many game birds do we produce?

Annually, BC produces approximately 19,000 pheasants, 135,000 quail, 9,000 partridge, 550,000 squab and 500,000 silkies for food consumption. Squab and silkie production and consumption continue to grow rapidly, reflecting demand from ethnic markets.

How are game birds produced?

Pheasants have a dressed weight of 1.22kg. They convert feed at a rate of 4.5kg per kg of body weight and reach market weight at 20 weeks. The birds are fed high-quality rations to ensure good quality meat. Partridge and quail are raised in conditions similar to broiler chickens. They are small birds that require little floor space. They consume 3.5kg of feed per kg of body weight gain. Quail are ready for market in seven to seven and a half weeks. At maturity the birds weigh 0.2kg eviscerated.



Partridge

Quail

Squab are the young offspring of pigeons. Pigeons produce 10 squab per breeding pair per year. Each squab weighs 0.45kg dressed weight. The pigeons eat high quality grain and when raising their young they only partially digest it. They then regurgitate it as "pigeon milk". Squab production is labour intensive.

Silkies are bantam chickens. Silkies have a dressed weight of 0.74kg and convert 3.5kg feed per kg of body weight gain. They lay only 120 eggs a year when mature compared to 290 for a commercial laying chicken.

How are game birds used?

Game birds are produced for their meat. They look like small roasters when they are cooked. In restaurants, the larger game birds, such as pheasants, may be served as quarters or halves. Sometimes only the breast meat is served, particularly in the case of quail and partridge. Quail eggs are boiled and pickled.

Some pheasants are produced for use on non-agricultural hunting reserves. Some quail are raised for feeding falcons and other hunting birds.

Meat of silkies is used as a medicine in Asian communities.

What happens to the game bird after it leaves the farm?

The farmer can sell the product to a processing plant that wholesales it to hotels, restaurants, institutions and retail outlets. Some farmers may have access to a processing plant where birds are killed. They pay the processing plant to process the birds, then take the birds back and sell them themselves. It is important with these new niche markets (direct farm marketing) to maintain a constant supply and consistent quality.

What challenges does the game bird producer face?

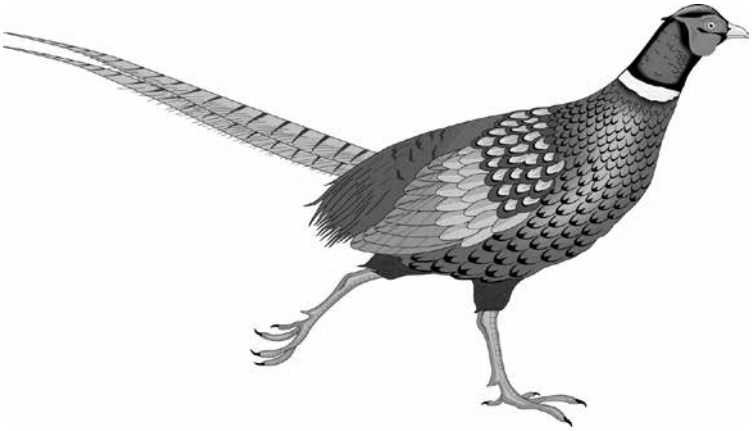
All game bird producers are faced with competition from low-cost imported product from the United States. There are no supply management systems or border controls on the amount of product that can be imported, so markets tend to be cyclical. As a result, most producers are hesitant to expand their operations using borrowed capital. Competition among producers for existing markets in BC is intense.

Who is involved in the game bird industry?

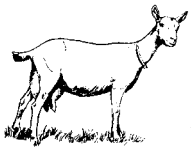
- Game bird producers
- Feed companies
- Equipment suppliers
- Processing plants
- Provincial and federal meat inspectors
- Specialty market distributors

Contacts and other resources:

BC Specialty Birds Association



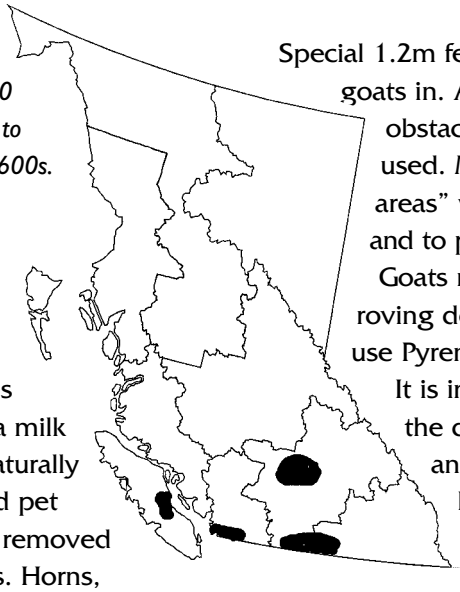
Pheasant



Goats

Interesting Facts

Goats were domesticated as early as 7000 BC. Settlers in New France brought them to North America, with sheep, in the early 1600s.



What are goats?

A goat is a frisky, shorthaired domesticated mammal. A female goat is called a doe, a male goat is called a buck and a young goat is called a kid. A common name for a milk goat is a nanny. Some goats are naturally hornless, or polled. Dairy goats and pet goats usually have their horn buds removed at a few days old for safety reasons. Horns, which are used for protection against predators, are left on goats that live on pasture (i.e., meat and Angora goats).

Where are goats produced in BC?

Goats are raised throughout much of BC. Dairy goat farms are found in the Lower Mainland, the Thompson Okanagan, and Vancouver Island. There are 12 licensed dairy goat farms in BC.

How many goats do we produce?

Most goats are kept as pets, however, goats are also kept for the production of milk, meat or fibre. Since the arrival of the Boer goat in Canada, there has been an increased interest in meat production.

How are goats produced?

Goats are relatively clean animals. They eat a wide variety of plants, including types that sheep and cattle won't eat. However, production animals feed on silage, hay and grain and are housed just like dairy cattle.

Special 1.2m fencing may be required to keep goats in. As goats like to go around obstacles, electric fencing is sometimes used. Many producers provide "play areas" with things to climb to amuse goats and to prevent damaging behaviour.

Goats need protection from coyotes or roving dogs if on pasture. Some producers use Pyrenees dogs to keep predators at bay.

It is important to provide extra feed for the doe during breeding, pregnancy and nursing. An underfed doe will have problems. The gestation period is 150 days. Kids are born between early January and late May, except in a production herd, where they are born year-round. Goats can have from 1 to 4 kids (very rarely 5 or 6) in one gestation. Twins are most common (about 70% of kiddings).

It usually takes from 4 to 6 months to raise a meat goat for market. There is also a market for smaller kids (milk-fed, about 10kg in weight) at Christmas and Easter. Some ethnic groups prefer adult goats.

Goats that are raised for their fleece can live up to 15 years. They are sheared twice a year. The adults produce 4 to 7kg of mohair or cashmere a year. The goats may require shelter after being sheared.

How are goats used?

There are three main uses for goats and their products: milk, meat and wool. Many goats are milked. The milk is used for drinking or for making cheeses. Common types of goat cheese include camembert, chevre, feta, shepherd's, tomme and capriano.

Goat meat, called cabrito or chevron, has little fat. Some people say that it tastes better than venison. Goats also provide leather and fibre for clothing.

Goats are shorn and spinners and weavers use their fleece. Cashmere is the soft downy undercoat most goats produce for winter insulation. The fleece of an Angora goat is called mohair.

What happens after the goat leaves the farm?

Meat goats are slaughtered, cured and butchered. The fleece can be sold raw to spinners and weavers, or the producer can add value to the product by washing and carding the wool.

To ensure a safe and wholesome product, milk must be marketed quickly. Only licensed processors do this. Some producers are processors themselves and make their own cheeses.

What challenges do goat producers face?

Currently, there is limited support for goat producers. Producers are responsible for ensuring their own processing contract and sometimes are even required to do marketing and delivery to stores.

Commercial goat producers must be self-reliant, innovative and business oriented in order to make a profit from goat farming.

Who's involved in the goat industry?

- Goat owners
- Artificial insemination workers
- Breed association workers
- Dairy Herd Improvement advisors
- Feed industry representatives
- Veterinarians
- Animal health product suppliers
- Milk processors
- Livestock and milk haulers
- Cheesemakers
- Shearers
- Milking and farm equipment suppliers

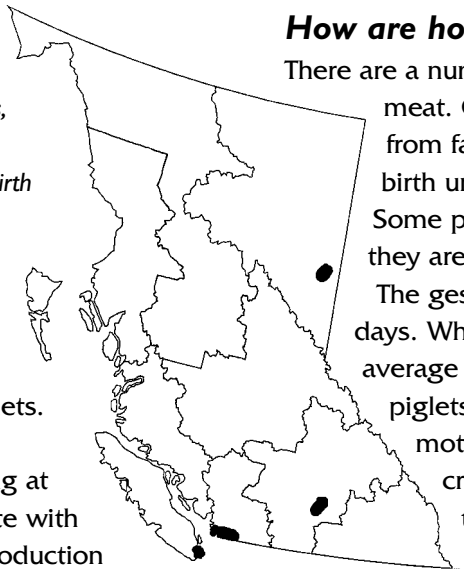
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Goat Breeders' Association
BC Goat Milk Producers Association

Hogs

Interesting Facts

Pigs have a fast rate of growth. At birth they weigh 1.5kg. After 16 weeks, they weigh 60kg. Compare this to the average person who weighs 3.5kg at birth and 7kg after 16 weeks.



What are hogs?

Pigs, hogs and swine are different names for the same animal. Baby pigs are called piglets. A boar is a male pig used for breeding. A boar can start mating at 5 to 8 months of age. It will mate with 20 to 30 females a year. Hog production today utilizes artificial insemination to reproduce hogs. This method improves the quality of pork because it gets better use from more desirable boars. A female pig is called a gilt before she has a first litter, and a sow after she has a litter. A castrated male pig is called a barrow.

Where are hogs produced in BC?

90% of BC's production comes from the Fraser Valley. The remainder is produced in the North Okanagan, on Vancouver Island and the rest in the Peace River.

How many hogs do we produce?

British Columbia has 50 registered growers producing 200,000 market hogs per year and 45,000 Round (Bar-B-Que) hogs. 95% of this pork is bought in BC and the other 10% exported. BC produces about 15% of the pork consumed in BC.

How are hogs produced?

There are a number of steps in raising hogs for meat. Often one producer will raise hogs from farrow to finish, which means from birth until they are ready to go to market. Some producers just raise the piglets after they are weaned from the sow.

The gestation period of a sow is about 112 days. When the sow farrows (gives birth) the average litter contains 10 piglets. When the piglets are small, they nurse from their mother. The mother is kept in a farrowing crate. This is a pen that allows the sow to nurse her young, but protects the young from the mother rolling on them. After 3 to 5 weeks, the young are weaned off their mother's milk and put in a nursery for 4 to 8 weeks. Nurseries are kept warm and the piglets start to eat solid food.

Pigs are then separated into similar sized categories and given a high energy feed. This is the growing-finishing stage.

Pigs are kept in large barns where the producer carefully controls feed, temperature and ventilation. This ensures healthy animals and maximum weight gain. It takes a total of 5 to 6 months to raise a pig from farrow to finish.

What happens after the hog leaves the farm?

When pigs weigh about 95 to 105kg, they are sent to market to be used as fresh pork. The slaughtered and cleaned pig carcasses, which weigh 75 to 85kg, are sold to grocery stores or butcher shops where they are butchered for fresh meat, or to meat processing plants where they are processed into products such as smoked sausages, bacon or ham.

To make products from the pig skin, the skin must first be tanned.

How are hogs used?

A hog is sent to market as meat, called pork. BC pork is quite lean because of the quality of the breeding stock. Over the years, breeding programs have reduced the level of fat in the animals. Pork can be eaten fresh as pork chops, roasts or spareribs. Pork is also often preserved, salted or smoked. We eat this as bacon, ham or sausages. Pork is an excellent source of protein and vitamins, especially vitamin B1. BC pork is renowned as a high quality product.

The list of other products made from hogs is long. Fatty acids are used in the production of weed killers, rubber, floor wax, crayons, make-up, plastics, chalk and antifreeze. The blood is used to make glue, protein for animal feed, and in leather making. The glands and organs supply insulin for diabetics and ventricles for special heart surgery. The skin of the pig is used for gloves, shoes and garments. The hair is used in artists' brushes, as insulation and in upholstery. The bones are crushed into bonemeal that adds minerals to animal feed, is used in water filters and in glass making.

What challenges do hog producers face?

In recent years, consumers have demanded meat that is leaner and contains less fat. To satisfy this demand, swine producers have bred pigs that produce meat that is 25% leaner than 20 years ago.

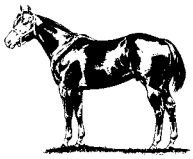
Hog production is an intensive farming operation. Problems with waste management and disposal, and with unpleasant odours can arise–especially if the swine operation is near residential areas. There are strict environmental guidelines that address these issues.

Who's involved in producing hogs?

- Swine producers
- Feed and veterinary suppliers
- Agri-business and extension representatives
- Meat processors
- Butchers and meat cutters
- Meat brokers
- Veterinarians
- Meat inspectors

Contacts and other resources:

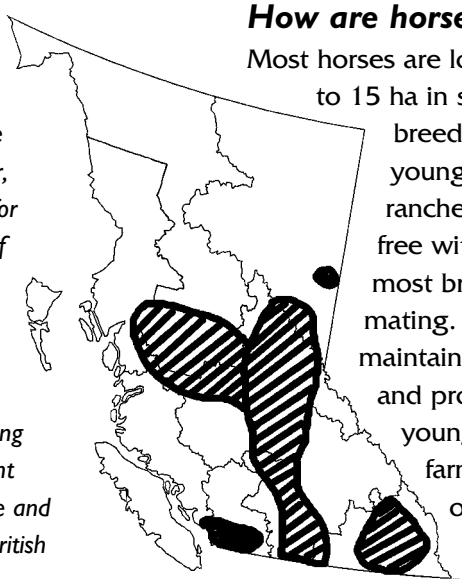
BC Ministry of Agriculture and Lands
BC Hog Marketing Commission



Horses

Interesting Facts

The horse has played an important role in human progress–more so than any other animal. The horse has been a source of food, a hunting partner, a willing worker, a source of sport and entertainment and for many centuries, the most reliable means of transportation. Horses are again gaining a place in the workforce through selective logging procedures, ranching, guiding and outfitters, the film industry and law enforcement. The horse industry is a growing segment of BC agriculture, with a significant increase in the 1990s. It is labour intensive and contributes over 10,500 full-time jobs to British Columbia's economy.



What are horses?

A horse is a solid-hoofed, four-legged, plant-eating mammal with a flowing mane and tail. A female horse is called a mare and a male a stallion. The young are called foals. A filly is a young female horse and a gelding is a castrated male horse. In BC, horses can be divided into four main groups: race horses, sport horses, recreational horses and workhorses.

Where are horses located in BC?

Horses can be found throughout the province. There are higher horse populations in the Lower Mainland (20%), Peace River North East area (19%) and Okanagan (16%).

How many horses are there?

In BC, there are 37,000 horse owners, and 90,000 horses –roughly 37,000 recreational horses, 15,000 in race, 20,000 in sport and 18,000 workhorses. There are 12,000 agricultural properties with horses.

How are horses produced?

Most horses are located on small farms that are 5 to 15 ha in size. Horse producers maintain breeding stock in order to produce young horses to be sold. Some large ranches still have stallions that roam free with mares and "range breed," but most breeding is done using pre-arranged mating. Farmers who raise horses will maintain the necessary facilities to feed and properly care for their animals. When young animals are old enough, the farmer sells them, often for recreation or show purposes.

Individual horse owners generally supply their animals with proper stabling, feed and grooming. In many instances, these owners may not have these facilities on their own property and, therefore, board their horses at local stables.

How are horses used?

Horses can be used as companions or for endurance or pleasure riding. There is a growing guide and packing industry in BC. Horses are used to perform work on ranches, and in selective forestry. They also perform at equestrian shows, such as dressage, jumping or three-day events, or at the racetrack.

What happens after the horses leave the farm?

People who want to buy horses can directly contact a breeder or attend an auction. There are local live horse markets in BC, Alberta and Washington State. Fresh meat from old animals is sold in European or Japanese markets or used domestically as fox feed.

What challenges do horse producers face?

The market for horses is driven by the end use. A lack of access to safe riding areas and adequate facilities for show and racehorses can reduce the market value of horses. The horse producer, like other livestock producers, faces high input costs and uncertain markets. The value of an animal also depends on the horse's conformation (looks) and its athletic performance.

Who's involved in producing horses?

- Horse farmers
- Ranchers
- Horse jockeys
- Farriers (horseshoers)
- Grooms
- Auctioneers
- Veterinarians
- Stable owners and workers
- Horse trainers
- Trail guides

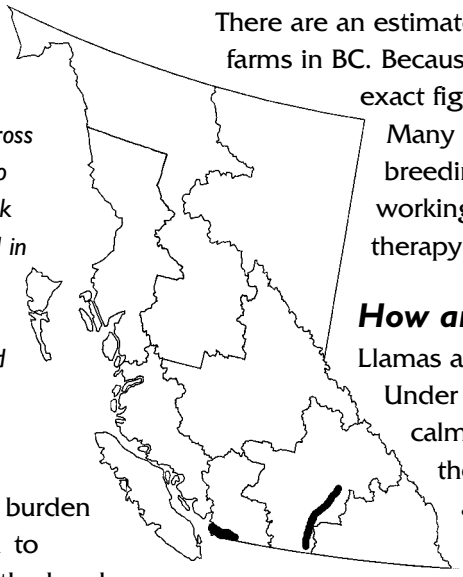
Contacts and other resources:

BC Ministry of Agriculture and Land
Horse Council of BC

Llamas

Interesting Facts

Llamas are the oldest domesticated animals in the world. Llamas originated in North America. With the coming of The Ice Age the herds split. Those in the north headed across the top of the continent to Siberia. Needing to adapt to a changing environment, llamas took on a new look—the camel. Those that stayed in North America headed south through Central America and on to South America. Conditions were favourable for llamas and they remained similar to those we see today.



What are llamas?

Llamas are a South American beast of burden with a soft woolly fleece. They stand 1 to 1.2m at the withers and 1.5 to 2m at the head; weigh 135 to 200kg and live 25-30 years. Llamas have a long graceful neck, erect ears, large doe-like eyes and a keen sense of hearing and smell. The upper lip is cleft with only lower teeth in the front, and upper and lower grinding molars in the back. Llamas can be white, silver, black, beige, brown or any combination of these. Llamas are ruminants with three chambered stomachs. They have padded feet with two toes covered by hard nails. Relatives of the llama include guanacos, vicunia, and alpacas.

Where are llamas produced in BC?

Llamas can be found throughout BC. They are mainly kept in the Okanagan and the Lower Mainland. Their ancestors are from the Andean highlands, so llamas are well suited to colder climates and are able to adapt to any climate or altitude. By evolving at higher altitudes, llamas have a large lung capacity and an ability to use blood oxygen more efficiently than other animals.

How many llamas do we produce?

There are an estimated 5,750 llamas on about 700 farms in BC. Because llamas are often kept as pets, exact figures are difficult to estimate. Many llamas are being raised as breeding stock, fibre stock, and working stock for stress management therapy.

How are llamas produced?

Llamas are intelligent, social animals. Under normal conditions, llamas are calm and stable, but if provoked they may bite, kick or spit. They are generally disease free. Their diet consists of good pasture or hay with some supplemental grain, mineral and salt. Commercial producers will breed llamas April through December to avoid winter births. The gestation period is 350 days. The Chia (offspring) weigh 8 to 16 kg at birth.

How are llamas used?

Llamas are used as pack animals, kept as pets, or sheared for their fibre. As pack animals, llamas are easier on trails than either horses or mules, and are capable of carrying 30 to 55kg. Llamas are used as show animals, as part of 4-H clubs, and can be trained to pull carts and wagons. Llamas, with their calm and gentle dispositions, can also provide therapy when they visit seniors, nursing homes or community centres. Handspinners and weavers seek their fibre, called camelid fibre, because it is oil free, lightweight, warm and will repel water if woven tightly. The hollow fibres make it a natural insulator. Llamas can have 10 to 30cm of wool at 2 years of age.

What happens after the llamas leave the farm?

The llama industry in BC is growing rapidly. The llama producers do much of the marketing of llamas. The market for llama fibre is quite diverse in BC.

What challenges do llama producers face?

It is difficult to import llamas from around the world. Hoof and mouth disease, a contagious viral disease in cattle, is virtually eliminated in North America, but still present in South America. Strict quarantine laws are in place for the import of animals from areas where this disease still exists.

Who's involved in producing llamas?

- Llama producers
- Llama outfitters
- Diversifying farm operators
- Feed producers
- Spinners/weavers

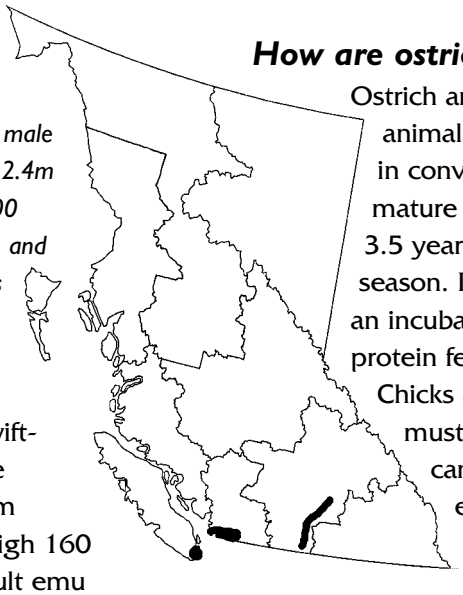
Contacts and other resources:

BC Llama and Alpaca Association

Ostrich and Emu

Interesting Facts

Ostrich is a low-fat, low cholesterol red meat similar in taste to beef. A full grown male ostrich can easily reach heights exceeding 2.4m (8 feet) and weigh in excess of 135kg (300 lbs). Emu adult females boom like a drum and males grunt. In the wild the male emu sits on the eggs and raises the chicks.



What are ostrich and emu?

Ostrich and emu are both large, swift-running, flightless birds. Ostrich are native to Africa and emu come from Australia. Ostrich are 2.5m tall, weigh 160 to 200kg and can run 65km/h. Adult emu stands 1.8m and weighs 70kg.

Where are ostrich and emu produced in BC?

Ostrich and emu farms in BC are in the Okanagan Valley, the Lower Mainland and on Vancouver Island.

How much ostrich and emu do we produce?

Production is low, as this is a new enterprise. In Canada, ostrich and emu are raised for therapeutic oil, leather and meat. Secondary products are feathers and eggs. An average emu can yield approximately 14kg of meat and 6 to 10 litres of oil. The fat on the bird is stored in a pad on it's back which is rendered into oil. The meat itself is very low in fat and high in iron. Hides are shipped to the United States. Secondary products are feathers and eggs.

How are ostrich and emu produced?

Ostrich and emu are both specialty livestock animals. They can, however, be raised in conventional barns. An ostrich hen is mature at 2.5 years and a male at 3 to 3.5 years. A hen will lay about 50 eggs a season. It takes 42 days to hatch an egg in an incubator. Young ostrich are fed a high-protein feed. They can grow 30cm a month. Chicks are susceptible to pneumonia and must be kept warm, fed and dry. Birds can live up to 70 years and produce eggs for 40 of those years.

Hens lay the eggs while the male makes the nest, incubates the eggs and raises the chicks after they hatch. Each egg weighs about 700g and are dark green in colour with a pebbled surface. By comparison, a large chicken egg weighs about 56g. Eggs are incubated for 48 to 54 days.

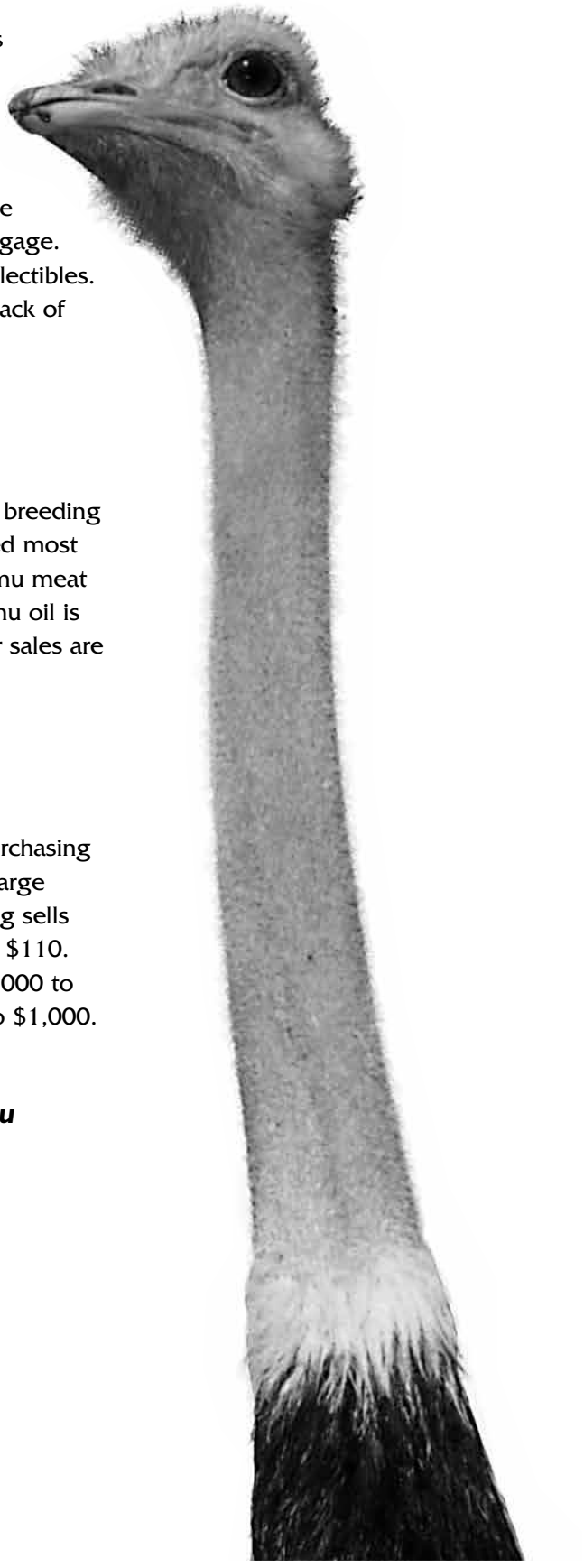
Each ostrich requires 0.12ha of relatively flat land. The area needs to be flat to minimize the risk of the birds tripping and injuring themselves.

These birds will eat anything shiny, like nails or buttons on clothing. Fencing should be made with a woven wire, approximately 1.6m high. Adults are capable of protecting themselves from coyotes or stray dogs by executing a strong forward kick.

Ostrich can eat approximately 3kg of feed per day. Their feed is one-half chopped alfalfa and one-half grain. Where pasture lands permit, ostrich are grazed as well.

How are ostrich and emu used?

Ostrich meat is eaten in upscale restaurants and is exported to Europe, where it is considered a delicacy. Ostrich feathers are used in feather dusters and as decorations on hats. Ostrich hides can be sold either raw (green) or tanned and are used for shoes, clothing, handbags and luggage. Ostrich eggs are decorated by artists as collectibles. Emu oil, from the thick layer of fat on the back of the emu, is used for skin care products.



What happens to the ostrich or emu after it leaves the farm?

Ostrich and emu are sold to other farms as breeding animals, but as the breeder market is limited most are sold for meat and hides. Ostrich and emu meat is sold through restaurants and retailers. Emu oil is sold for cosmetics and rubbing oils. Feather sales are quite profitable in some regions.

What challenges do ostrich and emu producers face?

There are very few ostrich in Canada, so purchasing breeding stock can be quite expensive. A large initial investment is required. An ostrich egg sells for $20 and a day old chick sells for $50 to $110. An adult proven-breeding pair can cost $1,000 to $5,000. Emu pairs currently sell for $500 to $1,000.

Who are the stakeholders in ostrich and emu production?

- Ostrich and emu producers
- Feed suppliers
- Equipment suppliers
- Veterinarians

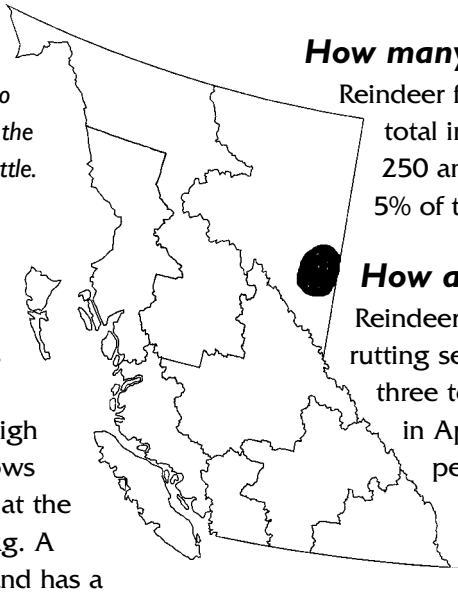
Contacts and other resources:

BC Ministry of Agriculture and Lands
Canadian Ostrich Association

Reindeer

Interesting Facts

A male reindeer or bull can lose up to 15 to 20% of its body weight during the mating season when it will eat very little.



What are reindeer?

Reindeer are mammals that usually live from 10 to 15 years. On average, adult bucks measure 180cm long, stand 110cm at the shoulder and weigh 81 to 153kg. Average adult cows are 166cm long, stand 104cm at the shoulder, and weigh 63 to 94kg. A mature pelt is 4 to 5cm thick and has a throat fringe, which is most developed during the fall in larger bulls.

Common colours are gray with some brown and a dash of yellow. Domestic reindeer tend to be more "salt and pepper" coloured. Colour variation ranges from white to black or dark brown. Most calves are born black to brownish-red and later develop their adult colouring. White calves remain white throughout their lives.

Both males and females have antlers that mature quickly. The period from prime to calcification can be as little as four days. Bull velvet is prime starting in May; cow velvet is prime by June. Velvet is removed before it palmates (the tip flattens out).

Where are reindeer produced in BC?

The majority of the reindeer farms in BC are located in the Peace River North East area. There are about 8 reindeer farms in the province. These reindeer are recognized as being among the healthiest in the world.

How many reindeer do we produce?

Reindeer farming is in its infancy stage in BC. The total inventory count for BC is approximately 250 animals. Reindeer game farms constitute 5% of the game farming industry in BC.

How are reindeer produced?

Reindeer are seasonal breeders. Their natural rutting season is September to October, lasting three to four weeks. Fawning generally occurs in April and May after a 7 month gestation period.

Reindeer start breeding around 1.5 years of age and remain fertile up to 10 years or more. Bulls tend to separate into smaller herds to forage. They return to the main herd in preparation for the rut. Prior to the rut, they rub the velvet from their antlers, their necks thicken, their bellies draw in and they grow manes. They do not eat much during the rut and as a result become dull and skinny. The highest sexual activity of a bull lasts only 10 to 22 days. Total rut period is 25 to 30 days.

The onset of heat depends on the condition of the cow. Well-nourished, content cows will come into

heat early, while weak, starved and underdeveloped cows won't come into heat at all. A reindeer cow's heat is less obvious than that of other farm animals. Each heat lasts 12 to 24 hours and if the cow isn't impregnated during the first cycle, the heat will return after 11 to 20 days and another breeding can take place.

A cow becomes restless in the 24 hours before calving occurs. She will leave the herd and hide, looking for a protected place out of the wind. The birth can take a few minutes to a 1/2 hour. The cow will lick the calf dry.

How is reindeer used?

Final products include venison (meat) and antlers. Game-farmed venison has been proven to have a lower fat and cholesterol content than most red meat. Antler velvet and shavings are exported to various countries, primarily in Asia.

What happens after the reindeer leave the farm?

Reindeer are transported to processing facilities where they are slaughtered and processed. The product is distributed by various means to retail stores, restaurants and novelty shops. There are few established markets willing to take reindeer. Individual producers are often involved in marketing. There is also a market for live animals in the United States, Alberta, Saskatchewan and Quebec.

What challenges do reindeer producers face?

In BC, the challenge is to develop a local market. Reindeer growers are considering ways to get their product to the public.

Who's involved in producing reindeer?

- Game farmers
- Crafters
- Antler buyers/sellers
- Slaughterhouses
- Transporters/truckers
- Meat packers
- Butchers
- Restaurant chefs

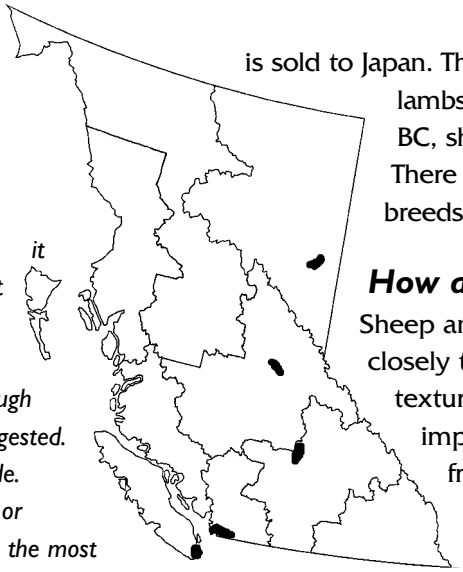
Contacts and other resources:

BC Ministry of Agriculture and Lands

Sheep

Interesting Facts

Sheep are ruminant animals that have several stomachs and chew their cud. This method of digestion was essential in the early stages of evolution. Being able to eat grass without chewing it well, sheep could graze quickly and get out of sight of predators. The "cuds" of grass are brought up from the first stomach and chewed. The chewed cud then passes through the other three stomachs to finish being digested. There are over 200 sheep breeds worldwide. Ewes can have single lambs, twins, triplets or sometimes even more. Meat from sheep is the most commonly eaten meat in the entire world.



What are sheep?

Sheep are mammals. Temperate breeds have a woolly coat and some breeds from the tropics have a hairy coat like cattle–they are called hair sheep. Sheep are kept in flocks and raised for meat, wool or milk. They are ruminants, which means that like cattle and goats, they chew their cud. Adult female sheep are called ewes, adult males are called rams, and young sheep are called lambs.

Where are sheep produced in BC?

There are about 60,000 sheep and lambs in BC. 39% of the sheep are raised on Vancouver Island and the Mainland-South Coast, 26% in the Thompson-Okanagan region, 15% in the Cariboo-Central region, 10% in the Peace River North East region and the remainder throughout the province.

How many sheep do we produce?

BC produces about 85 tonnes of shorn wool annually. Coarse wool is sold to countries in Europe; fine wool is sold to Japan. There are about 45,000 sheep and lambs slaughtered each year for meat. In BC, sheep's milk is a minor commodity. There are about 20 different sheep breeds in BC.

How are sheep produced?

Sheep and lambs are able to graze more closely than cattle on short grasses, fine textured plants and various shrubs. It is important to protect grazing sheep from predators such as coyotes or roving dogs.

Sheep can be raised on a small piece of land. One-half hectare of pasture can support 6 to 8 ewes in areas that are good for pasture growth. For this reason, many producers farm on a small, part-time scale. Sheep need to be well fed before and during breeding to ensure a good conception rate and a high incidence of twins. Besides grass or hay, ewes need a supplement of barley, protein concentrate and minerals. Breeding usually occurs in the fall. Ewes are first bred as yearlings. Gestation is between 142-154 days (or 5 months) depending on breed, so lambs are born in early spring. While most ewes are bred once per year, there are some breeds, like Dorsets or some hair breeds, that produce a 3-lamb crop over a 2-year period. Ideal market weight is 45 to 50kg. Some spring lambs are marketed at 20 to 25kg.

Typically, sheep are shorn for their wool once a year, although there are some breeds that can be shorn twice a year, usually in the late winter or early spring. Sheep grow another fleece of wool by the fall, when it is needed to keep the animal warm. Sheep can withstand severe cold with their full fleece.

How are sheep used?

Lamb is eaten as fresh meat. Lamb chops, ribs, or rack of lamb are all popular cuts. Mutton, which is the meat from mature sheep, is not as tender as lamb. It is often used as filler in sausages.

Sheep wool is spun and is used in clothing such as sweaters, mitts and suits. The average weight of wool from a mature meat sheep is about 2.3kg, and from a wool breed, about 5kg. The wool is used for a huge variety of products, from carpeting to the finest cloth for suits. Wool is also used for airplane seats and hotel carpet, as it is fire resistant. Other by-products include soap, candles and lanolin for hand cream. Hides are used as throw rugs. There is a specialty market for different colours of natural wool. Sheep wool can be blond, red, beige, brown, silver, black, cream or gray. This wool is often used for weaving and by fibre-industry artists. Sheep milk is used for yogurt and for cheeses such as roquefort, feta or ricotta.

A relatively new development in BC is the use of sheep for weed control in replanted forest clearcuts. Large flocks are needed for this, so many sheep are transported from Alberta to do the job.

What happens after the sheep leave the farm?

Fresh lamb is slaughtered, butchered and packaged for sale. Wool fleece is collected on farms and marketed through the Canadian Cooperative Wool Growers. BC fleece is sent to the Gulf Island Spinning Mill located on Salt Spring Island or to a similar processing plant in Lethbridge, Alberta. Some custom carding of wool is carried out at Monashee Woolen Mills in Cherryville, BC.

What challenges do sheep producers face?

BC produces only 15% of its lamb requirement, the rest is imported mainly from Australia and New Zealand. There is an opportunity to replace this imported meat with locally grown production. The Canadian sheep industry has to develop ways of lowering production costs and becoming more efficient. The BC Sheep Federation has been working on improving the marketing of BC lamb through education and promotions.

Who's involved in the sheep industry?

- Lamb farmers
- Processors and meat cutters
- Shearers
- Weavers
- Spinners
- Cheesemakers
- Meat inspectors
- Retailers
- Veterinarians
- Animal nutritionists

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Purebred Sheep Breeders Association

Turkeys

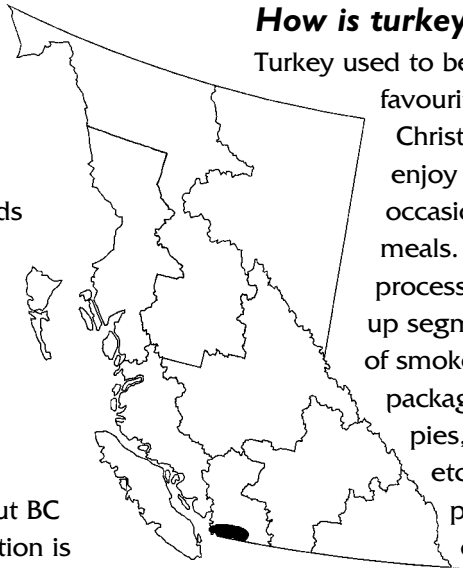
Interesting Facts

An average turkey farm in BC produces 47,000 turkeys every year.

What are turkeys?

Turkeys are large domesticated birds with white plumage. The male turkey is called a tom, the female turkey is called a hen and the young are called poults.

Where are turkeys produced in BC?



While turkeys are grown throughout BC in small flocks, commercial production is largely concentrated in the Fraser Valley. The only turkey breeder operation in BC is located in the central Fraser Valley.

How many turkeys do we produce?

BC's 60 turkey producers raise about 24 million kilograms of turkey annually, or about 2.8 million turkeys per year.

How are turkeys produced?

Hens are artificially inseminated to produce fertilized eggs. The eggs are incubated for 26 days then moved to a hatcher for 2 days where they hatch. They are sold to producers as day-old poults and shipped to farms in temperature-controlled trucks. In the barn they are placed on litter made up of wood shavings. At a day old, they weigh 65g. Tom turkeys are grown to 13.4kg by 16 weeks while hens are grown to 8kg by 13 to 13.5 weeks. Some turkeys are sold at 5.5kg at 11 weeks. These are known as broiler turkeys. Tom turkeys require 2.3kg of feed per kilogram of weight gain.

How is turkey used?

Turkey used to be consumed largely as a seasonal favourite at Easter, Thanksgiving and Christmas. Today, not only do people enjoy the whole turkey on these occasions, but year-round for everyday meals. Turkey is now offered in further processed products such as fresh cut up segments as well as many varieties of smoked deli meats and convenience packaged frozen products such as meat pies, schnitzel, burgers, cordon blue etc. These new further processed products have resulted in a more even distribution of demand for turkey throughout the year, so that turkey is becoming less of a seasonal commodity. Turkey meat is low in cholesterol and fat.

What happens after the turkey leaves the farm?

When turkeys are ready for market they are trucked to a primary processing plant. Once processed they are packaged or sent to be further processed into turkey products. Federal inspectors inspect each bird that moves through the processing plant to ensure it is safe for human consumption. The turkey products are then sent to retail outlets, hotels or restaurants. Some are shipped to institutions such as old age homes and hospitals.

What challenges do turkey producers face?

Keeping a healthy and disease free environment for turkeys is a challenge that is becoming more and more important.

Due to better breeding and a higher degree of

nutrition turkeys grow much faster than they did in the past. Today's farmer must make sure that bedding, feed, water and air quality are all managed properly to accommodate the large numbers of fast growing turkeys.

As a farm's production increases to meet greater demand, bio security issues also increase. A farm safety program must be implemented to:

- control salmonella and other pathogens
- ensure that turkeys grown in BC/Canada meet or surpass the standards of international competitors
- to ensure that, when marketed, turkeys are free of residues that may adversely affect food safety and the consuming public.

Turkey products in BC are always in competition with other meat products such as beef, chicken or pork. While turkey is a healthy protein source it must be priced competitively or consumers may choose a less expensive alternative.

BC turkey is almost all grown in the Fraser Valley and the pressures from having "urban and country" so close together are more challenging now than ever before. Dust or smells that are a accepted part of farm life are not always appreciated in the neighbouring subdivisions.

Who's involved in producing turkeys?

- Turkey breeders
- Hatcheries
- Turkey producers
- Equipment suppliers
- Feed company nutritionists
- Field workers
- Turkey-hauling companies
- Processing and further-processing companies
- Retail groceries
- Hotels and restaurants
- Pharmaceutical companies
- Provincial animal health veterinarians
- Federal government inspectors
- BC Avian Monitoring Laboratory

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Turkey Marketing Board
BC Turkey Association

Nutritional Facts

One 90-gram (3 ounce) serving of skinless, roasted turkey breast contains only 3 grams of fat and provides 141 calories. Equal amounts of dark meat contain 6 grams of fat and 168 calories. Turkey is an excellent source of protein providing the essential amino acids necessary for the renewal and maintenance of body tissues and providing food energy. Turkey is an excellent source of niacin, a factor in the maintenance of good health. Turkey is a good source of phosphorus, a factor in the normal development of bones and teeth.

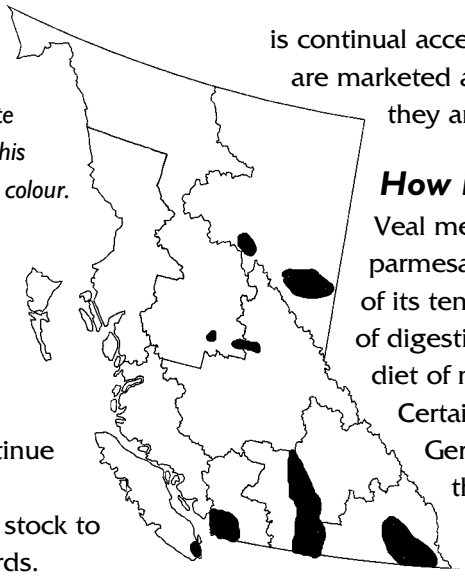
Veal

Interesting Facts

Meat from young animals tends to be lighter in colour and have a more delicate flavour than meat from older animals. This explains veal's characteristic flavour and colour.

What is veal?

Veal is the meat of calves raised to about 6 months of age. Many of the calves raised for veal are bull calves from dairy herds. Each milk cow must have a calf to continue producing milk. Heifer calves are virtually all raised as replacement stock to become milking cows in dairy herds.



Where is veal produced in BC?

Veal is produced across the province, with a concentration in the Lower Mainland.

How much veal do we produce?

Very few veal calves are processed in BC.

How is veal produced?

Veal calves are raised in bright, comfortable barns to ensure optimal calf growth. The calves are fed colostrum milk from their mothers for the first day or two of life, and then a milk replacement diet until they are about 6 weeks of age. Milk replacement is a balanced formula specific to the needs of young, growing calves. During this time, the calves are usually raised in individual stalls to minimized disease exposure and to ensure that they receive adequate nutrition. At about 6 weeks, the calves are weaned on to a diet of mixed grains (soya, corn, barley, etc.) and roughage. They are placed in larger pens with other animals of similar size where there is continual access to feed and water. Veal calves are marketed at about 6 months of age or when they are about 110kg.

How is veal used?

Veal meat dishes include veal cutlets, veal parmesan and wiener schnitzel. Because of its tenderness, low fat content and ease of digestion, it is an important meat in the diet of many people, including the elderly. Certain ethnic groups, such as Italians and Germans, often include veal dishes in their diets.

What happens after veal calves leave the farm?

Veal calves are transported to a federally or provincially-inspected plant for processing. The meat is chilled before it is cut up and sold to retail outlets or restaurants.

What challenges do veal producers face?

The veal industry in BC faces marketing challenges related to animal welfare concerns. This impression is based on a series of information campaigns that depict the conditions in which some calves in the United States are raised. BC veal producers are answering that challenge by ensuring that BC calves are raised in humane conditions, provided with a grain fed diet, and have access to all necessary minerals and vitamins.

BC veal producers grow veal calves according to standards developed by Canadian animal scientists and the Canadian Federation of Humane Societies.

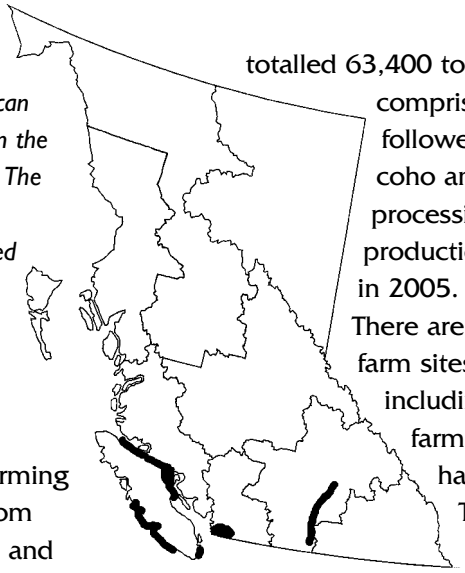
Who's involved in the veal industry?

- Dairy farmers
- Veal producers
- Truckers/transporters
- Meat inspectors
- Slaughterhouse workers
- Butchers
- Supermarket clerks
- Restaurant chefs

Contacts and other resources:

BC Ministry of Agriculture and Lands

Aquaculture—Fish Farming



Interesting Facts

Commercial finfish culture in British Columbia can be traced back to at least the mid 1950s when the province licensed the first rainbow trout farms. The first salmon farm began operation in 1971. 65% of all Canadian farmed salmon is produced in BC. Aquaculture is the main reason for the increase in seafood consumption in Canada during the past 10 years.

What is fish farming?

Aquaculture is the industry name for farming fish, shellfish and aquatic plants. It is from the Latin word "aqua", meaning water, and "cultura", meaning to cultivate, produce or grow. Another term, mariculture, is culturing in saltwater. Freshwater trout farms have been around since the 1950s and saltwater salmon farms were first developed in the early 1970s. A licence is required to farm fish in BC.

Where are the fish farms in BC?

Aquaculture requires water. The coastal areas in BC are ideal for the cultivation of saltwater fish, the most common being salmon. Almost all marine fish farms are currently located around Vancouver Island, predominately between Campbell River and Port Hardy on the northeast side, and in Clayoquot Sound on the west side. Some marine farms are located on the Sunshine Coast. Freshwater fish, such as rainbow trout, are raised on farms throughout BC, but mostly in the Fraser Valley, on Vancouver Island and in the Thompson-Okanagan region.

How much fish do we produce?

BC is the world's 4th largest farmed salmon producer and in 2012, the farmed salmon harvest totalled 63,400 tonnes. Atlantic salmon comprised 76% of production. followed by chinook at 22% and coho and steelhead at 2%. After processing, BC's farmed salmon production was worth $319 million in 2005.

There are more than 250 aquaculture farm sites in BC growing finfish, including 121 marine salmon farms and 129 freshwater finfish hatcheries and grow-out sites. The 2012 finfish harvest from aquaculture was 73,700 tonnes worth $344.8 million at the farm gate. The breakdown of production for 2012 is: 68,900 tonnes of Atlantic salmon valued at $324.8 million, 66% of total production is exported primarily to the United States and Japan.

Of BC's coastal nearshore area, which totals 816,000 hectares, salmon farms occupy less than 0.15% (1,200 ha). Recent industry growth is due primarily to more intensive cultivation of sites as access to new land has been limited. There are now a variety of finfish species (other than salmon) currently under culture in British Columbia including sablefish (also called blackcod) and wild-caught halibut.

How are fish produced?

Salmon are anadromous, meaning they spend most of their adult lives in saltwater, but must return to freshwater to spawn. Fish farmers have mimicked this natural life cycle when developing techniques for culture. Freshwater hatcheries collect eggs and milt (sperm) from their broodstock (mature fish) and fertilize the eggs. For Pacific salmon, which will die

as soon as they spawn (lay their eggs), the salmon are killed and then the eggs and milt are extracted. Atlantic salmon, which are also grown on BC farms, spawn 2 or 3 times in their life in the wild, but are generally used only once for commercial production.

Eggs and milt are extracted from the fish by anaesthetizing the fish and running a hand down the belly of the fish to squeeze out the eggs and sperm. The eggs are then fertilized and incubated. The eggs hatch and the juvenile fish, or "fry", are raised in fresh water until they have reached the stage at which they smolt, or adapt to a saltwater environment. This varies from species to species and ranges from 6 months in Chinook to a full year in Atlantic salmon.

The smolts are then transferred to saltwater floating cages or pens. The fish are fed a diet rich in protein. After 14 to 20 months in saltwater the fish are ready for market.

For freshwater fish, like trout and arctic char, the process is similar to Atlantic salmon, except the fish remain in freshwater for their entire life. Instead of floating pens, the fish are raised in earthen ponds, concrete raceways and fiberglass or plastic tanks.

How are fish used?

Salmon is eaten as whole baked fish, grilled as steaks or served as fillets. It can also be smoked whole or in fillets. Recent innovations include salmon patties for burgers and ground and seasoned salmon in paté. Adding value to salmon is becoming increasingly popular as consumers demand more variety in product forms. Niche markets catering to cultural groups, such as Asian communities, are developing. Sushi (raw fish) has become very popular in the last few years. The demand for fish (high in omega fatty acids), along with other low fat foods, has increased rapidly. Studies have shown that a regular helping of fish instead of meat reduces heart disease. Fish is also an excellent source of protein.

What happens to a fish after it leaves the farm?

Fish from farms is available to the consumer in less than 24 hours. A fish is gutted, cleaned, and sold as fresh whole fish, or it can be sold as fillets, which requires removing the spine and skin. Fish must be refrigerated immediately after harvest. Much of the farmed coho salmon is sold to Japan where it is used in a variety of traditional dishes.

What challenges do fish farmers face?

Salmon are raised in the same environment as their wild cousins, with only a net keeping them "inside". Farmers must safeguard farmed fish against accidents, pollution, vandalism, storms and predators, as well as toxic algae blooms, and also keep them from escaping. Good husbandry practices must be constantly maintained to reduce the incidence of disease on the farm.

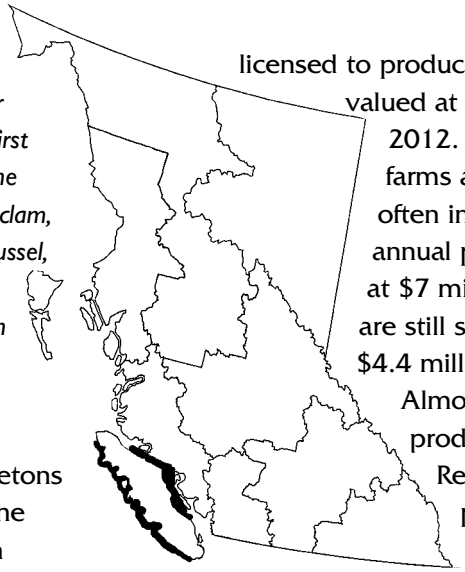
Who's involved in producing fish?

- Fish farmers and fish processors
- Wholesalers, brokers, retailers
- Government licensing agencies

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Salmon Farmers' Association
BC Farmed Salmon Institute

Aquaculture—Shellfish



Interesting Facts

The commercial culture of the Pacific oyster can be traced back to 1912, when it was first introduced from the Far East. Since then, the European oyster, the Manila and littleneck clam, the Japanese scallop, the blue and Gallo mussel, and, most recently, the geoduck clam have also been added to the inventory of shellfish species found on farms in British Columbia.

What are shellfish?

Shellfish are sea animals whose skeletons are on the outside of their bodies. The only shellfish grown commercially in British Columbia are bivalves such as oysters, clams, scallops and mussels. These shellfish have two halves to their shells, connected by a hinge (muscle). A shellfish can open its shell to filter water for its food or close the shell up tight for protection.

Where are shellfish produced in BC?

Shellfish in BC are grown in saltwater in the coastal regions off the mainland and in the waters surrounding Vancouver Island and the many smaller islands of the coast. The majority of shellfish production comes from the waters of the Georgia Basin and the West Coast of Vancouver Island. The gravel beaches around Baynes Sound on the eastern shore of Vancouver Island are well suited to beach culture. Deep-water tenures, where shellfish are grown suspended in the ocean, currently account for half of the number of tenures under production.

How much shellfish do we produce?

A licence is required to farm shellfish in BC. There are 455 shellfish tenures covering 2,700 hectares of the coast. Most of these tenures or farms, are licensed to produce the Pacific oyster. 7,400 tonnes valued at $10.6 million were produced in 2012. About one-half of the shellfish farms are licensed to farm Manila clams, often in conjunction with oysters. Current annual production is 1,400 tonnes valued at $7 million. Scallop and mussel harvests are still small at 800 tonnes valued at $4.4 million.

Almost 94% of all clams and all oysters produced in BC are from aquaculture. Recent industry growth is due primarily to more intensive cultivation of sites as access to new land has been limited. New shellfish aquaculture species are being explored and many provide high-value products. The spot prawn and giant rock scallop have been cultivated on an experimental basis as have abalone, sea cucumber and sea urchins.

How are shellfish produced?

All bivalves spawn at specific water temperatures and the eggs take 5 to 6 hours to hatch into larvae. The larvae are mobile for about two weeks. During this time they will find a place to settle and grow. Once the free-floating larvae of bivalves settle they don't generally move. Oysters and mussels firmly attach themselves to some sort of substrate. Clams live in the sand of beaches and can move up and down, while scallops are free to move along the bottom of the ocean in the wild.

All bivalves feed by filtering water through siphons and collecting plankton in gills. An oyster can filter 20 to 30L of water a day.

In the early days of the oyster industry, harvesters collected, from the wild, small "seed" oysters,

Little Neck Clam

Oyster

Scallop

which are the product of natural spawning. This supply was inconsistent from year to year. While this practice still occurs, it is no longer the predominant source of oysters for the industry.

Today, shellfish for aquaculture are spawned in hatcheries and the larvae and seed are sold to growers. On the farm, oyster larvae are placed in tanks filled with material to which the settling larvae can attach, often old oyster shells. After the oysters have attached themselves to this material, called cultch, they can be transferred to floating rafts where they are grown to market size.

Clams are also typically set in tanks similar to oysters, but they do not require cultch. They are kept in the tanks after setting and fed planktonic algae until they reach a size of 2 to 8mm in shell length. They are then gathered and seeded onto farm beaches.

Scallops are set in tanks on a filamentous material, also called cultch. Once they reach about 5mm in shell length, the cultch is bagged. When the scallops are bigger, they are removed from the cultch and placed in trays or lantern nets that are suspended from rafts for grow-out in the ocean.

How are shellfish used?

Shellfish are eaten fresh, in sauces and soups, breaded and deep-fried, canned or smoked. Oysters can also be eaten raw, right out of the shell. These are called "half-shell oysters" in the restaurant trade. A new innovation is "flash-freezing" which freezes the oysters in the shell individually at the peak of freshness and quality. This extends the shelf life of the shellfish and makes it attractive to food service chefs who use it when fresh oysters are unavailable. Value added shellfish products are being introduced to respond to changing consumer tastes such as prepared and packaged "Oysters Rockefeller".

What happens after shellfish leave the farm?

About one half of the oysters harvested in BC are shucked. That means that the shell is pried open and the meat is removed and sold fresh in small containers. This is a labour intensive process. The remaining oysters are sold in the shell and served as "half-shell" product.

Clams are sold whole or are shucked and canned. Scallops are primarily shucked and the adductor muscle (the muscle that moved the shell open and closed) removed. A small amount of scallops are sold whole. Shellfish are marketed to restaurants and through seafood outlets.

What challenges do shellfish producers face?

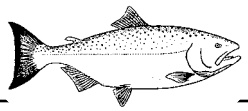
Major challenges to the development of shellfish aquaculture include securing suitable beach and deepwater tenures, the development and adaptation of technologies, the development of new markets, and making sure that growing areas do not become unusable because of pollution.

Who's involved in producing shellfish?

- Shellfish farmers
- Processors
- Wholesalers, brokers, retailers
- Equipment manufacturers ad suppliers
- Government licensing agencies

Contacts and other resources:

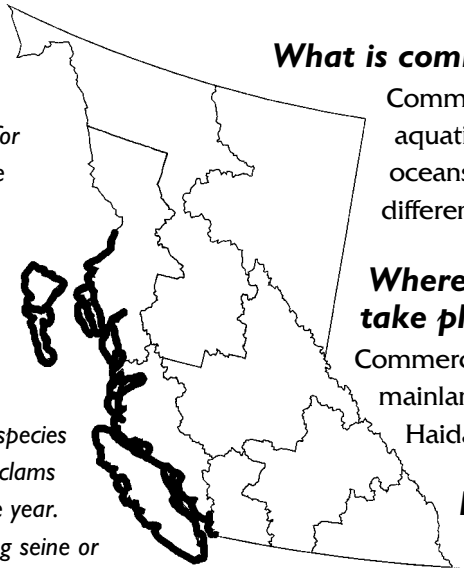
BC Ministry of Agriculture and Lands - (Fisheries and Aquaculture Branch)
BC Shellfish Growers



Commercial Fishing

Interesting Facts

The commercial fishing industry has been an integral part of BC's economy for over a century. Commercial fishing is the fourth largest primary industry in British Columbia after forestry, mining and agriculture. More than 80 different species of finfish, shellfish and plants are harvested commercially. While commercial fisheries for salmon and roe herring are seasonal, fisheries for other species such as sablefish, groundfish, geoducks, clams and other shellfish, occur throughout the year. Harvesting is undertaken by vessels using seine or gillnets, and by trawling, trolling or trapping. Other harvest methods include diving and hand picking. Wild shellfish is the most important commercial fishery in terms of value to the harvester. High landed prices are realized primarily in the geoduck clam, crab and prawn fisheries. Groundfish species account for 68% of the commercial fishery harvest by volume.



What is commercial fishing?

Commercial fishing is the harvesting of aquatic plants and animals from the oceans and rivers. There are more than 40 different species harvested.

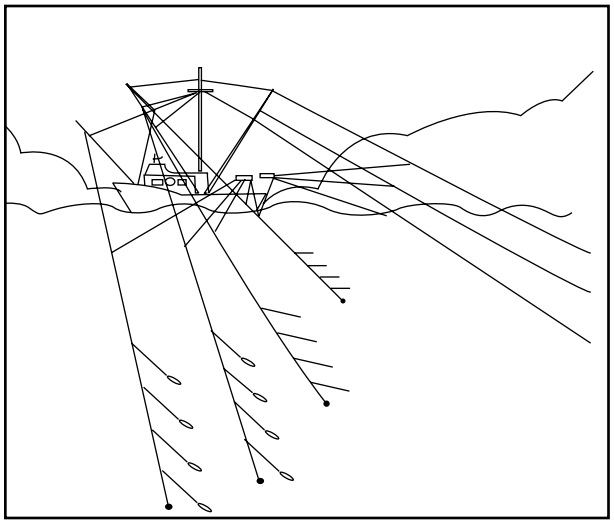
Where does commercial fishing take place in BC?

Commercial fishing takes place off the mainland coast, all around Vancouver Island Haida Gwaii and along the rivers of BC.

How much fish do we harvest?

In 2012, 64% of all fish and shellfish harvested in British Columbia came from the commercial fishing fleet participating in near and off-shore fisheries.

The wild commercial harvest was 148 thousand tonnes with a landed value of $293 million.



Trolling

A method of fishing in which several fishing lines with numerous lures are dragged slowly through the water.

Groundfish species including hake, halibut, sablefish, rockfish, sole and turbot accounted 75.2 thousand tonnes and 51% of the total wild harvest by volume. The rest of the catch was split between shellfish at 17 thousand tonnes, herring and salmon at 22 thousand tonnes each with minor species accounting for the remainder.

How is seafood used?

Seafood can be purchased fresh, frozen, canned, pickled, smoked or dried. It can be whole, filleted, flaked or in steaks.

How is seafood produced?

The primary types of fish that are caught in BC are salmon, herring, halibut and a variety of groundfish species including sablefish and rockfish.

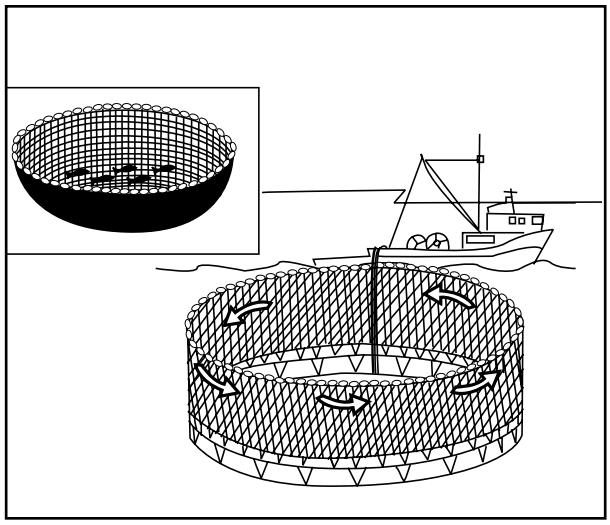
Salmon are caught by trolling, purse seining and gill netting. A troller has several fishing lines each with numerous bated lures which are dragged slowly through the water. Purse seining uses a long, deep net. A person in a skiff takes one end of the net around a school of fish and attaches the ends. The net is then drawn together around the bottom, forming a purse. Herring are also caught this way. Gill nets have a mesh size just large enough to allow the head of the fish through, but not the body. When the salmon tries to back out of the net, the gills get trapped by the net and the fish is caught. Halibut are caught in a process called longlining. One main line has a number of shorter lines each with baited hooks attached. This type of line can be used at a variety of depths.

The main shellfish species caught in BC are crabs, shrimp, prawns and sea urchins, sea cucumbers and geoducks. Clams are dug by hand from the beaches using shovels and pitch forks. Scallops are scooped up from the bottom of the ocean with a large net. After using an electronic finder to locate large concentrations, shrimp and prawns are also collected in nets dragged through the water. They can also be caught in baited traps such as those used to collect crabs. Sea urchins on the other hand are picked by hand.

What happens after the seafood is caught or harvested?

Once the seafood is caught, it is generally stored on ice and transported fresh to the processing plant for processing and packaging. Sometimes fishing vessels will be at sea for days and, therefore, to preserve the fish, it may be gutted before being stored on ice. At the plant the seafood is processed as per the species or market demands. Fish may be gutted and sold fresh, dressed head on, or it may be filleted or cut into steaks. Filleted fish can be further processed by smoking or drying. Fish such as salmon or tuna may also by canned.

Bivalve shellfish such as Manila clams, mussels and scallops are either left in the shell and sold fresh to be cooked and served from the shell or removed from the shell and canned. Larger bivalves such as



Purse Seining

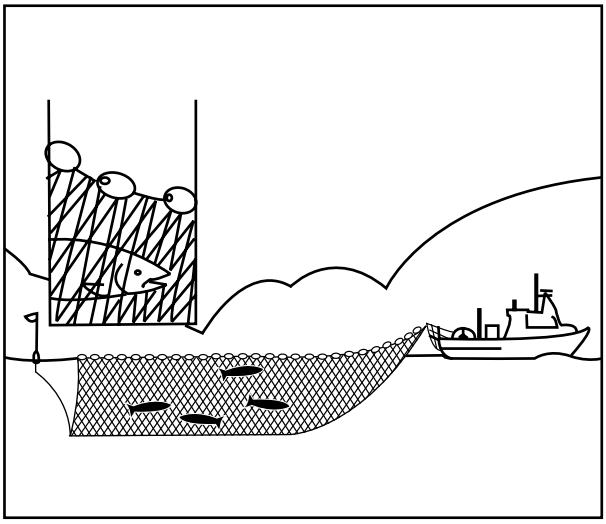
A method of fishing involving a long, deep net that stands like a fence in the water, supported at the surface by floats and held down by lead lines at the bottom. A person in a skiff (small boat) takes one end of the net around the school of fish and joins the seiner (large boat) at the other end. The seiner then hauls in the wire or rope purse line strung though the bottom of the net, forming a "purse" under the fish.

horse clams and geoducks are removed from the shell and sold fresh or processed in a variety of forms, such as canned or dried. Shrimps and prawns are shelled or not and sold fresh or frozen.

What challenges does the commercial fishing industry face?

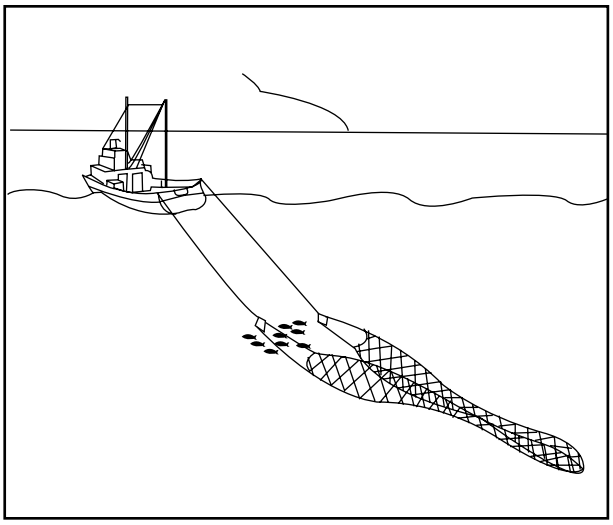
The commercial fishery faces a large challenge to ensure that over-fishing does not occur. If too many fish or shellfish are taken from the waters there will not be enough remaining to replenish the stocks. The federal government is responsible for conservation and protection of marine fish stocks in BC and the provincial government is responsible for shellfish and freshwater fish stocks.

Harvesting seasons vary for different species and for different parts of the coast. Open season and quotas are chosen so as to allow enough individuals to escape capture to allow the species to continue to harvest in the ensuing years. Salmon season can be open July through November, while herring season is in February and March. Some species' seasons are open all year and quotas are set on how much an individual fishing boat may harvest. These are called individual Vessel Quotas, or IVQs.



Gillnetting

A method of fishing in which fish swim into a suspended net and become entangled by their gills in the webbing. The net can be placed at various depths, depending on the fishery location.



Otter Trawling

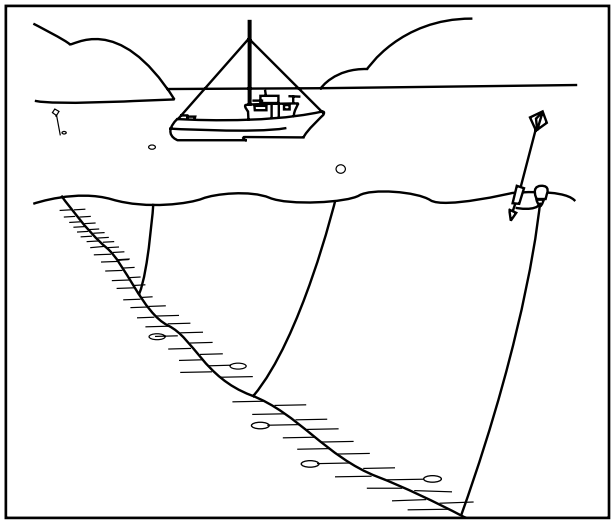
A method of fishing in which a large wedge-shaped net is dragged along the ocean bottom. An otter door is attached to each side of the net to hold the net open and keep it horizontal. Fish collect in the end (the back) of the net.

Who's involved in the commercial fishing industry?

- Fishing vessel owners and workers
- Seafood processors
- Wholesalers, brokers and retailers
- Suppliers of fishing equipment
- Government licensing agencies

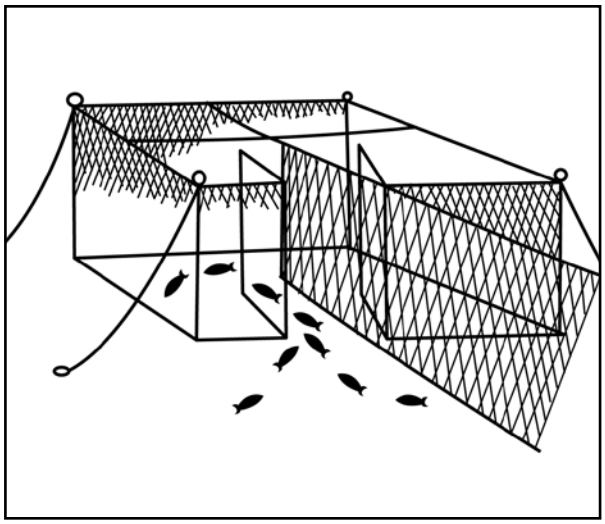
Contacts and other resources:

BC Ministry of Agriculture and Lands
Federal Department of Fisheries and Oceans
BC Salmon Marketing Council



Longlining

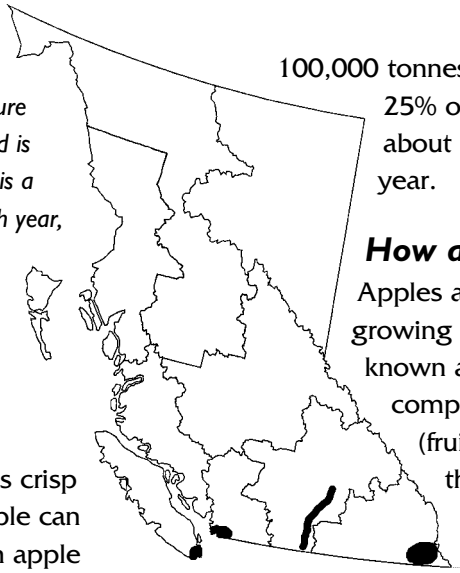
A method of fishing involving one main line to which a series of shorter lines (gangions) with baited hooks are attached. Used at various depths i.e. a surface longlining for pelagic species such as tuna and swordfish, bottom longlining for demersal species such as halibut and cod.



Blackcod Traps

Set on the ocean floor close to shore these open-topped box nets contain a door facing the shore. Seashore feeding cod are deterred by a net fence that directs them to the trap: once inside they tend to swim in circles and not leave the trap.

Apples



Interesting Facts

Apples are the most valuable edible horticulture crop in BC. About 75% of all BC orchard land is planted with apple trees. The apple industry is a major employer in the Okanagan Valley. Each year, 7% of the labour force is employed by the apple industry. About 4,800 people work in the orchards, 2,500 in packinghouses, and 1,000 are hired as seasonal workers.

What are apples?

An apple is a round tree fruit that has crisp white flesh. The skin colour of an apple can vary from yellow to green to red. An apple is a pome fruit, as is a pear. A pome fruit has multiple seeds protected by a core. There are over 100 varieties of apples grown in North America. The varieties grown for BC's commercial production are Red and Golden Delicious, Royal Gala, McIntosh and Spartan. Newer varieties now being widely planted include Jonagold, Braeburn and Fuji.

Where are apples produced in BC?

About 98% of BC apples are produced in the Okanagan-Similkameen Valleys. The rest are grown in the Fraser Valley and in the Kootenay areas. The hot, dry weather in the Okanagan is ideal for growing Red and Golden Delicious apples. High sunlight and temperature levels are ideal for apple colouring and yield. The low rainfall level reduces the impact of disease. Most orchards are on slopes near lakes. This moderates the temperature and reduces the risk of winter injury and spring frost.

How many apples do we produce?

about 27% of apples grown in Canada. The total quantity ranges from 91,000 tonnes to 100,000 tonnes. British Columbians consume 25% of the apples grown in BC. That's about 75 to 100 apples per person per year.

How are apples produced?

Apples are grown in orchards. Apple growing has become a specialized science known as pomology. An apple tree is composed of two parts: the cultivar (fruit-bearing part of the tree) and the rootstock. Both cultivar and rootstock are selected for specific site conditions. The cultivar is grafted onto the rootstock. Grafting involves placing a short shoot of a dormant cultivar into the rootstock. The tongue and groove union is then wrapped with tape and left to grow. Caring for an orchard requires planting trees, pruning, fertilizing, controlling weed growth, insects, and other pests, watering, and replanting trees to ensure the orchard is always healthy.

Apple trees must be cross-pollinated. When the trees start to bloom, orchardists place beehives in fields to ensure pollination. It is important not to spray an orchard at this time, as honeybees are very sensitive to insecticides.

As small apples start to grow, some are removed to control the size and number of apples produced. The trees will also do this naturally during the June drop. Apples are harvested from August to October.

How are apples used?

About two-thirds of the apples grown are eaten as fresh fruit. Processed apples are used for fresh and frozen apple juice, sauce, pie filling, cider and vinegar, or dried into apple leather.

Apples are about 85% water. They contain a variety of essential minerals and vitamins. They are about 12% natural sugar or fructose. Fructose is a water-soluble sugar found in all ripe fruit. Because of the solubility of fructose, the body does not have to convert it into sugar before use, therefore, making apples a source of instant energy. Apples are a high source of pectin, a soluble fibre that can absorb more water than any other bulking agent.

Apples clean the digestive system. Eating an apple cleans the teeth and massages the gums, removing more bacteria. Scientists have proven that those who eat apples have fewer headaches, intestinal disorders, colds, respiratory problems and illnesses associated with the nervous system.

What happens after the apples leave the farm?

Two-thirds of the apple crop is sold fresh. Apples that are to be eaten fresh are hand picked. Apples are either sold directly right after harvest or taken to the packinghouse where they are stored, graded and packed into 18kg boxes and sometimes into smaller bags. Packinghouses use modern equipment and computers, but still rely on hand labour. Apples are shipped to North American markets by truck, and to other markets by boat. At the retail outlet, apples are either sold already bagged, or sold individually or in bulk by weight.

One-third of the crop is processed. Apple juice is the most popular form of processed apples. To make apple juice, apples are washed and ground to a pulp. The juice is squeezed out and filtered. The juice is then pasteurized–heated to kill any harmful bacteria.

What challenges do apple growers face?

Fruit growers have modernized their growing methods to remain competitive. Many of the old orchards consisted of big apple trees planted large distances apart. Today, many orchardists have switched to high-density plantings. These orchards have smaller trees planted much closer together. For example, older orchards might have 80 trees per hectare. High-density orchards can have as many as 1500 to 12,000 trees per hectare. High-density planted trees produce fruit earlier, yield larger crops and are easier to harvest. Growers have planted different varieties of apples that are more popular in the international markets.

There are 3 main orchard pests that challenge apple production. They are the codling moth, leaf roller and bud moth.

Who's involved in producing apples?

- Orchard owners, managers and labourers
- Apiarists
- Packinghouse and processing plant employees
- Fertilizer, pesticide and equipment dealers
- Box, bin and pallet manufacturers
- Government and university researchers

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Fruit Growers' Association
BC Tree Fruits

Nutritional Facts

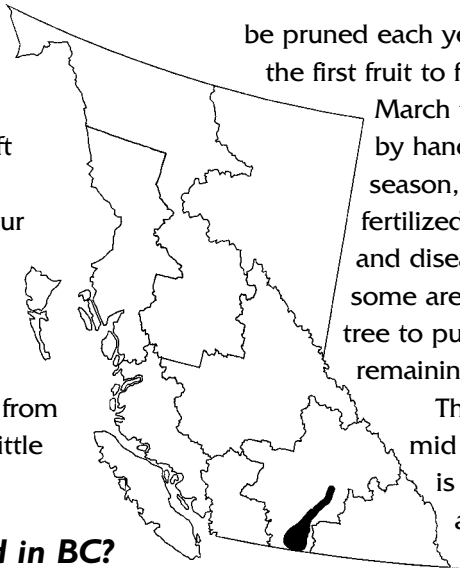
Serving Size: 1 medium apple (154g)	
Calories	60
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	22g
Dietary Fibre	5g
Sugars	16g
Protein	0g
Vitamin A	2%
Vitamin C	8%
Iron	2%
Calcium	0%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	7%
Dietary Fibre	20%

•Per cent Daily Values are based on a 2,000-calorie diet.

Apricots

What are apricots?

Apricots are known as stone fruits because they have a single seed in a hard shell. They are also called soft fruits as opposed to hard fruits such as apples and pears. The fruit's colour varies from light yellow to orange red, depending on the variety. It is not fuzzy like a peach, but some varieties have a pebbled appearance. The fruit ranges in size from slightly larger than a golf ball, to a little smaller than a tennis ball.



Where are apricots produced in BC?

Apricots are produced in the south end of the Okanagan Valley and the Similkameen Valley in the Keremeos area. Apricots are sensitive to spring frosts, susceptible to disease in humid climates and require high temperatures to ripen. They grow well in the same locations as grapes, peaches, cherries, nectarines and sour cherries. Well drained slopes facing south, southwest and southeast are usually the best.

How many apricots do we produce?

BC produces 520,000 kilograms of apricots per year. Production can vary depending on winter damage and spring frosts. About 90% of these are sold as fresh fruit; the other 10% go for processing. 332 growers produce apricots on approximately 94 hectares. Apricot trees are usually part of a larger mixed fruit planting of peaches, cherries, apples and pears.

How are apricots produced?

Once apricot trees are in production, they need to be pruned each year in late winter. Apricots are the first fruit to flower in the Okanagan, from late March to mid April. Blossoms are thinned by hand. Throughout the growing season, the trees have to be irrigated, fertilized and checked for harmful insects and disease. When the fruit starts to form, some are removed. Doing this enables the tree to put its energy toward making the remaining fruit larger.

There are 2 to 4 pickings between mid July and early August. The fruit is picked in canvas picking bags and placed into half bins that hold 150kg.

How are apricots used?

Fruit is ripe when it is a golden colour and gives way to slight palm pressure. Apricots are eaten fresh, canned, frozen, dried or used in jams, jellies and syrups. Prior to canning, apricots are usually cut into halves and the stones are removed. Apricots are dried as halves and can be quite soft and pliable. From a nutritional standpoint, apricots are a very good source of beta-carotene and vitamin C.

What happens after the apricots leave the farm?

After harvest, bins are taken directly to the packinghouse where the apricots are graded, packed into boxes and placed in cold storage. They are usually shipped to market in refrigerated trucks within a few days of being picked. Fruit can be picked when firm, but not fully mature. Apricots will last several weeks in controlled storage.

What challenges do

apricot growers face?

Fruit blossoms must be pollinated before fruit will start to form. To ensure that pollination is as complete as possible, orchardists place beehives in the orchard when 10 to 20% of the blossoms are open. If the bees are put in the orchard any earlier the bees will go beyond the orchard to forage for nectar. Orchardists pay apiarists (beekeepers) to bring hives to their orchard.

Who's involved in producing apricots?

- Orchard owners and orchard workers
- Apiarists
- Fruit processors
- Transporters
- Equipment suppliers
- Grading and packinghouse managers
- Packinghouse employees
- Cardboard box manufacturers and suppliers
- Horticulturists,
- Entomologists,
- Pathologists
- Physiologists

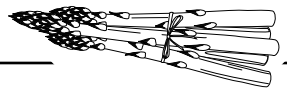
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Fruit Growers' Association
BC Tree Fruits

Nutritional Facts

Serving Size: 3 apricots (144 g)	
Calories	60
Total Fat	1g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	11g
Dietary Fibre	1g
Sugars	11g
Protein	0
Vitamin A	45%
Vitamin C	20%
Iron	2%
Calcium	2%
Calories from Fat	10
Daily Value•	
Total Fat	1%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	4%
Dietary Fibre	4%

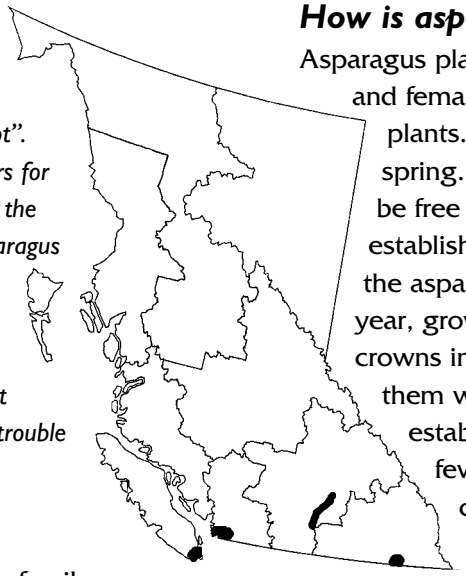
•Per cent Daily Values are based on a 2,000-calorie diet.



Asparagus

Interesting Facts

European settlers brought asparagus to North America. "Asparagus" is a Greek word meaning "stalk" or "shoot". It has been grown for over 2000 years for both food and medicinal purposes. In the past, people believed that eating asparagus before a meal would refresh and open the liver, spleen and kidneys. They also believed it to be good for the eyes. Asparagus was once thought to cure bee stings, toothaches, heart trouble and maintain good eyesight.



What is asparagus?

Asparagus, a member of the lily family, is the young, green shoot or stem of the asparagus plant. It is one of the vegetables to appear earliest in the spring. After harvest season, shoots are grown into tall fern-like plants. Asparagus is a good source of vitamin A. It also supplies several of the B vitamins and vitamin C.

Where is asparagus produced in BC?

Asparagus is grown in the Lower Mainland, in the Okanagan Valley, on Vancouver Island and near Creston.

How much asparagus do we produce?

BC produces about 134,000 kilograms, which is retailed through farm and roadside sales. BC produces 2% of the Canadian total. Asparagus production in BC has declined in recent years, but there is room for more production for local fresh sales.

How is asparagus produced?

Asparagus plants are dioecious, which means male and female reproductive parts are on different plants. Asparagus seeds are planted in late spring. It is important that the seeded area be free of perennial weeds. The asparagus will establish a crown and a root base from which the asparagus shoots will grow. In the second year, growers set out 1-year-old asparagus crowns in a 20-25cm deep furrow and cover them with 4cm of soil. The third year is the establishment year for asparagus. There are few stems produced and the asparagus crown grows to mature size. Once asparagus plants are mature, shoots are harvested for 6 to 8 weeks in the spring. The stems are cut off at the base of the plant. After harvest, which is very labour intensive, the asparagus spears are permitted to grow into fern-like plants. This growth manufactures carbohydrates that are stored in the roots and used to produce new growth the following spring. Established fields are productive for 15 to 20 years.

How is asparagus used?

Asparagus is sold to stores and restaurants as a fresh vegetable. It is also canned or frozen. Asparagus is a good source of potassium and an excellent source of folate.

What happens after asparagus leaves the farm?

Asparagus needs to be cooled quickly to 0°C, or the tips will continue to grow. From the farm, it is shipped to sales outlets or to processing plants.

What challenges do asparagus producers face?

Asparagus, like many other crops, needs fertile soil. Growers have their soil tested regularly to know exactly which nutrients must be added to ensure the best crop. Samples of soil are taken to a laboratory, where they are analyzed. The results will indicate the amounts of various nutrients in the soil. From this, the grower chooses what fertilizer will be required.

Asparagus growers also face the challenge of high input costs and low prices. They face strong competition from imported asparagus that is available year round as well as competition from other vegetables.

Who's involved in producing asparagus?

- Asparagus growers
- Sales people
- Processors

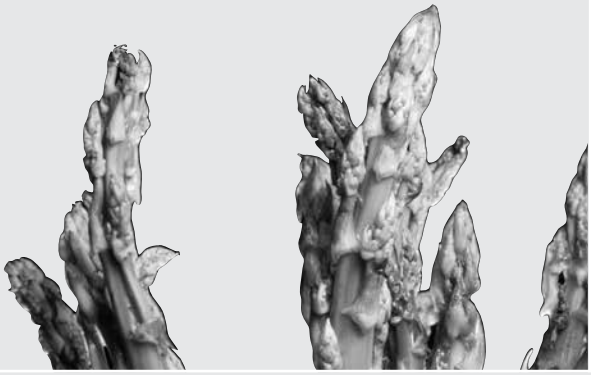
Contacts and other resources:

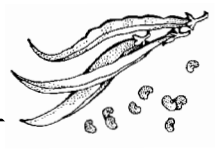
BC Ministry of Agriculture and Lands
BC Asparagus Growers' Association

Nutritional Facts

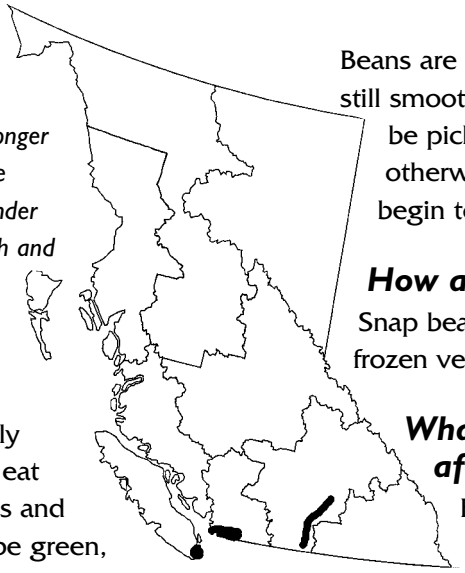
Serving Size: 5 asparagus spears (93g)	
Calories	25
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	4g
Dietary Fibre	2g
Sugars	2g
Protein	2g
Vitamin A	10%
Vitamin C	15%
Iron	2%
Calcium	2%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	1%
Dietary Fibre	8%

•Per cent Daily Values are based on a 2,000-calorie diet.





Beans



Interesting Facts

Snap beans used to be known as "string" beans. This name is no longer used because plant breeders have developed bean pods that are tender and juicy. String beans were tough and difficult to eat.

What are beans?

Beans are used as a vegetable, but are botanically classed as a fruit. When we eat snap beans, we eat the pods and the seeds. Snap beans can be green, yellow or purple, round or flat. Some beans grow on low bushes while other varieties, such as pole bean plants, will grow quite tall with support systems.

Where are beans produced in BC?

Beans are mainly grown in the Lower Mainland, but there is some production in the Okanagan Valley and on Vancouver Island.

How many beans do we produce?

BC produces about 5.9 million kilograms of beans annually. These would cover a football field to a depth of over 4m. Over 85% of these beans are processed.

How are beans produced?

Snap beans are grown on low bush plants or on tall climbing plants. Bean plants grow vertically up poles, strings or trellises. Most of the beans grown commercially are the bush type, because they can be mechanically harvested. Beans are ready for harvest 50 to 70 days after planting.

Beans are picked as immature fruit, while pods are still smooth, slim and tender. Fresh beans should be picked with the stems still on the beans, otherwise, the open end will lose moisture and begin to rot.

How are beans used?

Snap beans can be eaten fresh, or as canned or frozen vegetables.

What happens after the beans leave the farm?

Beans for the fresh market are hand harvested and cooled before being shipped to warehouses for distribution to supermarkets. Many beans are sold directly from the farm through farm stands and U-Picks. Beans grown for the process market are harvested with large machines that strip the beans from the plant. The beans are dumped into trucks and shipped to processing plants where they are de-stemmed, washed, sized, blanched and frozen.

What challenges do bean producers face?

As with other processed crops, BC growers and processors must compete with large farms and processors in other parts of Canada and the US. The crop quality must be very good and it must be grown very efficiently.

Beans are very susceptible to rot caused by several types of fungi. Growers must manage their crops using crop rotation, careful spacing of seeds and just the right amount of fertilizer. Sometimes they must apply fungicides to make sure their crops are free of rot.

Who's involved in producing beans?

- Farm owners and managers
- Field workers
- Vegetable inspectors
- Canning and freezing companies and their employees
- Producers of freezer containers and tin cans
- Fertilizer companies
- Equipment dealers
- Fuel companies
- Seed companies
- Processors
- Truckers

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Vegetable Marketing Commission

Nutritional Facts

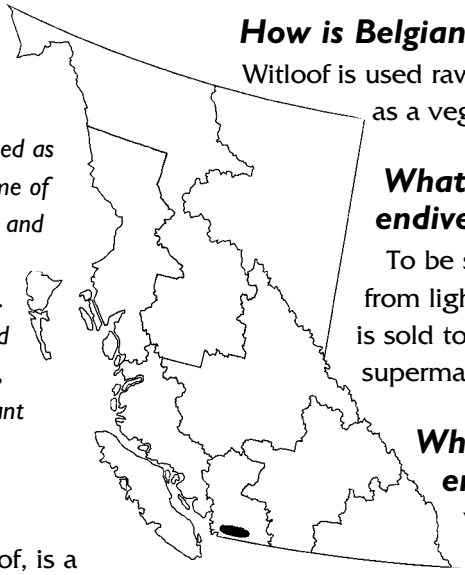
Serving Size: 1 cup beans	
Calories	25
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	5g
Dietary Fibre	3g
Sugars	2g
Protein	1g
Vitamin A	4%
Vitamin C	10%
Iron	2%
Calcium	4%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	2%
Dietary Fibre	1%

•Per cent Daily Values are based on a 2,000-calorie diet.

Belgian Endive

Interesting Facts

The Belgian endive we eat today is the result of an accident. A Belgian farmer was growing chicory for its root The root was used as a coffee substitute in Europe. He threw some of these roots into the soft soil of a dark shed and forgot about them. Three weeks later, he found that tight blanched heads had grown. The result has been systematically cultivated since. In BC, Belgian endive is a minor crop, but in Northern Europe, it is a very important winter vegetable.



What is Belgian endive?

Belgian endive, also known as witloof, is a salad green with smooth cream-coloured leaves. It is 10 to 15cm long, compact, slender and has a pointed head.

Where is Belgian endive produced in BC?

It is grown in the Lower Mainland.

How much Belgian endive do we produce?

While witloof is an important vegetable in Europe, it is not a major crop in BC. BC has only one producer.

How is Belgian endive produced?

Seeds are planted in April through June, about 15cm apart. The plants are watered and fertilized throughout the summer. In the late summer and fall, the crop is topped and the roots are dug up. After a cold-storage period, roots are planted in dark forcing chambers and watered with a hydroponic solution. The first harvest can be made about four weeks later.

How is Belgian endive used?

Witloof is used raw in salads or braised and served as a vegetable.

What happens after Belgian endive leaves the farm?

To be stored, witloof must be protected from light, otherwise it will turn green. It is sold to wholesalers, who in turn supply supermarkets and restaurants.

What challenges do Belgian endive producers face?

Witloof production is a very specialized business requiring investment in sophisticated equipment and careful management by the grower. It is a long season crop that must be first grown in the field, then stored for a time and finally forced (which means to artificially hasten the development) before the product is ready for market.

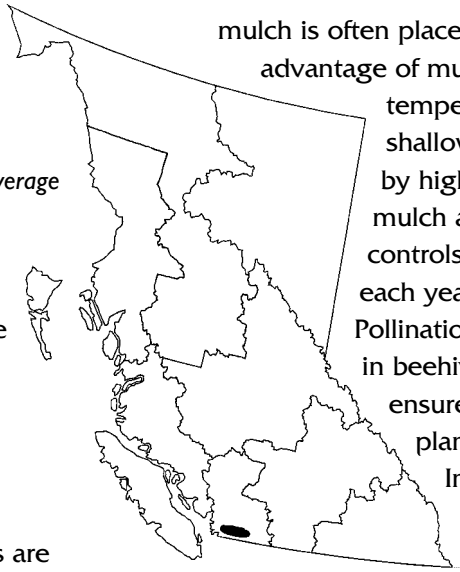
Who's involved in producing Belgian endive?

- Witloof producers
- Seed suppliers
- Fertilizer suppliers
- Equipment dealers

Blueberries

Interesting Facts

BC is one of the top three blueberry producing regions in the world. In the last 10 to 15 years, per capita consumption of blueberries has doubled. In North America, average consumption each year is about 400 grams.



What are blueberries?

Blueberries are small, round, dark blue berries. A berry is a small juicy fruit with many tiny seeds.

Where are blueberries produced in BC?

Ninety-nine per cent of BC blueberries are grown in the Fraser Valley, Richmond, Pitt Meadows, Matsqui Prairie and Surrey.

How many blueberries do we produce?

BC produces at least 95% of the Canadian production of cultivated blueberries–about 24 million kilograms per year. About 50% of these are frozen and made into value-added products such as jams. The rest are bought fresh for export or local consumption through stores and farm gate outlets. In BC, over 8,400 hectares are farmed by over 1340 farm families.

How are blueberries produced?

Blueberries require an acidic soil, as well as proper drainage and balanced nutrients. Once grown only in peat (drained bogs) now blueberry bushes are also cultivated in mineral soil.

A blueberry plant is started from a plant cutting planted in rooting media. The plant grows its first year protected in a greenhouse. The second year the bush is planted in rows in a field and a sawdust mulch is often placed around the plants. The main advantage of mulching is to regulate the soil temperature. Blueberries have very shallow roots and can be affected by high or low soil temperatures. A mulch also keeps the soil moist and controls weeds. Plants must be pruned each year for good berry production. Pollination is important. Farmers bring in beehives during flowering season to ensure good pollination. A blueberry plant can grow up to 2.5m high. In Richmond BC, some blueberry plants are over 50 years old.

Blueberries are usually harvested 2 to 4 times between July and September. Berries for the fresh market are hand picked from the bush. Berries for the processed market are increasingly harvested using mechanical harvesters. More growers are changing to mechanical harvesting because of the increasing cost of labour relative to the price of blueberries.

Blueberry plants are deciduous and lose their leaves in the fall. Fall leaf colour ranges from yellow to crimson to dark red.

How are blueberries used?

Blueberries can be eaten fresh, dried or processed into pie filling, jam, jelly or syrup. They are also frozen and made into candies, baked goods, muffin mixes, purées and more.

What happens after the blueberries leave the farm?

After harvest, the berries are either sold fresh or sent to a processor or packer. There are about

10 major processors and packers in BC as well as a number of smaller packers. Blueberries are distributed to wholesalers who export BC blueberries throughout the world including the United States, Europe, Japan and Australia.

What challenges do blueberry producers face?

Blueberry production is increasing worldwide. BC's blueberry industry must encourage increased consumption of blueberries.

Blueberry farmers face increasing costs in producing their crops. This means farmers must find ways of reducing their costs so that they can remain competitive with other blueberry-producing regions. Reducing costs include the use of mechanical harvesters and effective methods of crop protection.

Birds are a major challenge during the harvesting period. They can eat a large portion of the crop if the field is not protected. Farmers use sound devices and control devices such as hawk kites and balloons to scare birds away from their crops.

Who's involved in producing blueberries?

- Blueberry growers
- Field workers for crop maintenance/picking
- Transporters/truckers
- Integrated Pest Management services
- Researchers
- Market/promotion workers
- Fertilizer and pesticide sales people
- Nursery workers and owners

* Farm Equipment Dealers

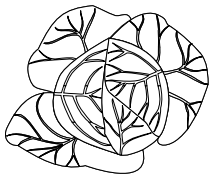
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Blueberry Council

Nutritional Facts

Serving Size: 1 cup blueberries (140g)	
Calories	25
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	5g
Dietary Fibre	3g
Sugars	2g
Protein	1g
Vitamin A	4%
Vitamin C	10%
Iron	2%
Calcium	4%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	2%
Dietary Fibre	2%

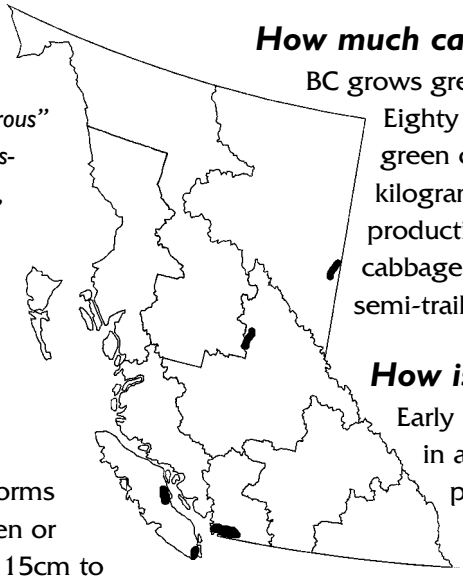
•Per cent Daily Values are based on a 2,000-calorie diet.



Cabbage

Interesting Facts

Cabbage belongs to a class of vegetables called "brassicas," also known as "cruciferous" vegetables (because their flowers are cross-shaped). Other crucifers are broccoli, kale, cauliflower and brussels sprouts. Medical researchers are finding that vegetables in the cabbage family contain compounds that assist in preventing several types of cancer.



What is cabbage?

Cabbage is a leafy vegetable that forms a tight head. Cabbages can be green or purple, and vary in head size from 15cm to 30cm in diameter. Green and red cabbage have smooth leaves; savoy cabbage has wrinkled leaves.

Where is cabbage produced in BC?

Cabbage is grown commercially in the Lower Mainland, on Vancouver Island and in many locations in the Interior. It is quite adaptable but prefers a cool growing season.

How much cabbage do we produce?

BC grows green, red and savoy cabbage. Eighty per cent of cabbage grown is green cabbage. In total, 4.2 million kilograms (about 4% of Canadian cabbage production) is grown in BC. All of this cabbage would fill approximately 280 semi-trailers.

How is cabbage produced?

Early crops of cabbage can be seeded in a greenhouse. The resulting young plants are exposed to cooler temperatures before being planted in the fields. Moving from a protected greenhouse to a cold field can slow the growth down and affect yields. Early varieties of cabbage mature about 70 days after transplanting. When field soil conditions are warm enough cabbage seed can be sown directly into the ground. The main crop matures in 75 to 80 days. Storage varieties can take up to 130 days. When cabbage is harvested, it is cut by hand near the base. A few outer leaves are left for protection.

Nutritional Facts

Serving Size: 1/2 medium head green cabbage or 1 cup red cabbage

Calories	25/20
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	20/30mg
Total Carbohydrate	4/5g
Dietary Fibre	2/1g
Sugars	3/4g
Protein	1g
Vitamin A	0%
Vitamin C	70%
Iron	2%
Calcium	4%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	1%
Total Carbohydrate	2/1%
Dietary Fibre	8/3%

•Per cent Daily Values are based on a 2,000-calorie diet.

How is cabbage used?

Cabbage is used raw in salads, such as coleslaw, as a cooked vegetable, or preserved in pickles or sauerkraut. Cabbage is 90% water and an excellent source of minerals, vitamin A and C as well as B vitamins.

What happens after the cabbage leaves the farm?

Cabbage can, if handled properly, be kept fresh for a long time after harvesting. Early cabbage harvested through the summer months is graded, cooled, and then shipped directly to wholesalers for distribution to retail stores. Much of the fall cabbage is harvested and placed into refrigerated cold storage where it can be kept for several months and shipped as the market requires.

What challenges do cabbage producers face?

Cabbage is a difficult crop to grow because it is susceptible to many insect and disease pests. Many growers practice Integrated Pest Management (IPM). Crops are inspected carefully every week to monitor pest populations. Pesticides are applied only when absolutely necessary. Crop rotation is used to minimized pest populations.

Who's involved in producing cabbage?

- Farm owners and managers
- Field workers
- Seed suppliers
- Farm machine suppliers
- Cooperative packing plant workers
- Fertilizer companies
- Equipment dealers
- Fuel companies
- Seed companies
- Truckers

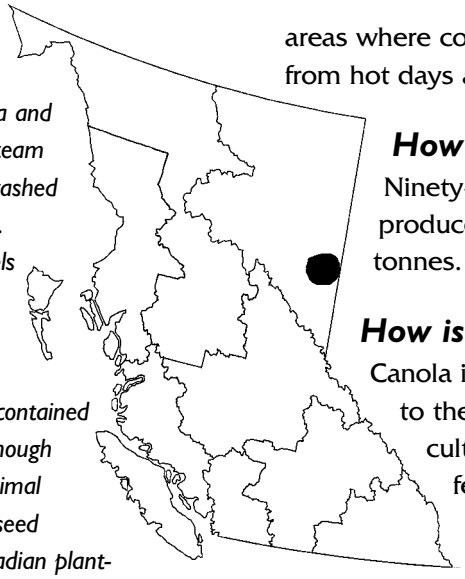
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Vegetable Marketing Commission

Canola

Interesting Facts

Rapeseed oil was used as a lamp and cooking oil by ancient civilizations in Asia and Europe. With the development of the steam engine, it was found to cling to steam-washed surfaces better than any other lubricant. Rapeseed oil however contains high levels of erucic acid which can be associated with heart lesions in humans. Rapeseed meal is the by-product of the oil extraction process. The rapeseed meal contained high levels of sulphur compounds and though full of protein was not useable as an animal supplement. Canola is a variety of rapeseed developed after World War 11 by Canadian plant-breeding programs. Researchers developed canola that has a low level of both components and is thus useful both as an oil plant and animal food.



What is canola?

Canola is a member of the Crucifarea family. This family includes broccoli, cabbage and mustard seed. Canola grows 1 to 1.5m high and has a seedpod with 15 to 40 small round seeds. The seeds have a high percentage of oil therefore, canola is classed as a type of oilseed. There are two types of canola; the short growing season Polish type (Brassica rapa/ campestris); and the longer season Argentine type (Brassica napus). Both types are grown in BC.

The first canola variety was released in 1974. Since that time, canola has become a major Canadian crop.

Where is canola produced in BC?

Canola is grown in the Peace River North East area in BC, with an occasional field grown elsewhere in the province. It is a cool season crop adapted to areas where cool night temperatures allow recovery from hot days and dry weather.

How much canola do we produce?

Ninety-eight per cent of the oilseed produced in BC is canola. BC grows 82,800 tonnes.

How is canola produced?

Canola is grown in a process that is similar to the growing of grain. Fields are cultivated as required, seeded and fertilized. Pesticides are applied to control insects, weeds and diseases. Seedlings emerge 4 to 10 days after planting. The bottom leaves are produced in a rosette and the plant sends up a flower stalk when the days lengthen. Flowering lasts 14 to 21 days. The fields at this time are a brilliant mass of yellow blossoms. The flowers of the Polish type are fertilized by the wind and the Argentine type is self-pollinated. However, bees visit the flowers for nectar to produce honey and also carry pollen. Once the flowers are fertilized, pods form and take 35 to 45 days to fill. The field is swathed (cut down) when about one-third to one-half of the seeds have turned colour, from green to yellow or brown. The swathed crop is dried for about 10 days. The seed is separated from the crop by a machine called a combine. Alternatively, the crop can be desiccated or dried in the field or straight cut without the need of swathing.

How is canola used?

Canola is pressed and the oil is used for cooking and salad oils or processed into margarine. Canola is 42 to 45% oil and 23% protein. It contains mono

and polyunsaturated fats, neither of which are the type of fat associated with heart disease. Canola oil has the lowest level of saturated fats of the available vegetable oils, at 6 to 7%. It has won health and nutrition awards

The meal that is left after the canola is pressed is used as a high protein feed supplement for livestock.

Trials are underway to use canola as a diesel fuel, hydraulic oil and as biodegradable chain saw oil.

What happens after the canola leaves the farm?

About half of the BC production of canola is trucked to the nearest processor where it is crushed for oil. The balance of production is moved by rail to Vancouver where it is loaded onto ships, mostly destined for Japan, although some goes to Korea and Mexico.

What challenges do canola producers face?

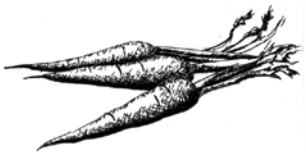
Since canola seed is very fine (less than 1mm in diameter) it must be planted close to the surface. It takes proper seedbed preparation to allow the seed to germinate. Canola is subject to attack by several diseases and insects. To reduce the impact of these, farmers are advised to grow canola only one year in four on the same field. Seed treatment is used to reduce seedling disease and early flea beetle attack. Herbicides are used to control competition from weeds. The economics of growing canola versus grain are at present such that farmers are shortening rotations and increasing the risk of disease. Plant breeders are working to produce varieties that are disease and herbicide tolerant.

Who's involved in producing canola?

- Canola farmers
- Seed growers
- Farm implement dealers and mechanics
- Pesticide dealers
- Fertilizer dealers
- Transporters/Truckers
- Airplane pilots for aerial spraying
- Grain inspectors
- Agronomists
- Truckers, railway workers
- Oil processors and refiners
- Chemists
- Ship crew members
- Dock workers

Contacts and other resources:

BC Ministry of Agriculture and Lands
Canola Council of Canada
Canada Grain Commission



Carrots

Interesting Facts

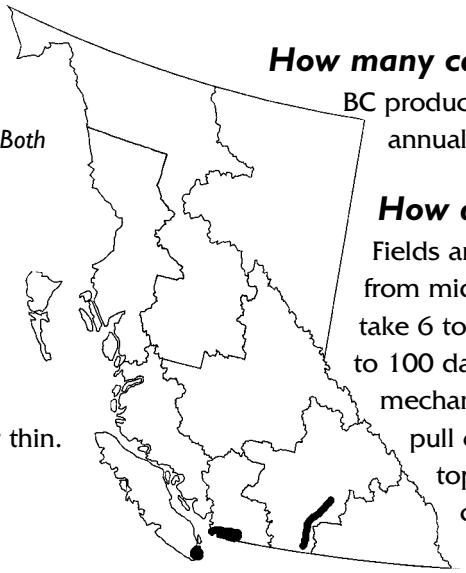
The carrot is a highly refined version of a common weed, "Queen Anne's Lace". Both plants originated in the Middle East.

What are carrots?

Carrots have a taproot, a type of root that grows downward into the soil and swells. Carrots come in many sizes and shapes: round, cylindrical, fat, very small, long or thin.

Where are carrots produced in BC?

Carrots are commercially grown in the Okanagan Valley, Mainland-South Coast and on Vancouver Island.



How many carrots do we produce?

BC produces 5.7 million kilograms of carrots annually.

How are carrots produced?

Fields are seeded with precision seeders from mid-March to the first of July. They take 6 to 21 days to germinate and 70 to 100 days to mature fully. Carrots are mechanically harvested by machines that pull carrots up by their tops, cut the tops off and drop the carrots onto a conveyor leading to a truck.

Nutritional Facts

Serving Size: 1 medium carrot (78g)	
Calories	35
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	40mg
Total Carbohydrate	8g
Dietary Fibre	2g
Sugars	5g
Protein	1g
Vitamin A	270%
Vitamin C	10%
Iron	0%
Calcium	2%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	2%
Total Carbohydrate	3%
Dietary Fibre	8%

•Per cent Daily Values are based on a 2,000-calorie diet.

How are carrots used?

Carrots are a common and popular fresh vegetable. Baby carrots are particularly tender and juicy. They can also be canned or frozen. Carrot juice is a very nutritious drink especially high in beta-carotene. Carrots are used in baking dishes such as carrot cake or muffins. Carrots are rich in minerals and vitamins.

What happens after the carrots leave the farm?

Carrots are harvested into large bulk trucks that take the product to on-farm packing operations. Upon arrival, carrots are unloaded onto a line where they are hydro-cooled, graded and packaged. They are held in cold storage or shipped to wholesale distributors as the market demands. Carrots can also be purchased with the tops on. These carrots are typically hand harvested at a younger stage and are then wrapped in bunches resulting in "bunched carrots."

What challenges do carrot producers face?

Numerous root diseases affect carrots (black root rot, cavity spot), but proper cultural practices can keep them under control. Carrot rust flies are kept under control through an Integrated Pest Management (IPM) program.

Growers also face strong market competition from the western United States and the Prairies.

Who's involved in producing carrots?

- Carrot producers
- Seed suppliers
- Farm equipment suppliers
- Agri-business suppliers
- Processing plant (co-op)
- Financiers

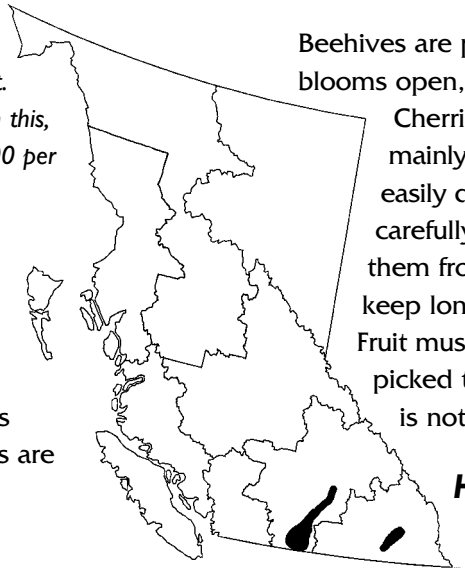
Contacts and other resources:

BC Ministry of Agriculture and Lands
Lower Mainland Vegetable Distributors
BC Farm Fresh

Cherries

Interesting Facts

Excess rain can cause cherries to split. Rain covers can protect the fruit from this, but they can cost $44,000 to $50,000 per hectare.



What are cherries?

Cherries are a small, round, dark red stone fruit. They grow on trees in small clusters. Both sweet cherries and sour cherries are grown in BC. Sweet cherries are round or slightly heart-shaped.

Where are cherries produced in BC?

Cherries are grown in the Okanagan, Similkameen and Kootenay Valleys. They are sensitive to winter and spring frosts.

How many cherries do we produce?

BC produces 16.6 million kilograms of sweet cherries and 0.5 million kilograms of sour cherries annually. This is more 70% of the Canadian cherry crop. The main varieties grown in BC are Bing, Lambert, Van, Lapins and Sweetheart. Lapins and Sweetheart are late varieties that are receiving high returns in eastern and offshore markets.

How are cherries produced?

Once planted, a cherry orchard takes 10 to 15 years to reach full production, however, producers are experimenting with higher density plantings. Once cherry trees are established, the orchardist must regularly prune, fertilize, control weed growth, insects and disease, water and replant trees to ensure the orchard is always healthy.

Beehives are placed in orchards after the first blooms open, to ensure pollination.

Cherries are harvested during the summer, mainly late June through July. Cherries are easily damaged; harvesters must handle them carefully while picking and when moving them from bucket to bin. Bruised fruit will not keep long, even in proper storage conditions. Fruit must be cooled immediately after being picked to avoid moisture loss. Shrivelled fruit is not attractive to buyers.

How are cherries used?

Cherries are eaten fresh or made into pie filling, flavoured yogurt, jellies, jams, sauces, stewed fruit, fruit drinks, ice cream and candies. Cherries are a good source of vitamin C, the B vitamins, potassium and many micronutrients. Most sweet cherries are eaten fresh. Almost all sour cherries are processed.

What happens after the cherries leave the farm?

After cherries are picked, they are put into bins and moved from the orchard. Cherries are taken to packinghouses where they are cooled before being packaged and shipped to buyers. Cherries are best kept at -1°C to 1°C throughout these operations to retain maximum quality. Cherries should be shipped to market 24 to 48 hours after harvest.

What challenges do cherry producers face?

Little cherry disease is a serious threat to the cherry industry in the Okanagan-Similkameen and Kootenay Valleys. This disease is spread by the apple mealy bug. Japanese flowering cherries,

a common ornamental tree grown in many gardens, can carry this disease without showing any signs of it. To protect cherry orchards, it is illegal to grow these flowering cherry trees in the Okanagan and Similkameen Valleys. Two other pests of concern are cherry fruit flies and cherry fruit worms. If not controlled, they will make the cherries unmarketable.

Researchers are developing dwarf rootstocks. These smaller trees can be planted closer together, thereby increasing total production per hectare. Because the trees are smaller, labour costs for pruning and harvesting are reduced and smaller spray volumes are required due to less total leaf area.

Bird damage is another problem for producers, especially on young trees. Protecting crops is becoming more difficult, and the problem is growing. With increasing urban/rural interface, producers are looking for new ways to protect their crops, as opposed to the traditional methods, i.e., using guns or spraying.

Who's involved in producing cherries?

- Orchard owners
- Cherry pickers
- Sorters and packers
- Transporters/truck drivers
- Fruit processors

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Fruits Growers' Association

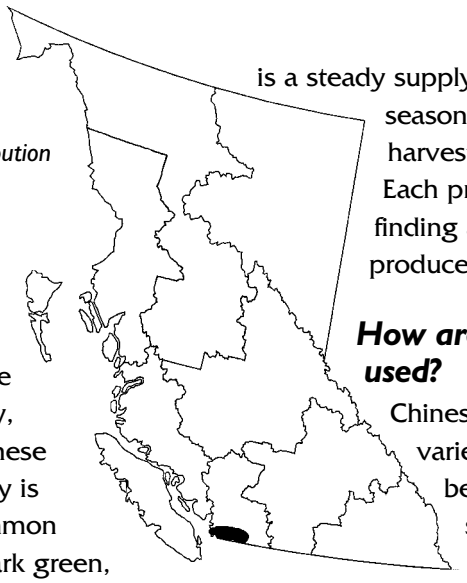
Nutritional Facts

Serving Size: 1 cup, 21 cherries (140g)

Calories	90
Total Fat	0.5g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	22g
Dietary Fibre	3g
Sugars	19g
Protein	2g
Vitamin A	2%
Vitamin C	15%
Iron	2%
Calcium	2%
Calories from Fat	0
Daily Value•	
Total Fat	1%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	7%
Dietary Fibre	12%

•Per cent Daily Values are based on a 2,000-calorie diet.

Chinese Vegetables



Interesting Facts

Reported to have been cultivated since 500 BC, Chinese greens have made a tremendous contribution to Asian diets, adding a rich source of vitamins, minerals and fibre.

What are Chinese vegetables?

Chinese vegetables are associated with Asian cooking. The most popular Chinese greens are bok choy, choy sum, gai choy, sui choy and gai lan. Others include Chinese cabbage, daikon and lotus root. Bok choy is also called Chinese chard. The most common type has thick white stalks with large, dark green, oval-shaped leaves. Chinese cabbage has a long thin, firm head of leaves. The outer leaves are pale green and the inner leaves are almost white with a thick mid-rib. Daikons are also called Chinese turnips or Japanese radish. This is a spherical, oblong or cylindrical root that is available all year. Lotus root resembles flowers when sliced.

Where are Chinese vegetables produced in BC?

Chinese vegetables are grown predominantly in the Mainland-South Coast region.

How many Chinese vegetables do we produce?

BC produces 2.0 million kilograms of Chinese vegetables annually.

How are Chinese vegetables produced?

Seedlings are started early in the year in a greenhouse and transplanted outdoors when the weather is favourable. After the first planting, crops are seeded in consecutive plantings so that there is a steady supply throughout the growing season. All Chinese vegetables are harvested by hand into cartons. Each producer is responsible for finding a buyer and for trucking the produce to the buyer's workplace.

How are Chinese vegetables used?

Chinese vegetables are used in a variety of Asian dishes. They can be used in chop suey or in a stir-fry.

What happens after the Chinese vegetables leave the farm?

Chinese vegetables are marketed through specialty stores, restaurants and supermarkets.

What challenges do Chinese vegetable producers face?

Most specialty crops cannot be harvested by machine. The producer must make sure that there will be adequate labour available so the crop can be gathered, packed and sent to market quickly.

Who's involved in producing Chinese vegetables?

- Vegetable growers
- Field workers
- Agri-business suppliers
- Financiers
- Seed Companies

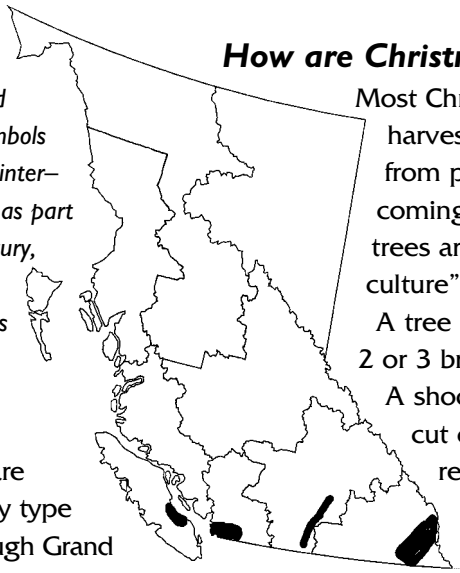
Contacts and other resources:

BC Ministry of Agriculture and Lands

Christmas Trees

Interesting Facts

The tradition of decorating a holiday tree started in pre-Christian times in Europe. Evergreens–symbols of life because they remain green through the winter– were brought into homes and places of worship as part of religious rituals and festivals. In the 16th century, Martin Luther is said to have decorated a fir tree with candles to represent the starry heavens from which Christ had come.



What are Christmas trees?

Christmas trees are evergreen trees that are decorated at Christmas. In BC, the primary type of Christmas tree is the Douglas fir, although Grand fir, Noble fir, Scotch pine, White pine, Concolor fir, Fraser fir and various spruces are also grown.

Where are Christmas trees produced in BC?

Christmas trees were first harvested and shipped to market from the East Kootenay area of BC during the 1930s. This area still produces large numbers of Christmas trees. Christmas trees are cut from cultured natural stands in the Kootenay region and grown on plantations in the Fraser Valley, on Vancouver Island, and in the Okanagan, Thompson and Kootenay regions, as well as on transmission line right-of-ways.

How many Christmas trees do we produce?

Each year BC produces about 300,000 Christmas trees. About 50% of these are harvested from natural stands. There are about 500 growers: 50 in the Kootenay area, 300 in the Fraser Valley and on Vancouver Island and 100 in the Okanagan and Thompson areas.

How are Christmas trees produced?

Most Christmas trees that are harvested from natural stands come from private lands with about 20% coming from crown lands. These trees are produced using "stump culture".

A tree is cut, leaving the bottom 2 or 3 branches near the ground. A shoot may grow from near the cut or the uppermost of these remaining branches may turn up to form a new treetop. This type of culture has been practiced in BC for 40 to 50 years. Recently there have been improved cultural practices, such as fertilizing and shearing, to improve the look and marketability of the trees. Stump culture is a sustainable Christmas tree production system.

The number of trees produced in plantations is rapidly increasing in all regions of BC. Seedlings are planted and grown, to be harvested in 6 to 10 years. Land cultivation, fertilizing, spraying and shearing are farming techniques that are used to produce nicely-shaped trees ready for market.

Chain saws and brush saws are used to harvest the trees. The trees are then bailed by compressing and wrapping them with twine. The reduced size and protected branches make for more successful shipping.

How are Christmas trees used?

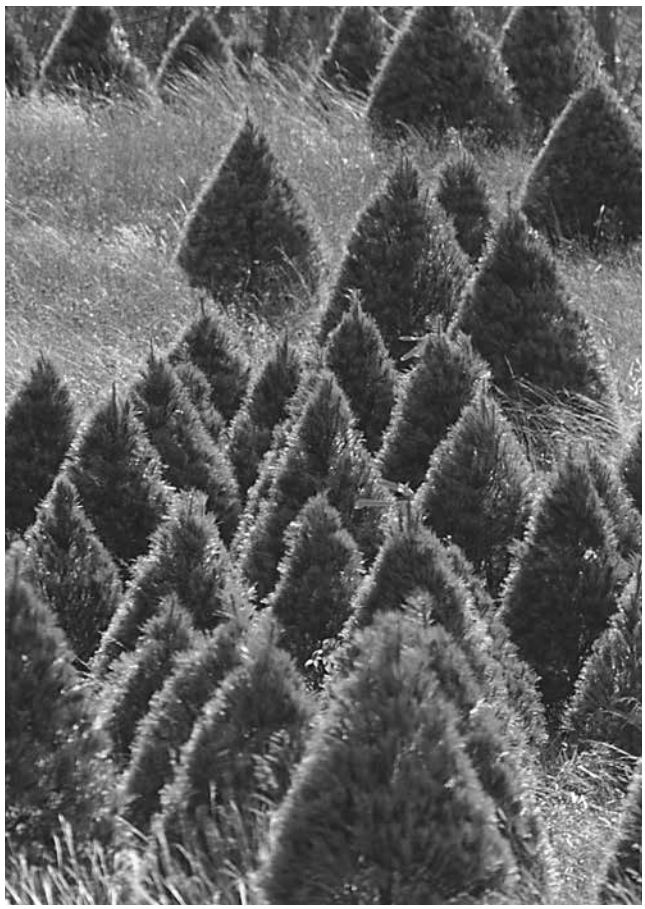
A Christmas tree is an evergreen that is decorated with lights and baubles. Christmas trees are usually cut, but sometimes potted trees are decorated. Although they are all green, some are dark green

while others are blue green. They can have long or short needles which can be soft or sharp to the touch.

What happens after the Christmas trees leave the farm?

Christmas trees are sold through retail outlets and grocery stores. If being shipped a long distance, they are transported inside large semi-trailers or the load is well tarped to prevent desiccation. Corner Christmas tree lots are disappearing due to competition from American tree producers. Many growers are developing "Choose and Harvest" farms. On "Choose and Harvest" farms, consumers pick the tree they want before it is harvested. These farms often supply hot chocolate or hot dogs for the customers, sleigh rides, Christmas music, a warm fire and possibly a Santa Claus.

Mexico used to be a strong export market for BC Christmas trees. Other markets are being investigated in Central and South America and Asia. The United States is also a good market. BC supplies about 50% of the Christmas trees sold in Alberta and Saskatchewan. Trees grown in coastal climates can be damaged and loose all their needles if shipped into cold climates. Trees shipped into the cold areas of the Canadian Prairies are supplied from the East Kootenay area, where trees are grown in a cool dry climate so they can withstand the cold prairie climate.



BC imports plantation trees from the United States into the Fraser Valley area and exports natural stand trees to the United States from the East Kootenay area.

What challenges do Christmas tree producers face?

Producers of Christmas trees face a marketing challenge. Christmas trees are viewed as messy, as a fire hazard and as environmentally detrimental. Growers are countering concerns about trees drying out and dropping needles, or creating a fire hazard, by providing information on the proper care of a Christmas tree. They are also providing information that points out that these trees are grown as an agricultural, renewable crop. In recent years, a mulching service has been provided in many centres. This ensures that used Christmas trees are turned into usable compost or mulch.

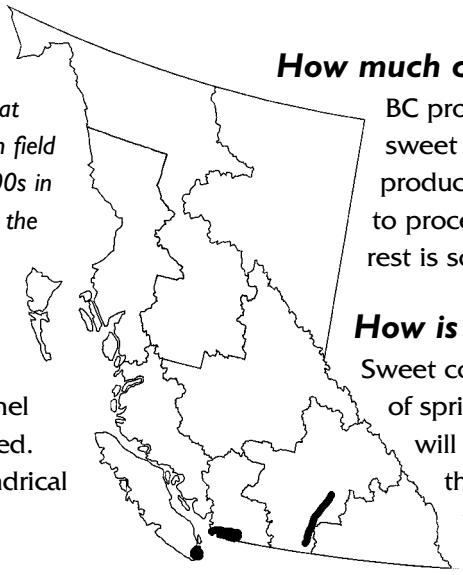
Who's involved in producing Christmas trees?

- Tree farmers
- Contract shearing crews
- Truck drivers
- Christmas tree lot salespeople
- Boy Scouts and others who sell them
- Municipalities for recycling
- Utility company employees (when trees are grown on powerline right-of-ways)

Contacts and other resources:

BC Ministry of Agriculture and Lands

Sweet Corn



Interesting Facts

Sweet corn, which is the corn that we eat fresh, is the result of a gene mutation in field corn. This mutation occurred in the 1800s in the United States. It prevented sugar in the kernel from being converted right away to starch.

What is sweet corn?

Sweet corn is a vegetable. A kernel of sweet corn is a yellow, soft seed. Sweet corn kernels grow on cylindrical cobs in rows.

Where is sweet corn produced in BC?

Sweet corn is grown commercially in the Okanagan Valley, the Mainland-South Coast region and Vancouver Island. Sweet corn is a hot weather crop. It cannot be seeded until after all danger of spring frost has passed. Harvesting must be completed before fall frosts.

How much do we produce?

BC produces 8.1 million kilograms of sweet corn, which is about 3% of Canadian production. About 30% of the corn is sold to processors to produce frozen corn; the rest is sold as fresh corn-on-the-cob.

How is sweet corn produced?

Sweet corn should be seeded, after the threat of spring frost, in a well-drained field. It will germinate quickly in warm soil and the stalk will grow to a height of 1.5 to 2.5m. Pollen is produced on the tassels that form at the top of the plant. Cobs develop on the side of the stalk. Sweet corn is ready to be harvested when the silk dries and the kernels fill out. Sweet corn is harvested by machine for the processing market, and picked by hand for the fresh market.

Nutritional Facts

Serving Size: 1 medium ear of sweet corn (90g)	
Calories	80
Total Fat	1g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	18g
Dietary Fibre	3g
Sugars	5g
Protein	3g
Vitamin A	2%
Vitamin C	10%
Iron	2%
Calcium	0%
Calories from Fat	10
Daily Value•	
Total Fat	2%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	6%
Dietary Fibre	1%

•Per cent Daily Values are based on a 2,000-calorie diet.

How is sweet corn used?

Sweet corn can be eaten fresh, as sweet corn-on-the-cob or as fresh cut kernels. It can be canned, creamed or frozen. Sweet corn is a good source of carbohydrates, fibre and niacin. Field corn, a relative of sweet corn, is used as feed for cattle. The whole plant is cut, chopped up, ensiled and later fed to cows (mainly in the dairy industry).

What happens after the sweet corn leaves the farm?

After harvest, sweet corn sugar quickly converts to starch. Sweet corn is best eaten soon after being picked. Much of sweet corn is sold the same day it is picked at roadside stands and farmers' markets. Sweet corn that is sold to supermarkets is hydro-cooled (dipped in ice-cold water), packed into boxes, topped with ice and shipped to market in refrigerated trucks. Sweet corn for the processing market is shipped to plants within hours of harvest. Specialized equipment removes the husks. The sweet corn is then blanched, cooled, cut from the cobs and frozen.

What challenges do sweet corn producers face?

Because BC sweet corn growers have to contend with few insects and disease problems, they rarely have to spray with pesticides. Sometimes the sweet corn is attacked by blackbirds and other birds that strip the husk and eat the sweet corn. When this occurs, farmers use a variety of means to frighten the birds away.

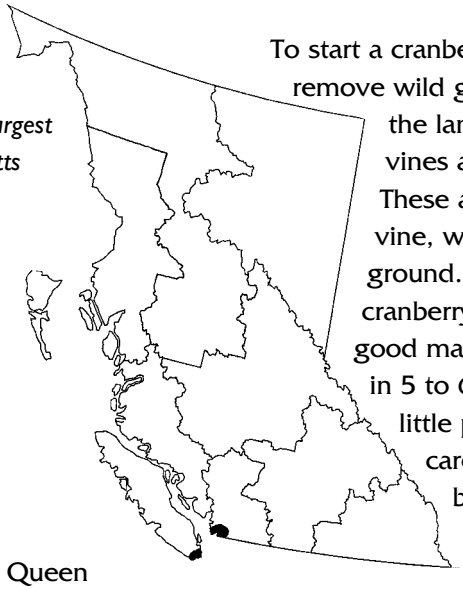
Who's involved in producing sweet corn?

- Farm owners and managers
- Field workers
- Canning and freezing companies and their employees
- Producers of food packaging
- Fertilizer and chemical companies
- Equipment dealers
- Fuel companies
- Seed companies
- Processor fieldworkers
- Truckers

Contacts and other resources:

BC Ministry of Agriculture and Lands
Fraser Valley Corn Growers' Association

Cranberries



Interesting Facts

BC grows about 29% of the cranberries grown in Canada. BC is the world's third largest producer of cranberries, after Massachusetts and Wisconsin.

What are cranberries?

A cranberry is a berry that is round and bright red when ripe. It is 0.3 to 2.5cm in diameter. Cranberries grow on low lying vines.

Where are cranberries produced in BC?

Cranberries were first grown on the Queen Charlotte Islands in the 1920s. Now, almost all of the cranberry bogs are in the Lower Fraser Valley, Richmond, Pitt Meadows and Fort Langley. There are also a few bogs on Vancouver Island.

How many cranberries do we produce?

Almost all (70%) of BC's cranberries are grown for the processing market. The rest are sold as fresh berries. Cranberries are BC's largest berry crop–by both volume and value. BC produces about 37 million kilograms of cranberries, valued at $49 million. These berries are grown by 91 family farm operations on 2,638 producing hectares.

How are cranberries produced?

Cranberry growth and survival depends on a rare and fragile combination of soils and geology, the right climate and a dedicated grower. Cranberries are grown in bogs that are a mixture of sand and peat soil. These bogs must have an ample water supply for irrigation and for harvest flooding.

To start a cranberry bog, growers must first remove wild growth from the bog, then level the land, and plant vines. Cranberry vines are started from vine cuttings. These are 10 to 25cm long pieces of vine, which are placed directly into the ground. It takes 2 to 3 years before a cranberry vine will bear fruit, and with good management it will be full-bearing in 5 to 6 years. Cranberries require very little pruning. Fertilization is done carefully to promote the growth of berry production while minimizing vine growth. For crop pollination, a high level of bee activity is important. Hives are placed in the crop when 10 to 20% of the plants are in bloom. It is important not to spray the crop at this time, as insecticides can harm honeybees.

Cranberries grow in clusters on the vine. When it is time to harvest the cranberries, most growers flood the fields. A beater is run over vines to shake berries loose. The berries, which float, have a soft landing in the water. The berries are corralled with wooden or inflatable booms. They are then pumped onto trucks. Floodwater is recycled by cranberry growers, passing from grower to grower through canals, flume gates and holding ponds.

Berries that are to be used in the fresh market are harvested dry. A mechanical harvester "combs" berries off the vines.

How are cranberries used?

Cranberries are used in cranberry sauce, cranberry juice and cranberry jelly. They are used in baking, in products such as cranberry muffins or bread. Cranberries are an excellent source of vitamin C.

One glass of cranberry juice cocktail supplies the total daily requirement of vitamin C. Cranberries are a perennial crop. It is not unusual to find a 75 to 100-year-old bog in production.

What happens after the cranberries leave the farm?

Cranberries are a regulated crop in BC. Cranberry growers sell their berries either to Lucerne or Ocean Spray. Lucerne deals with the 4 to 5 growers that are not affiliated with Ocean Spray. Ocean Spray is a farmer-owned co-operative, located throughout cranberry-growing areas in Canada and the United States. In BC, Ocean Spray has a receiving station where berries are cleaned. From there they are sent to freezers in the United States to await processing. Ocean Spray, a Massachusetts-based company, markets nearly all of the cranberries grown in North America.

What challenges do cranberry producers face?

One challenge that growers face is frost damage to vines. Frost in bogs can occur as late as June. A producer can lose up to 50% of a crop in as little as two hours. To protect their crops, growers spray the vines with water when the temperature nears freezing. The ice protects the plants from frost damage. Computerized heat sensors can be used to inform farmers when the temperature nears freezing.

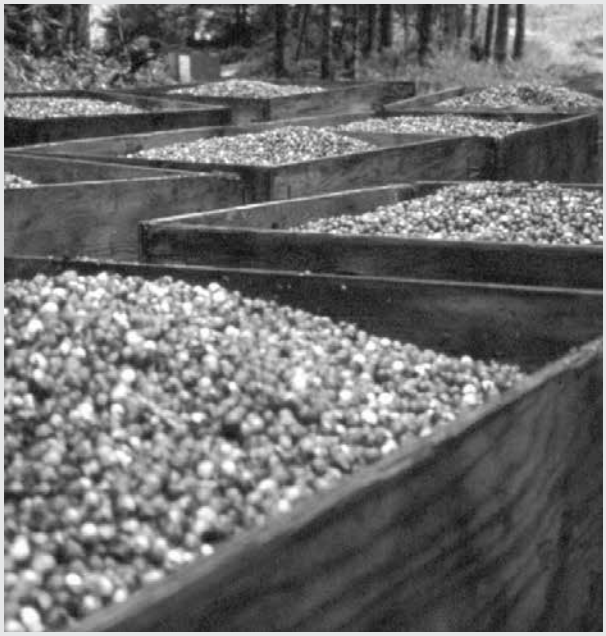
A second challenge is ensuring pollination of the flowers. Cranberry flowers produce little nectar so bee colonies must be placed on the edge of cranberry bogs to ensure pollination. There has been a recent reduction in the availability of bees, as a result of significant colony losses from mites, a new and deadly pest of honeybees.

Who's involved in producing cranberries?

- Owners
- Field workers for maintenance and harvest
- Apiarists to supply the bees
- Extension workers
- Marketing/promotion people
- Pest management services
- Pesticide and fertilizer salespeople
- Truckers/transporters
- Researchers

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Cranberry Growers' Association
BC Cranberry Marketing Commission



Nutritional Facts

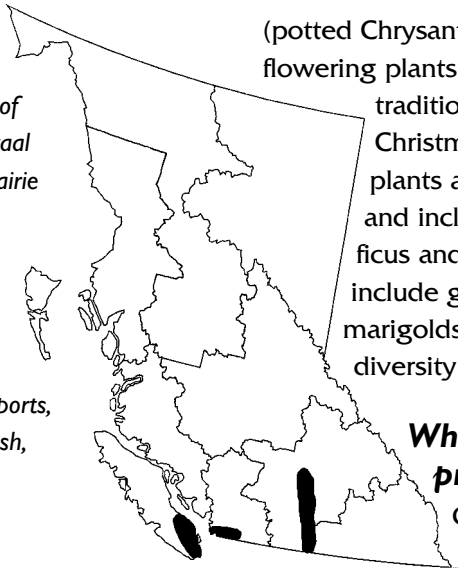
Serving Size: 1/2 cup chopped	
Calories	30
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	.5mg
Total Carbohydrate	6.5g
Dietary Fibre	2.5g
Sugars	-g
Protein	.25g
Vitamin A	-%
Vitamin C	10%
Iron	-%
Calcium	4mg

•Per cent Daily Values are based on a 2,000-calorie diet.

Floriculture

Interesting Facts

Some of our important floricultural crops originated as weeds in other parts of the world. For example, gerberas (Transvaal Daisies) in South Africa and eustoma (Prairie Gentian) in Texas. Some countries grow dandelions commercially as a salad crop. Floriculture is a world-wide industry; the flowers you buy today could have been picked in South America, Europe or Israel two days ago. To compete with imports, local growers must be able to provide fresh, high quality products for less money.



What is floriculture?

Floriculture is the growing of cut flowers, potted flowering and foliage plants, and bedding plants in greenhouses and/or in fields. There are several thousand different species of flowers and plants that are grown as commercial crops. Cut flowers include such crops as roses, freesia, alstromeria and snapdragons. Some of the favourite flowering potted plants available year-round are African violets, orchids, cyclamen and potmums (potted Chrysanthemums). Some seasonal flowering plants are an important part of our traditions, for example, poinsettias for Christmas and lilies for Easter. Tropical plants are generally available year-round and include such genera as dieffenbachia, ficus and philodendron. Bedding plants include geraniums, impatiens, lobelias, marigolds and pansies. Freshness and diversity are hallmarks of BC floriculture.

Where are floriculture products produced in BC?

Growers are located throughout BC, but production is concentrated in the Lower Fraser Valley. Approximately 90% of the floriculture operations are located within two hours drive of Vancouver. Other important production areas are Vancouver Island and some of the southern interior valleys.

How much do we produce?

There are 450 to 500 operations in the province and most of these are family operated. In 201, there were about 190 hectares in greenhouse crops and 150 hectares in field-grown crops. Greenhouses range in size from several hundred square metres to over 200,000 square metres. The average size is 8,000 to 10,000 square metres. Statistics Canada estimates that in 2011, farm gate sales were about $6.240 million.

How are floriculture products produced?

Growers who produce crops year-round rely on greenhouses to protect their crops from our northern environment. Production requires a high degree of technology and capital investment.

The average-sized greenhouse is close to a hectare in size and could cost up to $350 per square metre to build, about $3.5 million in capital expenditure. These large greenhouses include such features as computer systems to monitor and regulate the growing environment; rolling tables to increase useable production area; supplemental lighting to offset our low winter light levels and mechanization to reduce labour costs. Re-using irrigation water is becoming a common practice in many greenhouses. Even with state-of-the-art production systems, new operations can become obsolete within five years.

Floriculture also involves a considerable amount of production that is not greenhouse based. Field-grown specialty cut flowers such as daffodils, tulips, gladiolus, snapdragons, asters and holly are grown outside during the frost-free months of the year. Without greenhouses to protect them, field-grown cut flowers are at the mercy of the weather. A late spring or summer delays planting, while a hot summer increases production levels that in turn, cause prices to fall. Growers manipulate or extend the natural growing season by staggering plantings, using temporary cover structures and other cultural strategies. Some of the more innovative growers chill plant crowns in coolers to extend the "normal" flowering season.

How are floriculture products used?

Flowers play an essential role in peoples' celebrations and every day lives. Weddings, graduations, Mother's Day, St. Valentine's Day, Easter, Christmas and funerals all demand flowers and plants. Cut flowers are combined in elaborate arrangements and bouquets, or several stems are packaged together for impulse cash-and-carry purchases. Flowering and foliage plants are combined together in baskets or planters, or sold individually with pot covers and sleeves to accent their beauty.

Cut flowers, potted plants and bedding plants are available at florists, supermarkets, corner grocery stores, mass-market outlets and garden centres. More people are buying flowers at supermarkets as part of their weekly grocery shopping. Another shift in marketing is the move towards more direct farm marketing. Several growers have retail outlets on

Alstroemeria

Azalea

Geranium

Freesia

Gladiola

Lily

Poinsettia

Rose

the farm where you can buy products such as longstem roses, potted orchids and bedding plants.

What happens after the flowers leave the farm?

There are two main marketing options available to BC growers. The first is the more traditional North American method of selling the product direct to outlets such as wholesalers, florists and garden centres. The second is to sell the product through the United Flower Growers Co-Op Association (UFG). The UFG handles approximately 20 to 25% of the farm gate sales. It has a unique method of selling floriculture products. Sales are done via several reverse style Dutch clocks. Prices start above the expected selling price and fall until the first buyer stops the swing of the clock arm and buys the product. It is a fast, efficient selling method, with several thousand sales transactions per hour. Prices vary daily depending upon supply and demand, so selling the product becomes a daily gamble. The Burnaby-based auction continues to be the largest floral auction in North America. The UFG has benefited both BC growers and their customers. It has allowed growers to specialize, leading to improved quality and decreased costs of production. For customers, it provides one-stop shopping that features a diverse range of fresh product.

Most products are sold to consumers within the Lower Mainland area of the province. Approximately 25% is exported out of the province to other areas across North America. Other Pacific Rim countries represent an important growth area for export sales. High quality and consistent standards are important components in market penetration and export sales.

What challenges do floriculture producers face?

Growers face many challenges, including:

- Declining margins - While prices have remained steady over the past several years, most input costs have risen steadily. To remain profitable, growers have had to become more efficient in their production and management.
- Environment - Environmental issues are a major concern for growers. Growers have responded by re-using irrigation water, reducing pesticide

and fertilizer use and reducing greenhouse runoff.

- Pest control - Concerns over pesticide use by the public and producers alike, have prompted growers to adopt alternative pest control methods. Integrated Pest Management (IPM) is playing a larger role in greenhouse pest control. Many growers are now using biological or bio-rational control methods to supplement or replace existing pesticides.
- Employment - Labour is an important element in production. Bedding plant and cut-flower growers face labour costs of up to one third of gross sales. Although increased mechanization is a necessary element of global competition, the industry continues to be a major agricultural employer.
- Urban-rural conflicts - Conflicts with people are a fact of life for most producers in BC. Some municipalities look upon floriculture as more of a factory production industry rather than agriculture. Most municipalities have zoning regulations concerning the maximum site coverage for greenhouses.
- Capital costs - Modern, state-of-the-art greenhouse operations can cost up to $350 per square metre. These costs intimidate potential new growers. Field-grown cut flowers and bedding plants have much lower capital costs, so they are often entry level crops.
- Seasonal demand - The demand for fresh floriculture products is seasonal and the product is very perishable. Large numbers of people want to buy flowers for special occasions or holidays like St. Valentine's Day, Easter, Mother's Day and Christmas. Growers must time their production to meet these periods of high demand. Some growers have 30% of their annual sales in a three-week period in spring.

Who's involved in producing floriculture products?

- Growers
- Greenhouse and field employees
- Wholesalers
- Florists
- Garden centres
- Supermarkets
- Corner stores
- Mass-market outlets
- Retail clerks

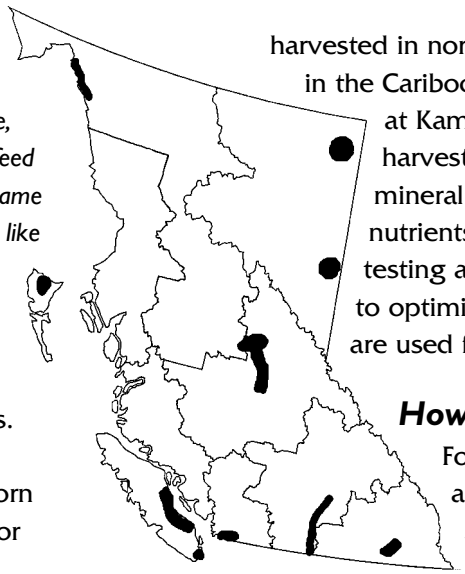
Contacts and other resources:

BC Ministry of Agriculture and Lands
United Flower Growers' Co-op Association
Flowers Canada

Forage

Interesting Facts

More hectares of forage are grown in BC than any other cultivated crop. While, traditionally, forage has been grown as feed for livestock, it is also used as feed for game animals like fallow deer and exotic birds like emu and ostrich.



What is forage?

Forage is feed for livestock, including cattle, sheep and horses. It includes grasses, legume and other crops such as cereals and corn harvested as pasture, hay, silage or green-feed.

Where is forage produced in BC?

Forage is grown in every part of BC. While the production per hectare is generally greatest in southern areas, high-quality, low-cost feed can be produced north of Prince George, where land prices are lower. Most forage is grown and fed to livestock on the same farm.

How much forage do we produce?

On average, BC annually produces about 1.4 million tonnes of tame hay. Tame hay includes alfalfa, alfalfa mixtures, other legume and grasses.

How is forage produced?

Annual crops such as cereals, peas or corn are sown in early spring and harvested from July to September, mostly as silage. Perennial crops of grasses and legume are sown alone or with a companion crop, and harvested for 4 to 8 years. One cut per year, plus some fall pasture, is harvested in northern areas; two cuts are common in the Cariboo-Central; three cuts under irrigation at Kamloops; and four to five cuts are harvested per year in coastal areas. The mineral soils of BC are often deficient in nutrients essential for crop growth, so soil testing and nutrient application are essential to optimize production. Livestock manures are used for this purpose wherever possible.

How is forage used?

Forage is grown for pasture, harvested as green-feed, stored as hay or silage, or processed for domestic or export markets. Stored feed can be harvested as hay (less than 15% moisture) in small rectangular bales (22 to 45kg), large square bales (900kg), small (350kg) or large (635kg) round bales, and in loose stacks (approximately 2,700kg).

Silage (40 to 75% moisture) can be chopped and stored in upright or horizontal silos or packed in plastic either individual or in long tubes, the familiar "marshmallows" seen stored in fields. Processed BC forage is sold as bagged, small-bale haylage for the coastal horse market, or as alfalfa processed in pellets or small cubes for the export market.

What happens after the forage leaves the farm?

About 75% of forage produced in BC is utilized on the farm. Another 20% is shipped within the province. Several trucking firms are in the business of transporting forage to livestock producers in the province. Some forage is shipped out-of-province to supply the Alaska dairy market, the Yukon horse market and the Pacific Rim processed-forage market.

What challenges do forage producers face?

Forage producers are looking for ways to overcome the problem of wet weather at harvest. Faster hay-drying techniques, such as using a macerator, are being developed. A macerator finely chops the forage and lays it in a swath. Because the cut material is in small pieces, drying time is reduced considerably. Producers are also developing cheaper silage storage techniques. Like most other agricultural producers, they are seeking ways to reduce the cost of production.

Who's involved in producing forage?

- Livestock producers
- Commercial forage producers
- Forage seed producers
- Truckers/transporters
- Suppliers of fertilizer, farm machinery and irrigation equipment
- Forage processors

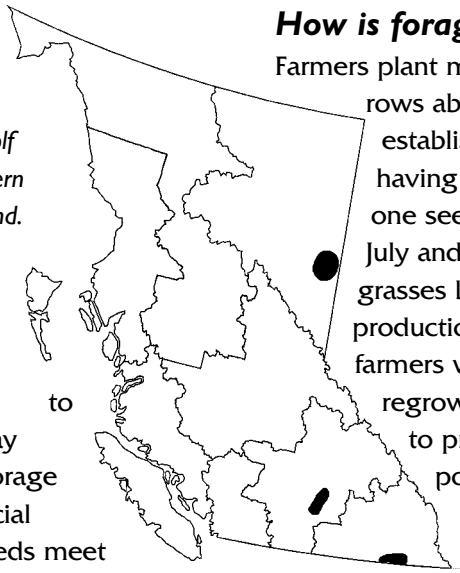
Contacts and other resources:

BC Ministry of Agriculture and Lands
Agriculture & Agri-Food Canada Research Stations at Kamloops and Agassiz
BC Forage Council

Forage Seeds

Interesting Facts

BC produces about 40% of the creeping red fescue seed grown in Canada. Most of it ends up in lawns, golf courses and along highways in the eastern United States, and in pastures in England.



What is forage seed?

Forage legume and grass seed is grown for plant turf and lawns, and for sale to farmers who use seed to plant hay fields and pastures. Growers of forage and grass seeds have to use special techniques to make sure their seeds meet certain standards, regarding weed content and seed germination. Several kinds of seeds are grown and harvested in BC, the main ones being creeping red fescue (grass), Timothy (grass) and clover (legume). Alfalfa is also grown for seed in the Peace region.

Where is forage seed produced in BC?

Production is concentrated in the Peace River North East region, but other centres, such as the North Okanagan and Creston, also grow forage seed.

How much forage seed do we produce?

BC produces about 16% of the Canadian production of forage and grass seed. This is about 5,700 tonnes per year. This volume of seed could easily seed 400,000 hectares (1 million acres) of hay land or pasture.

How is forage seed produced?

Farmers plant most forage seed in their fields in rows about 15cm apart. Once the plants are established they grow every year without having to be replanted. The farmers harvest one seed crop a year, usually between late July and early September. After a few years, grasses become overgrown and reduce seed production. To increase seed production farmers will plow the field and let the grass regrow. In order for clovers and alfalfa to produce seed, the plants must be pollinated by bees.

How is forage seed used?

Grass seed is fine and small. Much of the grass seed BC farmers produce ends up in small bags of lawn seed in home and garden stores in the United States. The rest of the grass seed and most of the legume seed is bought by farmers who plant it for hay or pasture to feed their horses, cattle or other grazing animals.

What happens after the forage seed leaves the farm?

Farmers transport the seed they harvest from the field to their farms, where they store it in bins. When they wish to sell it, they load it back on a truck and take it to a seed-cleaning plant in one of the nearby towns. Here it is cleaned and put on to large trucks to be transported either directly to a boat heading to Europe, or directly to a seed company in Canada or the United States. Seed companies take the seed and either sell it directly to farmers, or mix it with other kinds of seed, package it in small bags, and sell it to stores all over North America as lawn grass seed.

What challenges do forage seed producers face?

To produce seed that other farmers will use as seed, a farmer must have the crop inspected by someone from Agriculture Canada, both in the field and once the seed has been harvested. The inspector checks for weeds and other plants. The seed is checked for germination potential as well. To get fields clean enough for the inspectors, farmers must often spend days walking through their crops pulling up weeds and other plants.

Who's involved in producing forage seed?

- Forage seed producers
- Processors
- Marketers
- Truckers
- Brokers
- Seed companies

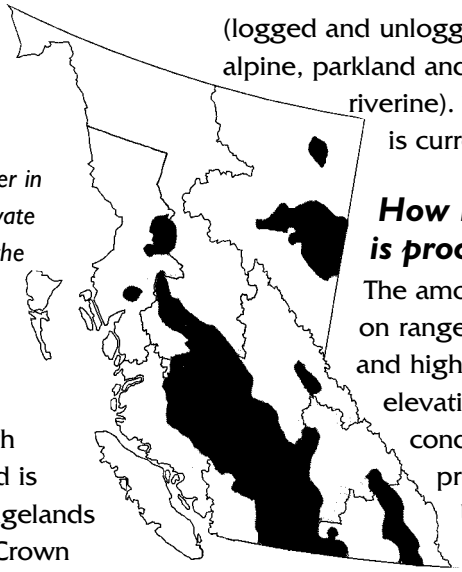
Contacts and other resources:

BC Ministry of Agriculture and Lands
Canadian Seed Growers Association, BC Branch

Forage (Range)

Interesting Facts

Most of British Columbia's ranchers depend on crown range. Crown range is typically used from May to October in the southern portion of the province and June to September in the northern portion of the province with private lands supplying the forage requirements for the remainder of the year.



What is range?

Range is any land supporting vegetation that can be consumed both by domestic livestock and wildlife and is managed as a natural ecosystem. Rangelands are owned either privately or by the Crown and are managed to supply forage for both livestock and wildlife.

Where are rangelands in BC?

Rangelands occur throughout most of British Columbia and are limited only by the rancher's imagination. Examples of rangeland include community pastures, grasslands, forestlands (logged and unlogged), shrublands, subalpine, alpine, parkland and riparian areas (wetlands and riverine). The map indicates where range is currently being utilized.

How much forage on range is produced annually?

The amount of forage produced annually on range is very difficult to predict and highly dependent on climate, soil, elevation, latitude and topographic conditions. Currently crown range produces about 1,000,000 Animal Unit Months per year. An Animal Unit Month is defined as the amount of forage that is consumed by an "animal unit" grazing for one month. An "animal unit" is equal to a 450-kilogram cow with or without her calf.

How is the forage on range produced?

Forage on range is generally produced by letting nature take its course. Plants occurring on range use all the sun, water, minerals etc. available to them and produce forage that is harvested by a rancher's livestock and local wildlife.

How is range used?

Range plants are grazed by livestock and wildlife, and regrow, much like your lawn regrows after cutting. Under proper management it is often very difficult to determine if range has been used. Generally the only way to tell if use has occurred is if livestock are present or if they have been recently moved.

What happens when forage leaves the range?

A small percentage of forage is harvested by both livestock and wildlife allowing them to grow, raise their young and maintain their body condition.

What challenges do range managers face?

Range is constantly being damaged by careless activities. Plants are typically injured or killed by severe trampling, overuse by both wildlife and livestock and unauthorized use by all-terrain vehicles, pedal bikes and 4X4's. This resulting damage severely limits the range from performing important ecological functions such as holding the soil and water in place. Human disturbance also provides an ideal site for weed invasion. Numerous weeds including Toadflax, Leafy Spurge, Knapweed, Houndstongue, Orange-flowered Hawkweed and Canada Thistle are all a serious menace to the health of BC rangelands. Proper management applied with sound economics protects our range resources. Visitors must always leave gates as they are found and respect fences, as they are both an important part of range management.

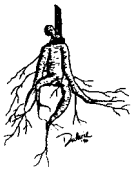
Who's involved in using range?

- Livestock producers
- Wildlife
- Recreationalists
- Forest Companies
- Mining Companies
- General Public

Contacts and other resources:

BC Ministry of Agriculture and Lands

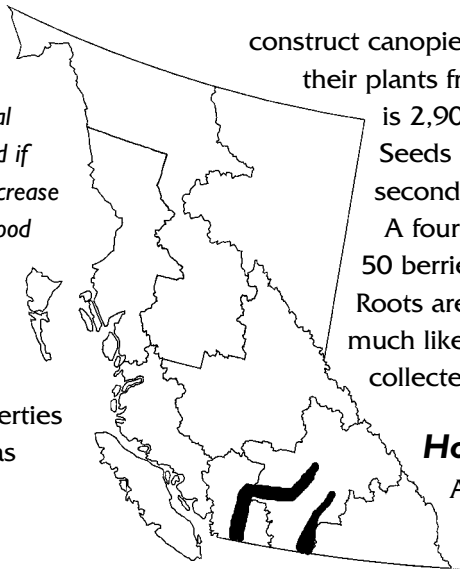
Photos by: Darren Bruhjell



Ginseng

Interesting Facts

Ginseng has been grown in parts of Asia for 3,000 years and is used as a traditional medicine. It is called "the elixir of life," and if taken regularly, is said to reduce stress, increase physical stamina, quiet nerves, enhance blood flow and increase longevity.



What is ginseng?

Ginseng is a herbaceous perennial plant grown for the medicinal properties of its thick, fleshy root. The stem has whorled leaves, and each leaf on a mature plant has five leaflets.

Where is ginseng produced in BC?

Ginseng is grown in the Okanagan Valley and the Thompson River Valley. The arid climate of the BC Interior is ideal for ginseng production.

How much ginseng do we produce?

The first ginseng grower started in 1982 with 2 ha. According to 2006 statistics for BC, there are about 14 growers with approximately 400 ha in production. Today ginseng sells for $20/kg (dry) and seed is about $40/kg. Prices have dropped over time due to the depressed Asian economy, an oversupply of root and a number of other factors.

How is ginseng produced?

There is a species of ginseng, American ginseng Panax quinquefolius, that is native to North America. It is indigenous to Eastern Canada and the United States. It grows on the forest floor under a canopy of leafy deciduous trees. A shade lover, it will scorch if exposed to direct light. When ginseng is grown outside forested areas, growers must construct canopies of 70 to 80% shade to protect their plants from direct sun. Yield, on average, is 2,900kg dry root weight per hectare. Seeds can also be collected after the second year.

A four-year-old plant will produce 10 to 50 berries each containing 1 to 3 seeds. Roots are typically dug by a machine much like a potato harvester. They are then collected by hand.

How is ginseng used?

Although some people prefer to eat fresh roots, ginseng is typically consumed dry and can be used whole, chopped, powdered, or as an extract. Ginseng tea, tincture, candies, drinks, capsules and tablets are available in specialty shops.

What happens after the ginseng leaves the field?

Forced warm air is used to dry the roots. Roots are then stored in a cool, dry place. The drying process is critical in production, as improperly dried roots can have green or reddish-brown discolouration, which is not desirable. Dried roots weigh only one-third of their fresh weight. BC ginseng is typically direct marketed from the farm to ginseng brokers. Approximately 95% of the ginseng produced is exported to Asian countries. The other 5% is sold in specialty stores in BC.

What challenges do ginseng producers face?

Ginseng is a new crop in BC. Understanding the ideal growing conditions is still evolving. The largest challenge in ginseng production is disease, with root disease being the most destructive. The shaded, moist climate that ginseng is adapted to makes it susceptible to some root and leaf diseases.

Who's involved in producing ginseng and ginseng products?

- Seed growers and brokers
- Ginseng farmers
- Plant scientists and researchers
- Buyers
- Manufacturers

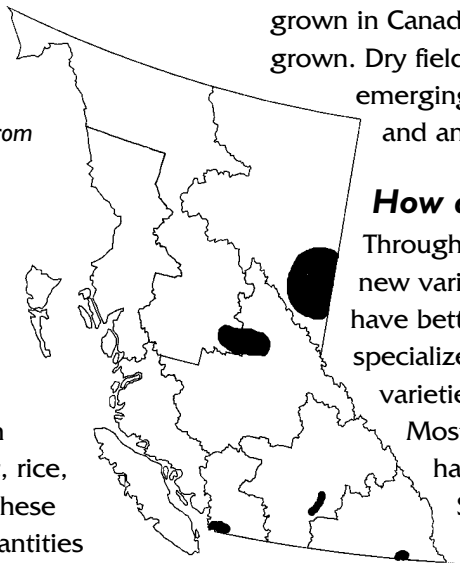
Contacts and other resources:

BC Ministry of Agriculture and Lands
The Associated Ginseng Growers of BC

Grains

Interesting Facts

The use of wheat dates back 75,000 years. Grain crops are also known as cereal crops. The word "cereal" stems from "Ceres," the Greek goddess of farming.



What are grains?

Grains are the seed heads of grass plants. Over time, certain species of grasses were found to produce seeds that people preferred over others. Major grain categories in the world are wheat, rice, corn, barley, oats and rye. All of these except rice are grown in large quantities in Canada. A kernel of wheat is composed of 3 main parts: 83% of the kernel is the starchy interior called the endosperm; 14.5% of the kernel is the protective seed coat called bran; and 2.5% of the kernel is the embryo part of the seed that will germinate a new plant.

Where are grains produced in BC?

Eighty five to 90% of the grain crops grown in BC are grown in the Peace River North East region. Special varieties have been adapted for the soil and temperature conditions found there. There is also some production in the North Okanagan, around Vanderhoof, around Creston, and in the Lower Mainland.

How many grains do we produce?

Barley, oats and wheat are the most common grain crops in BC. Oats and barley are used mainly as animal feed. BC produces about 55,800 tonnes of barley. Wheat is used both for human consumption and for livestock feed. BC produces about 96,000 tonnes of wheat. This is about 0.3% of the wheat grown in Canada. Smaller amounts of rye are also grown. Dry field peas, one of the pulse crops, is an emerging crop that is used for both human and animal consumption.

How are grains produced?

Through plant breeding, scientists develop new varieties that are higher yielding and have better disease resistance. Some farmers specialize in seed production of these varieties for commercial farmers to plant. Most farmers plant in the spring, and harvest in August and September. Some farmers, about 5%, plant winter wheat in September or October. Winter wheat is harvested in late July and early August.

Before planting a crop, farmers prepare their fields for seeding. This involves cultivating the soil, usually applying fertilizers, and then seeding the crop using a seed drill. If required, herbicides for weed control are used.

When the crop ripens, it is harvested. Wheat, for example, is ready for harvest when it is about 1m high and its colour changes from green to golden. A head of wheat contains 30 to 65 kernels of grain. A combine is used to separate the seeds from the chaff and straw. Harvested grain is stored in granaries, and may require drying or cooling. It is important to maintain a specific moisture level and temperature in grain to ensure that it does not become mouldy.

How is grain used?

Ground grain is called flour. The most common type of flour in Canada is wheat flour. This is used to make bread, pizza dough and pastries. A special kind of hard wheat, called durum wheat, is used

to make pasta. We also eat whole grains when we eat porridge, such as oatmeal. High quality barley is malted (sprouted and dried) and used in making beer.

Grains are also used for animal feed. There are feed mills throughout BC that make livestock feed.

Grains are a good source of nutrients. In wheat, the endosperm contains starch, the bran contains minerals and vitamins, and the embryo contains protein, fat and vitamins.

What happens after the grain leaves the farm?

From the farm, most of the grain is taken to grain elevators where it is graded and sold. Wheat is graded based on the type of wheat, moisture content, foreign materials, and disease or weather damage. The Canadian Wheat Board (CWB) exports wheat and barley. Food grains may be marketed only by the CWB. Feed growers have a number of different marketing options.

Most wheat eaten by people is milled, which means it is ground into flour. Milling involves cleaning the wheat and removing all foreign materials. The wheat is then conditioned, by adding moisture, so that the bran can be removed easily. Finally the wheat is passed through large rollers to grind the grain. For white flour, bran is sifted out. Because bran contains many nutrients, when it is removed, flour loses much of its nutritive value.

In Canada, enrichment of white flour by replacing these nutrients has been required by law since 1953. In the last few years, an increasing amount of wheat is milled into whole-wheat flour rather than white. Barley and oats are usually processed into animal feed. A small amount of barley is malted for use in beer making.

What challenges do grain producers face?

Taking care of the soil is very important for crop growers. Special seeding methods can help prevent erosion of topsoil from wind and water. Some farmers turn the stubble from the previous year back into the ground. The roots help hold the topsoil in place. Wheat roots can penetrate the soil to a depth of 1m. Other farmers use a special seeding technique called minimum, or no-till. They plant the crop into the stubble of last year's crop. This is done with a machine that cuts a slice in the ground, drops in a seed, and covers the seed. This also saves energy and labour because it reduces the number of times that the farmer has to work the field.

Who's involved in producing grain?

- Grain growers
- Seed growers
- Dock workers
- Feedmill workers
- Grain inspectors
- Agronomists
- Brewers
- Pesticide dealers
- Fertilizer dealers
- Flour mill workers
- Ship crew members
- Elevator operators
- Animal nutritionists at feed mills
- Farm implement dealers and mechanics
- Airplane pilots for aerial spraying

Contacts and other resources:

Canadian Grain Commission
Canadian Wheat Board

Grapes and Wine

Interesting Facts

More grapes are grown than any other fruit in the world. Ninety per cent of grapes are used for wine.

What are grapes?

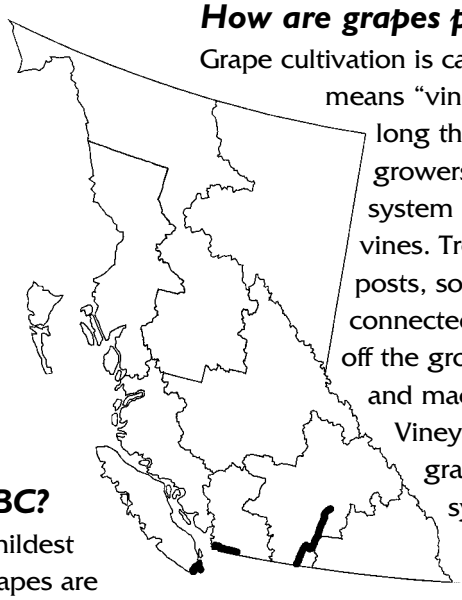
Grapes are a type of fruit. They grow in bunches or clusters on grapevines. They are classified as a type of berry because they grow on vines. Grape clusters can be green, red, pink or purple.

Where are grapes produced in BC?

Grapes are only suited to grow in the mildest parts of Canada. In British Columbia, grapes are grown in the Okanagan Valley, the Similkameen Valley, the Fraser Valley, and on Vancouver Island. The largest producing areas are in the Okanagan Valley, near Oliver/Osoyoos, Penticton and some in the north Okanagan. Grapes need a warm climate with an annual average temperature above 10°C along with a large amount of sunshine. The single most limiting factor for growing grapes is low fall temperatures that prevent grapes from ripening or damage plants in the vineyards. In the Okanagan Valley grapevines need to be irrigated. The valley receives less than 30mm of annual precipitation as a result of being in the rain shadow of mountains. Coastal rains are forced up the Cascade Mountains and dry out before reaching the valley.

How many grapes do we produce?

In 2012, BC produced about 25,000 tonnes of wine grapes. Two hundred tonnes were sold as fresh grapes. Production from one year to the next fluctuates with weather variability.



How are grapes produced?

Grape cultivation is called viticulture. "Viti" means "vine" in Latin. Grapes grow on long thin vines. Most commercial growers set up some type of trellis system in fields to support the vines. Trellis systems are a series of posts, sometimes with cross-arms, connected by wires. This keeps grapes off the ground and allows workers and machines easy access to fields. Vineyards are rows and rows of grapevines trained on trellis systems.

A grapevine takes 5 years to produce at full capacity, (3.5 to 4.0kg per vine). Vines are pruned to limit growth, so that vines reach maturity quickly. Grape clusters form in spring and are harvested in fall. Grapes are picked by hand or by machine. Table grape and fresh grape clusters are individually picked by twisting the stem by hand, or by cutting them off with a knife or with pruning shears. A machine that shakes the clusters off the grapevines can also harvest wine grapes.

How are grapes used?

Ninety per cent of grapes grown worldwide are used in wine. Wine grapes are green and red. Grapes are also eaten fresh. Purple and white grapes are crushed to make juice. Jams and jellies are made from juice and pulp. Fruit leather is made from skin and pulp. Grapeseed oil is made from seeds. This oil is used for cosmetics and cooking.

What happens after the grapes leave the farm?

After harvest, table grapes are sent directly to market. Wine grapes are picked, placed in bins and sent to a winery. At the winery, the grapes are crushed. For white wine, the skins and seeds are removed. The juice is put into containers to ferment. This fermentation process, which creates alcohol and carbon dioxide, takes 10 to 30 days or more, depending on the type of wine that is produced. The wine is then "racked"(put into casks or barrels to age) and then bottled and sold.

What challenges do grape producers face?

Early grape growers tried to import European varieties to grow in North America. These vines struggled in the cold winters, and suffered from the various diseases and insects. New varieties have

Nutritional Facts

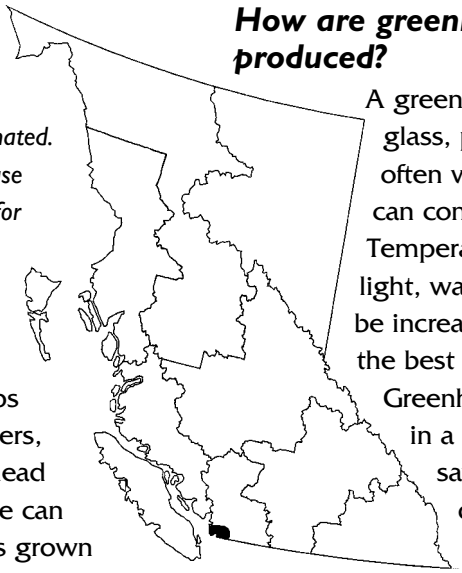
Serving Size: 1/2 cup grapes (138g)	
Calories	90
Total Fat	1g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	24g
Dietary Fibre	1g
Sugars	23g
Protein	1g
Vitamin A	2%
Vitamin C	25%
Iron	2%
Calcium	2%
Calories from Fat	10
Daily Value•	
Total Fat	2%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	8%
Dietary Fibre	4%

•Per cent Daily Values are based on a 2,000-calorie diet.

Greenhouse Vegetables

Interesting Facts

Many greenhouse tomato growers place hives of bumblebees in the greenhouse to ensure that the tomatoes are properly pollinated. Bumblebees are ideally suited for this because they seek out each flower at its best stage for pollen setting.



What are greenhouse vegetables?

The main greenhouse vegetable crops in BC are tomatoes, sweet bell peppers, long English cucumbers and butter head lettuce. Crops grown in a greenhouse can yield 15—20 times as much as crops grown in a field.

Where are greenhouse vegetables produced in BC?

96% of the greenhouses are located in the Lower Fraser Valley with the balance on Vancouver Island, in the Kamloops/Okanagan areas and in the northern regions. Approximately 285 ha are producing greenhouse vegetables.

How many greenhouse vegetables do we produce?

Annually, BC produces about 59.9 million kg of tomatoes, 33.3 million kg of peppers, 38.1 million kg of cucumbers, and 2.2 million kg of lettuce.

How are greenhouse vegetables produced?

A greenhouse is a building covered in glass, plastic or fibreglass. The producer, often with the help of computers, can control most growing conditions. Temperature, ventilation, humidity, light, water and carbon dioxide can all be increased or decreased to produce the best possible growing environment. Greenhouse growers often grow plants in a medium, such as rockwool or sawdust. This minimizes weed and disease problems. Nutrients are given to plants hydroponically (through the water supply). It is important to ensure that flowers are pollinated in a greenhouse. Greenhouse owners use electric vibrators or air blasts, or place bumblebee hives right in the greenhouse to make sure that pollination occurs.

Tomato seeds are planted in rockwool plugs. These plugs are quite light and provide oxygen to the roots of a plant, even when well watered. As tomatoes grow they are transplanted, fertilized, pruned to 1 or 2 main vines and trained to grow up a piece of twine. It takes 72 days for a tomato flower to develop into a mature fruit. In the summer, due to better light and temperature conditions, this process can take as few as 45 days. Harvest begins 5 to 7 weeks after the fruit has set, just before the tomatoes start to turn colour. Tomatoes need to be picked carefully so they are not bruised. Bruised tomatoes have a shorter shelf life.

It is possible to grow 1—4 crops of greenhouse cucumbers a year. Cucumbers are very sensitive

to environmental factors so care must be taken at all stages of growth. Seeds are planted in plugs, transplanted very carefully to protect their fragile roots, fertilized and watered. A mature cucumber plant can use 4 to 5L of water per day. Excess leaf growth is pruned to encourage fruits to form. Cucumber vines are trained to grow up support wires. Cucumber harvest starts in 2 to 3 weeks.

Sweet bell peppers are also planted into rockwool plugs, transplanted and pruned to maximize fruit production. The fruit will ripen 7 to 11 weeks after the fruit forms (depending on the time of year). Peppers are harvested when the fruit is at 85% of full colour.

How are greenhouse vegetables used?

Greenhouse vegetables look similar to vegetables grown in the field. Because they are grown in more controlled conditions they are often larger and more uniform in size, shape, colour and have been exposed to little or no pesticides. Vegetables are an excellent source of vitamins, minerals and fibre. For example, a red sweet pepper contains 3 times the vitamin C that an orange contains.

What happens after greenhouse vegetables leave the farm?

Most greenhouse products are centrally graded. This means growers pick the products in the morning and then ship them to a warehouse where they are graded, packaged and shipped to consumers in all parts of Canada and the United States. In fact, 75% of all greenhouse vegetable produce leaves the province for other destinations.

What challenges do greenhouse vegetable producers face?

Greenhouse growers realize that consumers are demanding vegetables grown with minimal pesticide use. As an alternative to pesticide use, greenhouse growers have been using "biological predator" (good bugs) to eat "pests" (bad bugs) for the past 15 years. For example: aphids, small green insects that feed on leaf sap, are a pest of most home gardens and greenhouses. Ladybugs are a natural predator of these pests, so growers release adult lady bugs in their greenhouse to reduce the harmful aphid populations to manageable levels.

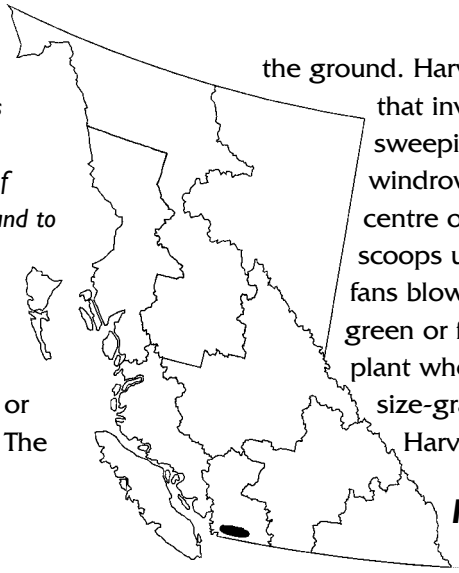
Who's involved in producing greenhouse vegetables?

- Greenhouse owners and managers
- Greenhouse workers
- Plant product inspectors
- Packaging machine operators
- Truckers or transporters
- Vegetable wholesalers
- Retail store employees

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Greenhouse Growers' Association

Hazelnuts



Interesting Facts

Turkey is the main producer of hazelnuts in the world, but the nuts they produce have very small kernels. The main area of production in North America is Oregon, and to a much lesser extent, Washington State and BC.

What are hazelnuts?

A hazelnut is a small, brown, oval or round nut about 2cm in diameter. The edible part of the nut is the seed.

Where are hazelnuts produced in BC?

Nut farms are located in the eastern Fraser Valley, mainly around Chilliwack and Agassiz. However, wild hazelnuts, which are much smaller than the domestic varieties, can be found growing throughout most of BC.

How many hazelnuts do we produce?

Hazelnuts are the only nut crop produced commercially in BC. About 530,000kg are produced annually, on about 360 hectares. Production is expected to increase over the next decade as newer plantings come into full production.

How are hazelnuts produced?

Hazelnuts are produced on short, multi-stemmed trees. In orchards they are planted about 7m apart. Each nut tree will live 75 to 100 years. A mature hazelnut tree should produce 8 to 10kg of nuts per tree. Hazelnuts grow in clusters of 1 to 6 nuts. A shell and a husk cover each nut. A husk is a leafy covering that encases the nut. When a nut is ripe, the husk releases the nut and it drops to the ground. Harvesting is a mechanical operation that involves two main steps starting with sweeping and/or blowing the nuts into windrows, or long continuous piles, in the centre of the aisles. Next, a second machine scoops up the windrow of nuts and large fans blow out leaves or other debris. The green or fresh nuts are taken to a processing plant where they are washed, dried and size-graded in preparation for marketing. Harvesting is usually done in October.

How are hazelnuts used?

Most hazelnuts are sold "in shell" for the consumer to crack. However, smaller-sized nuts are often "cracked out," the kernels sold for packaged mixed nut blends. In recent years, there has been a move towards developing new markets, like chopped nuts for use in home and commercial baking, chocolate making, pressing for oil and making hazelnut butter.

What happens after the hazelnuts leave the farm?

Processing begins immediately to preserve nut quality and to make the product available for the Christmas market, the main market for in-shell nuts. Over 95% of the product is washed, dried and marketed by a commercial nut processor. Some nuts are sold directly to the consumer from the farm, primarily on a U-pick basis. For storage, they should be dried to about 10% moisture content and then stored in a cool dry location. When hazelnuts are cracked, the kernels weigh 40 to 45% of the initial weight. The remainder is shell weight. Kernels will develop a roasted flavour if they are exposed to a temperature warmer than 32°C.

What challenges do hazelnut producers face?

The crop is one of low economic returns, due mainly to high land costs, the length of time for the trees to bear a crop (harvesting usually begins about 3 or 4 years after planting, but full production is usually not reached until about 10 to 12 years of age), and a relatively low income of about $5000/ha at maturity. For these reasons, most hazelnut growers choose not to be dependent upon hazelnuts as their primary source of income.

Who's involved in producing hazelnuts?

- Hazelnut growers
- Nut orchard workers
- Commercial nut processors
- Truckers/transporters
- Wholesalers
- Retailers

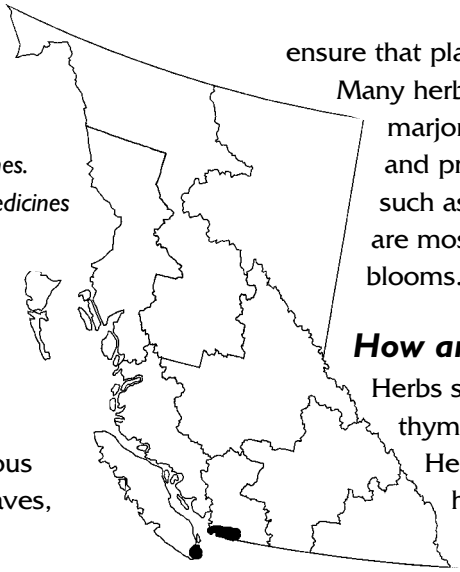
Contacts and other resources:

BC Ministry of Agriculture and Food
British Columbia Hazelnut Growers' Association

Nutritional Facts

For all types of nuts, a 100 gram serving has 550 to 700 calories and contains protein, phosphorus and potassium.

Herbs



Interesting Facts

Herbs have a rich history dating back to ancient civilizations. In earlier times, herbs were the main source of medicines. Even today, many of our drugs and medicines are derived from herbal sources.

What are herbs?

Herbs are plants used for culinary, cosmetic, medicinal, decorative or fragrance-emitting purposes. Different parts of various herb plants are used, such as leaves, seeds, stems and roots.

Where are herbs produced in BC?

Herbs are grown commercially in the Lower Mainland, Vancouver Island and throughout the Interior.

How many herbs do we produce?

Herbs are a minor contributor to agriculture in BC. Fresh market herbs, however, are considered valuable crops when compared to other vegetable commodities. It is estimated that the fresh herb market is valued in excess of $1 million. The BC natural health products industry is estimated at $1.5 billion a year. Interestingly BC processors import the majority of their raw materials from the US and overseas brokers while BC producers export the majority of their products to the US.

How are herbs produced?

Some herbs are perennials and thus grow year after year. Other herbs are annuals or biennials and have to be started from seed each year. Herb growers prepare the ground for the herbs, and must ensure that plants receive optimum conditions.

Many herbs, such as thyme, sage, oregano and marjoram, are native to Mediterranean areas and prefer dry, hot conditions. Other herbs, such as mint, prefer lots of moisture. Leaves are most aromatic just before the plant blooms. This is the best time to harvest herbs.

How are herbs used?

Herbs such as basil, oregano, rosemary or thyme, are used as condiments in cooking. Herbs such as mint, lemon balm or anise hyssop can be steeped and used as teas. These can be bought fresh or dried. With some herbs, such as dill, coriander and anise, the seeds are dried and used as flavouring. Most of the commercial herb production in BC is processed for the medicinal, botanical and essential oil markets. Potted plants are also significant contributors.

What happens after herbs leave the farm?

Most of the commercial herb production in BC is for the processed market, but some herbs are sold fresh. Herbs are dried in a commercial dryer that uses a forced air furnace and a ventilation system to rapidly dry herbs. Drying can also be done in darkened open-air sheds with ample air circulation but this is not usually done on a commercial scale.

The grower often does the marketing, since there is no established distribution system. Restaurants, specialty or health food stores and catalogues are possible sales outlets for fresh herbs but medicinal botanicals are shipped to processors throughout North America. Some growers also choose to have their products custom processed and distributed to retailers under house or farm label. There are also

some brokers or traders who will wholesale herbs and herbal products to stores or restaurants.

What challenges do herb producers face?

Market distribution channels, efficiency and quality assurance issues throughout the processing chain are significant challenges.

Year-round supply, consistent quality and limited shelf life are the major concerns to fresh herb growers. Some growers are assessing greenhouse production for year-round supply; some import product for distribution under their own label. Consistent quality is maintained on some farms by strict quality control in the field and the packinghouse. Shelf life is being extended with innovative packaging (e.g. plastic tubs, inert gases in containers, etc.).

Who's involved in producing herbs?

- Herb growers
- Brokers/traders
- Packers
- Dehydrators
- Spice millers
- Restaurant owners
- Store clerks
- Processors
- Essential oil distillers
- Nutraceutical processors
- Flavour brokers
- Cosmetic companies

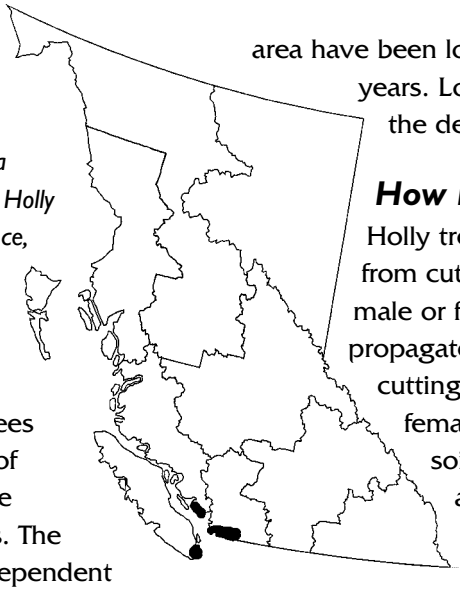
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Herb Growers' Association

Holly

Interesting Facts

The name holly is associated with folklore and religion. An ancient Druid ritual was to bring sprigs of holly indoors to provide a winter refuge for woodland spirits. English Holly (Ilex aquifolium) is native to England, France, Germany, southern Europe, northern Africa, and Asia.



What is holly?

Holly is an evergreen shrub. The trees are dioecious meaning it is a type of plant on which the male and female flowers are borne on separate trees. The female or berry-bearing trees are dependent upon the male trees for fertilization. Male trees produce clusters of flowers but no berries. The females are preferred, since only they carry the bright red berries. The leaves can have spiny or smooth edges, and can be green or variegated with green or yellow and white. The small branches are commonly used for decoration at Christmas.

The wide range in berry colour (white, yellow, gold, orange, red and black) leaf shape, colour and variegation as well as plant habit make holly an excellent landscape plant.

Where is holly produced in BC?

Holly is principally grown on Vancouver Island, with a few small plantings still remaining on the Sunshine Coast and in the Fraser Valley.

How much holly do we produce?

All of Canada's production is in BC. It is a declining industry with fewer than 10 commercial producers cutting less than 50,000kg per year. Many of the older, established plantings in the greater Victoria area have been lost to urbanization over the past 30 years. Low returns have also contributed to the decline of the holly industry.

How is holly produced?

Holly trees can be started from seeds or from cuttings. Since the trees are either male or female, all commercial trees are propagated vegetatively, usually from cuttings to ensure an optimum number of female trees. They grow in well-drained soil. Holly trees flower in the spring and the females produce berries in autumn. All the harvesting is done by hand beginning in November. Normally, no further pruning is required.

How is holly used?

Holly sprigs and branches are used as decoration, traditionally at Christmas, or as specimen trees in landscaping.

The wood of holly is hard, creamy white, and takes a smooth, glassy polish. It has been used for making small articles such as whip-handles, walking-sticks and small dishes. When it is stained black, holly wood is very similar to ebony in appearance and has been used for inlay work.

What happens after the holly leaves the farm?

Once the holly sprigs are cut they are taken to a central shed where they are dipped in a solution containing a copper fungicide to prevent disease and a plant hormone, to prevent leaf drop. After being dried, these branches are packed into plastic bags inside cartons and shipped to their destinations.

Most BC holly ends up in major centres in Eastern Canada.

What challenges do holly producers face?

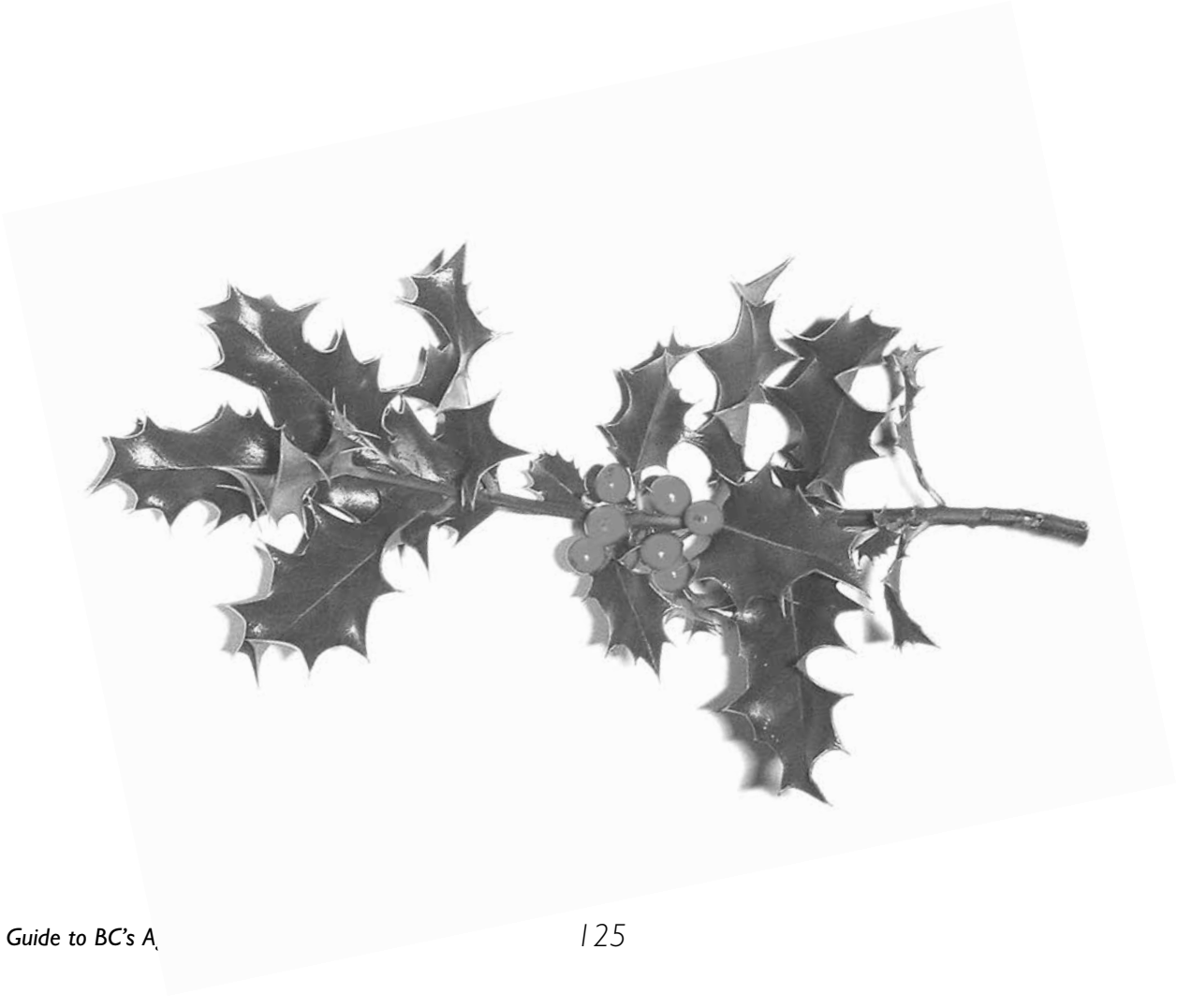
Insect and disease problems can make the holly crop unmarketable. A leaf miner, which tunnels in the leaf in the early spring, must be controlled. A serious fungal disease (twig blight) sometimes costs growers entire crops. In addition, the demand for holly has declined as plastic replicas have become popular.

Who's involved in producing holly?

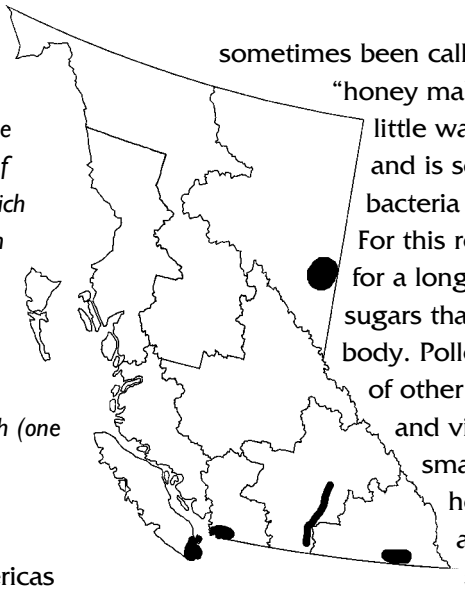
In all cases, the growers are responsible for their own packing, shipping and sales.

Contacts and other resources:

BC Ministry of Agriculture and Lands



Honey



Interesting Facts

People have collected honey for thousands of years. Until the Middle Ages, honey was the primary sweetener in food. For every pound of honey produced, bees fly over 50,000km, which is more than once around the earth. Although worker bees live for only 6—8 weeks in the summer, a queen (bee) can live as long as 5 years. "Honeymoon" got its name from centuries back when the newly wed couple would drink honey wine during the first month (one moon period) after the wedding.

Honeybees

Honeybees are not native to the Americas but were introduced with the arrival of European settlers. Beekeeping is also called apiculture, named after "apis", the Latin word for bee. It takes about one year to establish a bee colony. A queen bee may mate with up to 10 drone bees shortly after she is born. The sperm she receives is stored in a special organ, where it is kept viable for the rest of her life. Once a queen has returned to the colony from her mating flights, she will start laying eggs within days. A queen can lay as many as 2000 eggs a day. The fully-grown bee will emerge from the brood cell after 21 days. A beekeeper will manage the colony in the spring with the aim to increase the population. When the major bloom occurs there will be enough foraging bees around to take advantage of the "nectar flow" in June, July and August.

What is honey?

The Latin name of the honeybee is Apis mellifera, which means "honey gatherer". This is actually not true because bees collect nectar and make honey from it. For that reason, honeybees have sometimes been called Apis mellifica, meaning "honey maker". Honey contains very little water (up to a maximum 20%) and is so dry that microbes such as bacteria and molds can not grow in it. For this reason, honey can be stored for a long time. Honey contains simple sugars that are readily absorbed by the body. Pollen grains and a wide variety of other substances such as minerals and vitamins are also present in small quantities. Differences in honey colour, aroma and taste are determined by the flower source, not by the honeybees. In BC, there are many different types of honeys because there are many different nectar sources.

Where is honey produced in BC?

Honeybee colonies are managed in many parts of the province. Compared with other western Canadian provinces, BC's beekeeping industry is small with annual sales of only $10.6 million. The highest honey yields are obtained in the Peace region where colonies can produce as much as 150kg in one summer. The average honey yield for the province is about 43.2kg per colony. By far, the most important function of honeybees in agriculture is crop pollination. Without pollination of flowers, fruit or seeds will not form. The tree fruits in the Okanagan and berry crops in the Fraser Valley are very dependent on an abundance of bees when these crops are in bloom. Fruit growers rent large numbers of colonies from beekeepers. It is has been estimated that honeybees are responsible for the production of $160 million worth of crops in BC every year.

In the US with its milder climates, this figure is estimated at over $14 billion per year.

How much honey do we produce?

There are about 2,100 registered beekeepers in the province operating some 43,000 hives that produce, on average, 1.8 million kg of honey each year. Most beekeepers are small and part-time. The majority of honey is produced by 300 commercial beekeepers. Other products from honeybees include beeswax, pollen, royal jelly and propolis. Beeswax is widely used for candle making while pollen is used as a nutritional food supplement. A small number of beekeepers breed bees and queens which are sold to other beekeepers in areas where it is difficult or costly to over-winter bees.

How is honey used?

Honey is used as a spread on toast and bread or as a sweetener in many baked products, including breakfast cereals. Since BC offers many different nectar sources, its honeys can be almost as clear as water (from Fireweed) or as dark as molasses (from Buckwheat). Color does not reflect honey quality or purity. Dark colored honeys have mostly stronger flavors and aromas, which are often appreciated by European consumers. In North America, lighter colored and flavored honeys are often preferred. Honey is regarded as a fancy sweetener and an alternative to sugar. In many parts of the world however, honey is regarded as a precious food to which medicinal properties are attributed. Honey is known to be an excellent dressing for scrapes and wounds. Manuka honey from New Zealand has been known as an effective medicine against ulcers. In the tropics, honey is widely used in beer making and in some African cultures, it is an important part of dowry payments.

Beekeepers collect pollen for feeding bees at a later date. Pollen is also sold in health food and drug stores as a diet supplement and used in special animal feeds. While honey is the carbohydrate food source for bees and provides energy, pollen is the principal protein food source for bees and essential for the development of bee brood (larvae).

Propolis is a resinous material that bees collect from flower buds. Propolis is used as a putty to close off holes in the nest or to embalm foreign materials that cannot be physically removed. Propolis has strong anti-microbial and hydrophobic (water repellent) properties and thus has been widely used in homeopathic preparations and by the pharmaceutical and cosmetics industries. Even the ancient Egyptians recognized the unique characteristics of propolis and, together with beeswax, used it extensively in mummification.

How is honey produced?

On each foraging trip, honeybees visit many flowers. Nectar is collected but pollen is also transferred from flower to flower. The result is pollination and then fertilization of the flower. Some floral sources may only offer pollen to bees, or only nectar or both.

Nectar is a sugar solution containing as much as 80% water. After the bee has collected the nectar, she will store it in a special organ called the honey sac. Enzymes in the honey sac change large complex sugars in nectar, called polysaccharides, into simple sugars called monosaccharides. Upon return to the hive, the foraging bee will transfer the partially converted nectar to house bees, which will then remove most of the water through evaporation. When the water content of the honey has been reduced to less than 20%, the bees will store the honey in the cells of the wax comb.

What happens after honey leaves the farm?

Honey is extracted from the honey comb frames by removing the small wax caps covering each cell. The frames are then placed in a drum-like machine called an extractor, which works like a centrifuge. Extractors may hold anywhere from two frames at a time to more than 120. The frames are spun around rapidly causing the liquid honey to flow out of the cells. The honey is then collected and pumped through filters before being stored in a tank. Small honey containers are then filled and brought to market.

What challenges does the producer face?

Because bees keep a nice warm nest (approx. 33° to 35°C) many microbes and other organisms are attracted. Some of these are pests or cause disease in honeybees. Most of the diseases caused by microbes are controllable through the careful application of medication. More recently, two types of parasitic mites have become a serious problem in honeybee colonies. The tracheal mite is microscopic and lives inside the honeybee's breathing tubes. The mite may not kill the bee outright but weakens it severely, causing early death. The tracheal mite has become manageable after the development of tracheal mite resistant bees. The Varroa mite is much larger, lives on the outside of the bee, and parasitizes bee brood and adult honeybees. This mite is very destructive and can kill a whole colony in only a few months. Varroa mites are controlled through Integrated Pest Management (IPM) which involves the carefully timed use of management and chemical controls. Until now, no honeybees have been developed that are resistant to Varroa mites.

Who's involved in the beekeeping industry?

- Beekeepers
- Bee breeders
- Orchardists and berry growers
- Honey processors and graders
- Beekeeping equipment suppliers
- Manufacturers of jars and other containers
- Trucker/transporters
- Entomologists (apiculturists)

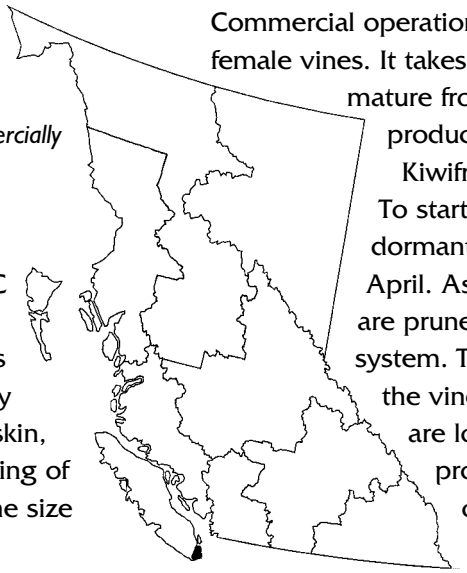
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Honey Producers' Association

Kiwifruit

Interesting Facts

The consumer demand for kiwifruit has increased dramatically since 1985. BC is the only place in Canada where kiwifruit is commercially grown.



What is kiwifruit?

Kiwifruit was recently introduced to BC from New Zealand. The plant is native to the mountainsides of China and was introduced to New Zealand in the early 1900s. Kiwifruit has thin brown fuzzy skin, emerald green flesh and a distinctive ring of small, black edible seeds. It is about the size of a chicken egg.

Where is kiwifruit produced in BC?

In BC, kiwifruit is grown almost exclusively on the southern tip of Vancouver Island, where temperatures are moderate. Kiwifruit plants can be killed by cold weather, even when they are dormant in the winter. Tests in BC and New Zealand show that a kiwifruit plant is killed if the temperature drops below -18°C.

How much kiwifruit do we produce?

Before 1987, there was no commercial kiwifruit production in BC. In 1987, BC produced 18,000kg, and now produces 450,000kg of kiwifruit a year. This equals about 6,500,000 kiwifruit.

How is kiwifruit produced?

Kiwifruit grows on vines. The vines are dioecious, which means a vine is either male or female. Both male and female vines have to be grown. The female vines produce fruit, but male blossoms are needed to cross-pollinate female blossoms. Commercial operations plant 1 male vine to 6 to 8 female vines. It takes 7 years for a kiwifruit vine to mature from seed. A mature vine can produce over 1000 kiwifruit a year. Kiwifruit require well-drained soil. To start a commercial operation, dormant vines are planted in March or April. As the vines start to grow they are pruned and trained along a trellis system. The trellis must be strong since the vines are very heavy when they are loaded with fruit. New growth produces the fruit. Blossoming occurs in mid-June, for about 10 days. Kiwifruit need to be irrigated during summer months. A mature vine can use up to 20L of water a day. Kiwifruit are harvested by hand during October and early November. Ripeness is determined by using a hand held instrument (a refractometer) that determines the level of sugar in the fruit. When average sugar levels read 7% the entire field is harvested. At this point the fruit is still hard and too sour to eat, but it is picked, graded, packed into cartons and kept in cold storage. Further ripening occurs naturally.

How is kiwifruit used?

Most kiwifruit grown in BC is eaten fresh. A single kiwifruit has more vitamin C than a similar sized orange, more potassium than a banana, and more fibre than a cup of bran flakes. Kiwifruit can also be used in jams and jellies, and fresh kiwifruit, applied to meat, works very well as a meat tenderizer.

Nutritional Facts

Serving Size: 2 medium kiwifruit (148g)	
Calories	100
Total Fat	1g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	24g
Dietary Fibre	4g
Sugars	16g
Protein	2g
Vitamin A	2%
Vitamin C	240%
Iron	4%
Calcium	6%
Calories from Fat	10
Daily Value•	
Total Fat	2%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	8%
Dietary Fibre	16%

•Per cent Daily Values are based on a 2,000-calorie diet.

What happens after kiwifruit leave the farm?

After kiwifruit is harvested, it is put into cold storage where it will continue to ripen. As a fresh fruit product it is removed from storage, ripened and sold to consumers.

What challenges do kiwifruit producers face?

Since kiwifruit needs a long season to ripen, producers are looking for ways to control damage done by extreme weather conditions. Young plants are wrapped to keep them warm in the winter. All plantings have overhead sprinklers. Coating the vines with ice can prevent frost damage.

Who's involved in producing kiwifruit?

- Kiwifruit growers
- Pickers
- Packers
- Cold storage operators
- Farm advisors
- Supply companies

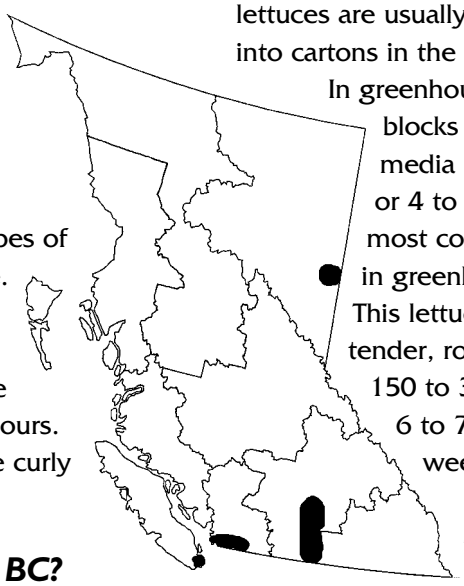
Contacts and other resources:

BC Ministry of Agriculture and Lands
Kiwifruit Association of British Columbia

Lettuce

Interesting Facts

Christopher Columbus introduced lettuce to the Americas.



What is lettuce?

Lettuce consists of the leaves of the lettuce plant. There are two main types of lettuce: head lettuce and leaf lettuce. The most familiar type of head lettuce is iceberg, but others include butterhead and romaine. Leaf lettuce comes in a variety of shapes and colours. Some have broad leaves, some have curly leaves, others have reddish leaves.

Where is lettuce produced in BC?

Lettuce is commercially grown in the Lower Mainland and on Vancouver Island.

How much lettuce do we produce?

BC produces 5 million kilograms annually, which is about 10% of the lettuce grown in Canada. Sixty per cent of the lettuce grown is head lettuce; 40% is leaf lettuce.

How is lettuce produced?

Lettuce can be grown in fields or in greenhouses. Field lettuce is seeded in a greenhouse and planted outside as soon as the ground can be prepared. Some producers seed the lettuce directly into the field. Leaf lettuce is harvested about 50 days after planting, while head lettuce takes closer to 75 days. Lettuce is planted in consecutive plantings so that there is a supply available throughout the growing season. That is, as soon as the first planting has germinated and emerged, the second planting is seeded. Head lettuce is harvested with the help of a mechanical harvesting aid, whereas the leaf lettuces are usually harvested by hand and packed into cartons in the field.

In greenhouses, lettuce is seeded in peat blocks and transplanted to the final media in 2 to 3 weeks in the summer or 4 to 6 weeks in the winter. The most common kind of lettuce grown in greenhouses is butterhead lettuce. This lettuce is noted for its loose head of tender, round green leaves. It is mature at 150 to 300g a head. The full cycle takes 6 to 7 weeks in summer and 10 to 12 weeks in winter.

How is lettuce used?

Lettuce is used fresh in salads, in sandwiches and as a garnish.

What happens after lettuce leaves the farm?

Producers take the lettuce to a co-op storage facility where it is cooled immediately. It can then be held in cold storage or shipped directly to wholesale distributors in reefer (cooled) trucks. A general rule of thumb is that lettuce loses one day of shelf life each hour it is not cooled after harvest. Expected shelf life for lettuce is approximately two weeks. Sales are in BC and across the prairies.

What challenges do lettuce producers face?

Lettuce is quite sensitive to most herbicides. Growers must find alternative ways to control weed growth during the growing season. Crop rotation, thorough clean-up of weeds before seeding, the use of only well-rotted weed-free manure, and tilling between rows are all practices that can limit weed growth and labour-intensive hand weeding. Growers

also face intense competition from California and Washington.

Who's involved in producing lettuce?

- Lettuce growers
- Field workers
- Agri-business suppliers
- IPM companies
- Financiers

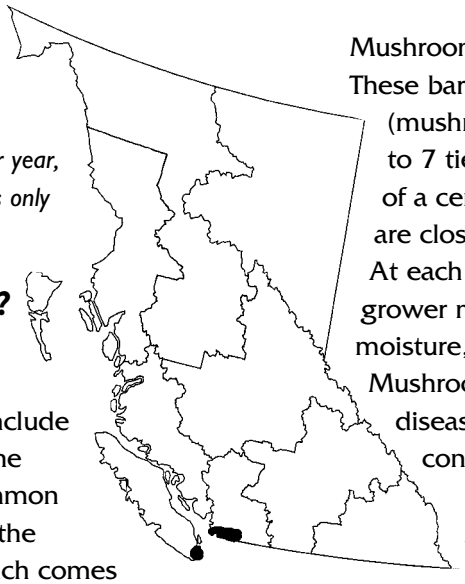
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Vegetable Marketing Commission

Mushrooms

Interesting Facts

British Columbians are the champion mushroom eaters of Canada. They eat about 3kg per year, while the average Canadian eats only 2kg per year.



What are mushrooms?

Mushrooms are a fungus. Some of the more exotic mushrooms grown in BC include shitake, oyster and wild pine mushrooms. The most common mushroom grown in BC is the "Agaricus" mushroom, which comes in 2 colours; white (button) and brown (crimini and portabella).

Where are mushrooms produced in BC?

The majority of mushrooms are grown in the Lower Mainland, with some production on Vancouver Island and in the Interior.

How many mushrooms do we produce?

Mushrooms are one of BC's most valuable edible horticultural crops, with total sales estimated at $101 million (2013). BC supplies the majority of mushrooms consumed in the province. There are approximately 60 producers who grow a total of 28 million kg annually. About 90% of this production is for the fresh market with the remainder going for processing. BC supplies about 30% of the total Canadian mushroom production. Markets include Canada, the United States and Japan.

How are mushrooms produced?

Mushrooms are grown in special insulated barns. These barns consist of a number of growing rooms (mushroom growing rooms often consist of 5 to 7 tiers of wooden frame beds on either side of a central aisle) in which growing conditions are closely controlled, often by a computer. At each stage of the mushroom cycle, the grower must carefully control the temperature, moisture, humidity, light levels and air movement. Mushrooms can be affected with a variety of diseases and insect pests which growers must control.

Mushrooms are grown in compost. Mushroom compost is a mixture of hay, straw, horse manure, gypsum and any one of several nitrogen containing compounds. Top quality compost at a reasonable price is one of the key factors in the economic production of mushrooms.

Compost needs to be sterilized to destroy any pests and disease-producing organisms. The compost is put into the wooden frame beds. It heats naturally, but steam is generally used to raise the air temperature to 60°C.

Mushrooms reproduce by means of spores mixed into the compost. This is called spawning. Ten to 14 days after spawning, a greyish-white growth called mycelium will appear on the surface. A casing soil, mainly peat and ground limestone, is put on the white growth. This soil is kept damp. Mushrooms first appear as "pins" and then grow larger.

Mushrooms are ready for harvest approximately 3 to 4 weeks after casing. Subsequent "flushes" of mushrooms appear every 6 to 8 days. Growers will typically harvest only the first 3 flushes. The whole cycle takes 9 to 10 weeks.

At the time of picking, mushrooms are graded

and then put in cold storage with a constant level of humidity.

The weed free spent mushroom compost is often sold to nurseries or garden suppliers for soil enrichment.

How are mushrooms used?

Mushrooms can be in a natural or processed form. Processed specialty and value-added forms of mushrooms include canned, in sauces or marinated. Mushrooms are a popular topping on pizza, in salads, in hamburgers, as a side dish with steaks, in soups or in stews. They are a good source of iron, potassium and the B vitamins.

What happens after mushrooms leave the farm?

In BC, most mushrooms are picked by hand, packed into boxes, cooled, and shipped to market within 24 hours. Mushrooms are sold through marketing agencies to wholesale and retail buyers. Mushrooms should be refrigerated in paper bags. They will keep for about 5 days after being harvested.

What challenges do mushroom producers face?

Mushroom producers are challenged with maintaining economic viability in the face of the high cost of producing compost in an environmentally responsible manner; increasing food safety and quality assurance standards; and increasing energy costs.

Who's involved in producing mushrooms?

- Composters
- Mushroom producers
- Truckers
- Marketing agencies
- Financial institutions
- Importers/exporters

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Mushroom Industry Development Council

Nutritional Facts

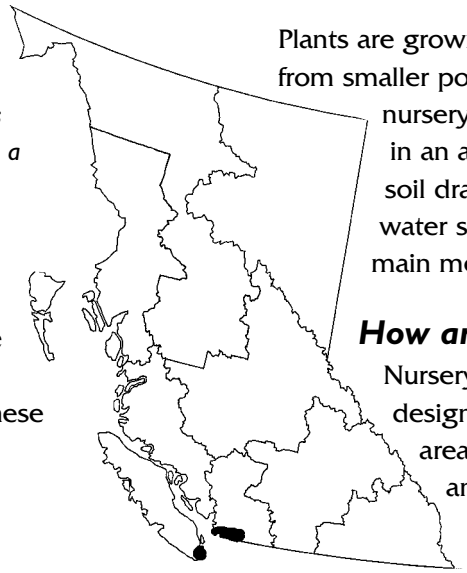
Serving Size: 5 medium mushrooms (84g)	
Calories	20
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	3g
Dietary Fibre	1g
Sugars	0g
Protein	3g
Vitamin A	0%
Vitamin C	2%
Iron	2%
Calcium	0%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	1%
Dietary Fibre	4%

•Per cent Daily Values are based on a 2,000-calorie diet.

Nursery Crops

Interesting Facts

Nursery growers can get 3 to 8 times the production from a hectare of plants grown in containers than they can from a hectare of plants grown in the ground.



What are nursery crops?

Nursery crops are ornamental plants that are used to landscape private yards and public places. Nurseries propagate and grow these plants to a marketable size.

Where are nursery crops produced in BC?

Most nurseries are in the Lower Mainland, Fraser Valley, Vancouver Island and Okanagan.

How many nursery crops do we produce?

The nursery industry accounts for over 6% of provincial farm receipts. The industry consists of a few large producers who grow a diverse range of plants suitable for markets throughout North America. Demand for nursery stock is influenced by the state of the economy and the weather. Nurseries produce approximately $179 million in gross revenue. British Columbia is the second-largest producer of nursery stock in Canada, contributing approximately 31% to national sales.

How are nursery crops produced?

Most nursery plants are started in a greenhouse. After 1 year of growing in controlled conditions, the plants are moved into an outdoor container bed or are transplanted into a field. Trees are grown for 3 to 8 years before they are dug up and sold.

Plants are grown in containers and are repotted from smaller pots to larger ones as they grow. A nursery field is at least 4 hectares in size, in an area without frost pockets, has good soil drainage and has access to a good water supply. Container production is the main method of production in BC.

How are nursery crops used?

Nursery stock is used by landscapers to design green spaces in private and public areas. Many individuals use specific trees and shrubs for landscaping around their homes. Nurseries supply evergreen or deciduous trees and shrubs, roses, any one of dozens of perennials, fruit trees, berry bushes, vines, ground covers or broadleaf evergreens.

Some nurseries grow forest seedlings that are planted in logged areas. Nurseries also grow fruit trees that are used to replenish orchards.

What happens after the nursery crop leaves the farm?

Some nurseries sell directly from the farm; others sell to wholesale producers, landscapers, retail garden centres or directly to the public. Over half of the sales are to landscape contractors and retail garden centres. Nursery stock is transported almost exclusively by transport truck. More than 40% of the nursery stock grown in BC is sold to clients outside the province.

What challenges do nursery crop producers face?

Nurseries grow a wide variety of plants, and many diseases and harmful insects can affect these

plants. In an effort to control these problems, and to minimize the use of chemical controls, many nursery operators use Integrated Pest Management (IPM). Growers that use IPM choose stock that is disease and pest resistant. They also use biological controls and only apply chemicals when absolutely necessary. The high price and shortage of land in BC is another major challenge facing BC producers. Because growers can get many times the production from a hectare of containers than they can from a hectare of field stock, more container production will occur in the future.

Who's involved in producing nursery crops?

- Nursery owners and managers
- Nursery employees
- Garden centre employees
- Horticultural supply companies and consultants
- Government researchers and extension personnel

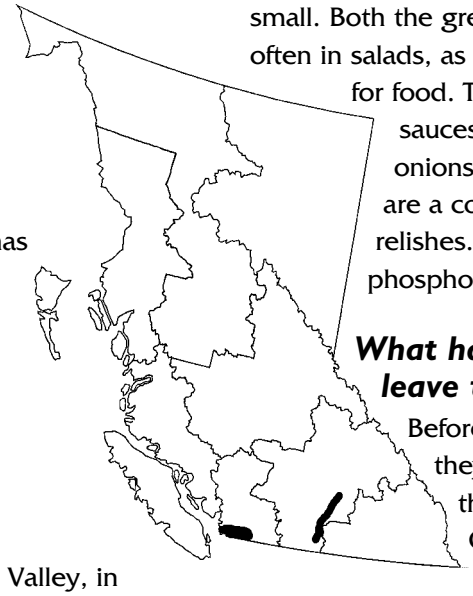
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Landscape and Nursery Association

Onions

Interesting Facts

The distinctive, pungent flavour of onions comes from sulphurous, volatile oils contained in the vegetable.



What are onions?

Onions are edible bulbs. The bulb has hollow overlapping leaves that thicken into 1.5 to 5mm fleshy layers. Bulb skins are yellow, white or red. Onions range in size from 6 to 14cm in diameter.

Where are onions produced in BC?

Onions are grown in the Okanagan Valley, in the Lower Mainland and on Vancouver Island.

How many onions do we produce?

BC grows about 3.5 million kilograms of onions annually. This is 2% of all onions grown in Canada.

How are onions produced?

Seeds are planted in mid-August, for over-winter onions, or in mid-April for spring-seeded onions. Seeding is done with a precision seeder. Seed is drilled to a depth a 2.5cm. A precision seeder allows seeds to be planted a uniform distance apart. This helps produce an even-sized crop with higher yield and fewer culls. Onions are shallow-rooted and need a constant supply of moisture. Once onions reach their mature size, they are harvested by machine.

How are onions used?

Most onions are grown to a mature size before they are used. Others are harvested when they are small. Both the green tops and small bulbs are used often in salads, as a condiment, or as a seasoning for food. They are added to soup, stews, sauces and stir-fries. Some of the milder onions are eaten raw in salads. Onions are a common addition to pickles and relishes. Onions contain vitamin A and C, phosphorus and potassium.

What happens after the onions leave the farm?

Before onions can be put into storage they must be cured. Curing allows the onion to dry thoroughly. Onions are lifted by a mechanical digger and left to dry on the field. This usually takes 2 weeks depending on the weather. An onion is cured when its neck is tight and its outer scales are dry. Cured onions are harvested into bulk trucks and transferred to temperature and humidity-controlled storage. It is important not to store other fruits or vegetables near onions or they may pick up the characteristic smell of onions.

What challenges do onion producers face?

Onion production is subject to a wide array of pests. One of the pests that onion growers face is the onion maggot. Small, grayish flies lay eggs at the base of the plants. These larvae, called maggots, feed in the onion bulbs. They can kill young plants or cause misshapen bulbs and rot. Growers use Integrated Pest Management (IPM) to control this pest. If onion maggots are suspected, growers can monitor the population numbers of flies using white sticky traps. Only when a certain threshold level

is reached, as determined through monitoring, do growers use insecticide spray. Growers also face the challenge of competition from the large production areas in the western United States and the Prairies.

Who's involved in producing onions?

- Onion farmers
- Agri-business suppliers (pesticides, fertilizer, fuel)
- Financiers
- Seed suppliers
- Farm machinery suppliers
- Field workers
- Retailers
- Truck drivers/transporters

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Vegetable Marketing Commission

Nutritional Facts

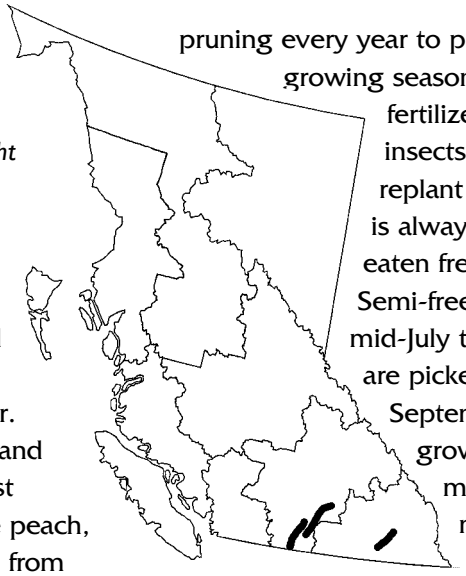
Serving Size: 1 medium onion (148g)	
Calories	60
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	5mg
Total Carbohydrate	14g
Dietary Fibre	3g
Sugars	9g
Protein	2g
Vitamin A	0%
Vitamin C	20%
Iron	2%
Calcium	4%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	5%
Dietary Fibre	12%

•Per cent Daily Values are based on a 2,000-calorie diet.

Peaches

Interesting Facts

The peach is the most widely grown of the stone fruits. It is native to China and was introduced to Europe 2000 years ago. Spanish explorers brought peaches to North America in the 1500s.



What are peaches?

Peaches are a round, juicy, stone fruit with a fuzzy cream or yellow skin flushed with red. A stone fruit has a single seed, called a pit, enclosed in a protective layer. The edible flesh is the pulp that protects and nurtures the young seed. One of the most popular types of peaches is the freestone peach, so named since the flesh easily separates from the pit. The most widely-grown variety in BC is redhaven.

Where are peaches produced in BC?

Peaches are grown in the southern areas of the Okanagan, Similkameen and Kootenay Valley. Peach trees are susceptible to winter damage.

How many peaches do we produce?

BC produces 5.2 million kilograms of peaches, about 18% of the Canadian production. Ninety per cent of the peaches grown are sold as fresh peaches; 10% are sold for processing. There are about 600 peach growers in BC.

How are peaches produced?

Peaches are grown on trees that stand 3 to 5m tall. These trees will begin to bear fruit at 2 to 3 years old and will live only 10 to 20 years. Peaches are different from other tree fruits in that most of the fruit is grown on one-year-old wood as opposed to long lived spurs. Consequently, peaches need heavy pruning every year to produce good crops. Each growing season, the orchardist must prune, fertilize; control weed growth; insects and disease; water and replant trees to ensure the orchard is always healthy. Peaches to be eaten fresh are harvested by hand. Semi-freestones are picked from mid-July to mid-August. Freestones are picked from August to early September. Most growers try to grow and harvest peaches with a minimum of hired labour. Care must be taken to prevent bruising and marking.

How are peaches used?

Peaches can be eaten fresh; blended for fruit drinks or sauces; used for jams, pie filling, flavouring or baby food; frozen; dried or canned. Peaches are 89% water and high in vitamin A.

What happens after the peaches leave the farm?

Peaches have a storage life of approximately 3 weeks. Peaches are sold directly from the orchards to consumers or to independent buyers. Part of the peach crop is sent to packinghouses where the peaches are graded, packed and shipped to retailers throughout Canada. Some of the peach crop is canned by commercial processors.

What challenges do peach producers face?

Production and consumption of peaches in North America is stable. Plant breeders are producing new varieties with bright red skin colour and

clear yellow flesh. There is a revived interest in white-fleshed peaches, particularly for potential sale in the Far East.

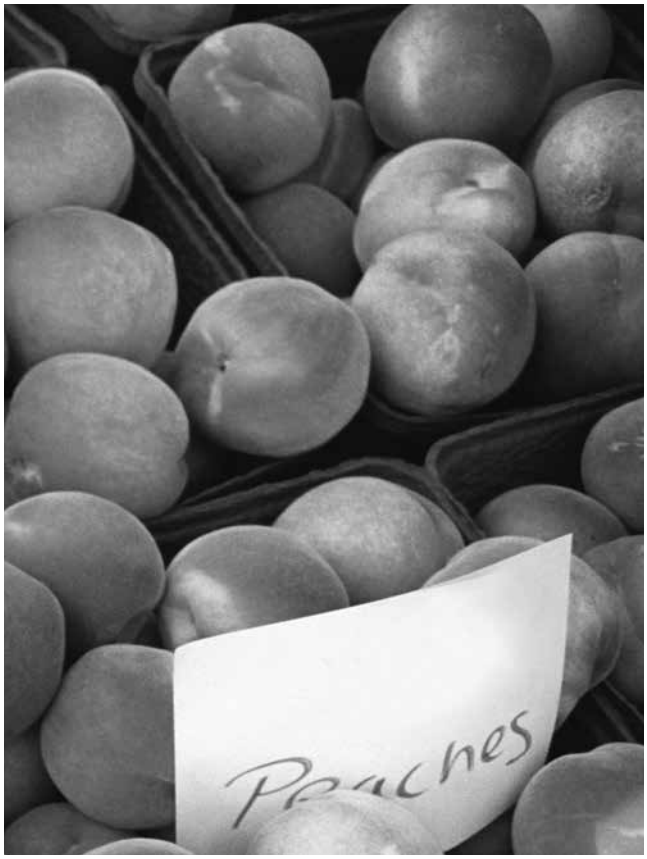
There are also two pests that producers combat: the peach tree borer and the peach twig borer.

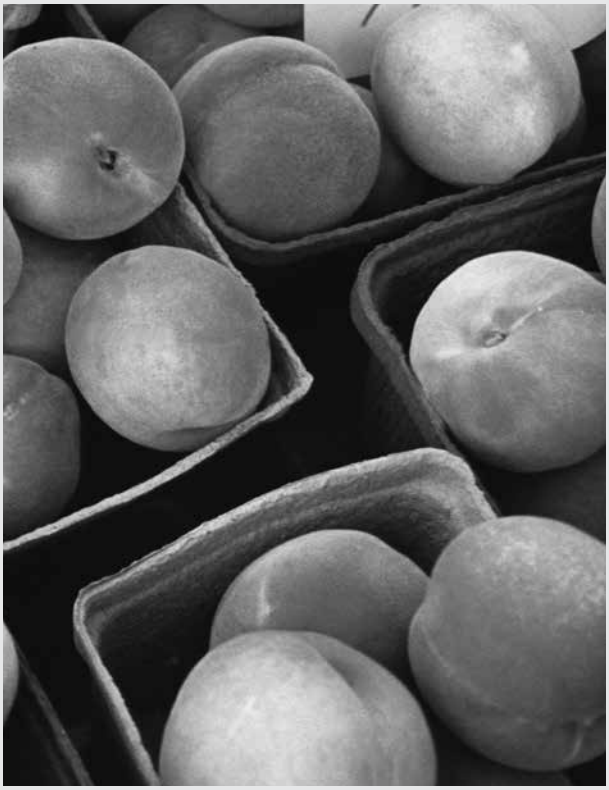
Who's involved in producing peaches?

- Orchard owners
- Orchard workers
- Fruit stand owners and operators
- Fresh fruit wholesalers
- Packinghouse workers
- Fruit processors

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Fruit Growers' Association

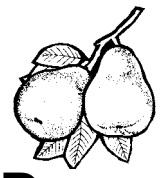




Nutritional Facts

Serving Size: 1 medium peach (98g)	
Calories	40
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	10g
Dietary Fibre	2g
Sugars	9g
Protein	1g
Vitamin A	0%
Vitamin C	2%
Iron	10%
Calcium	0%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	3%
Dietary Fibre	8%

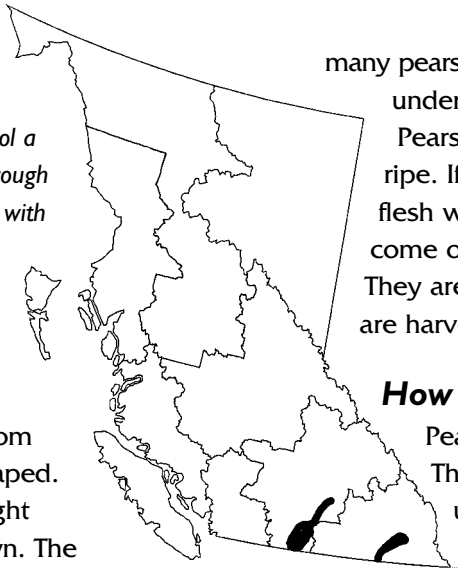
•Per cent Daily Values are based on a 2,000-calorie diet.



Pears

Interesting Facts

In the last three years, pear growers have learned how to control a pear insect pest, called "psylla" through a soft-chemical program combined with the introduction of predators that prey on the psylla and other insects such as mites.



What are pears?

A pear is a fruit that varies from apple shaped to teardrop shaped. its skin colour ranges from light yellow through red and brown. The flesh of pears is juicy and in some varieties, such as Asian pears, almost translucent.

Where are pears produced in BC?

Pears are grown in the Okanagan, Similkameen region and Kootenay Valley. Pears grow best on heavy soils. This limits the areas that they can be grown.

How many pears do we produce?

BC produces 9.7 million kilograms of pears annually. The main pear varieties grown are bartlett and anjou. Other varieties include bosc, red and asian pears.

How are pears produced?

It takes 10 to 15 years from the time a rootstock is planted to the time pears can be picked. Producers are experimenting with higher-density plantings that will reduce the time from planting to harvest. Two varieties must be planted in an orchard for cross-pollination. Pears need to be thinned soon after fruit forms, as pear trees often try to support too many pears. If excess fruit is not thinned, pears will be undersized.

Pears are picked by hand before they are fully ripe. If pears are left to ripen on the tree, the flesh will turn brown and soft. Bartlett pears come on the market near the end of August. They are a clear yellow when ripe. Anjou pears are harvested in mid to late September.

How are pears used?

Pears can be eaten fresh, plain or in salads. They can be baked, pickled, canned, frozen, used in baby food, or processed into jams, jellies and pies. A pear is 83% water, a good source of B vitamins, and contains some vitamin C, phosphorus and iodine.

What happens after the pears leave the farm?

Once harvested, pears are packed and stored in cold storage in a packinghouse. In order for anjou pears to mature properly before being eaten, they require 1 to 2 months in cold storage. Anjou pears are one variety of pears that is able to be stored through the winter. When pears are brought home from the supermarket they can be ripened by placing them in a bag. A pear is ripe and ready when it yields to gentle thumb pressure at the stem end–usually in 7—10 days. When ripe, a pear is sweet, buttery, tender and filled with juice. Put only ripe pears in the refrigerator, as cold storage is what keeps them from ripening. Pears are one of the few fruits that do not ripen well on the tree.

What challenges do pear producers face?

The main challenge pear producers face is the need to increase consumer demand. This can be done with increased advertising and promotion and by introducing new varieties.

Who's involved in producing pears?

- Pear orchard owners
- Orchard workers to prune, thin and harvest
- Fruit processors
- Packinghouse employees
- Fruit inspectors

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Fruit Growers' Association

Nutritional Facts

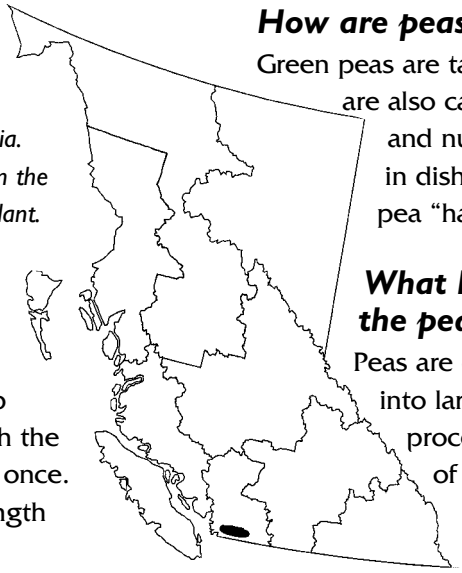
Serving Size: 1 medium pear (166g)	
Calories	100
Total Fat	1g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	25g
Dietary Fibre	4g
Sugars	17g
Protein	1g
Vitamin A	0%
Vitamin C	10%
Iron	0%
Calcium	2%
Calories from Fat	10
Daily Value•	
Total Fat	2%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	8%
Dietary Fibre	16%

•Per cent Daily Values are based on a 2,000-calorie diet.

Peas

Interesting Facts

Peas are legume. Like most legume, peas have special nodules (bumps) on their roots that contain a nitrogen-fixing bacteria. These bacteria can take the nitrogen from the air in the soil and make it useful to the plant.



What are peas?

Green peas are seeds. They are eaten after they've been removed from the pod. Snow peas and snap peas have tender pods so that both the pod and young seeds are eaten at once. Peas grow on vines that vary in length from 30cm to 3m.

Where are peas produced in BC?

Peas are produced in the Lower Mainland.

How many peas do we produce?

BC produces 1.8 million kg of peas per year. Over 95% of these are shelled and processed. The rest are sold fresh to wholesale outlets or at roadside stands. Peas are cool weather plants, which are well suited to the soils and climate of the Fraser Valley.

How are peas produced?

Peas are planted in fields. The fields are ploughed, harrowed and packed to ensure a smooth and even seedbed. Seeds are planted in the spring with a grain drill. Peas for freezing and canning are harvested by machines that cut the plants and shell and clean the peas. Tenderometers, machines that measure the tenderness of the pea, help to ensure that peas are harvested at peak quality. Peas are sown at successive intervals to ensure a continuous crop of fresh peas throughout the season.

How are peas used?

Green peas are tastiest when eaten fresh. They are also canned and frozen. Peas are sweet and nutritious. Dried field peas are used in dishes like pea soup. The left over pea "hay" is used as feed for cattle.

What happens after the peas leave the farm?

Peas are conveyed from the harvester into large trucks. These are hauled to processing plants within 2 hours or less of picking.

What challenges do pea producers face?

Because sugars in peas are so rapidly converted to starch, special procedures are used to ensure rapid delivery to processing plants. Processors manage the harvesting and packing operation. Because peas have to be picked within a day, or sometimes less, of reaching maturity, scheduling is very important. Processor fieldworkers manage the planting operation using a combination of planting dates and varieties of peas that mature at different rates. This will ensure that the peas mature in sequence and that not too many mature at once.

Diseases, such as pea wilt, can be a problem. Breeders have developed resistant varieties. Other diseases, such as a fungi that causes root rot, are controlled by following a careful crop rotation schedule to prevent buildup of the fungi in the soil.

Who's involved in producing peas?

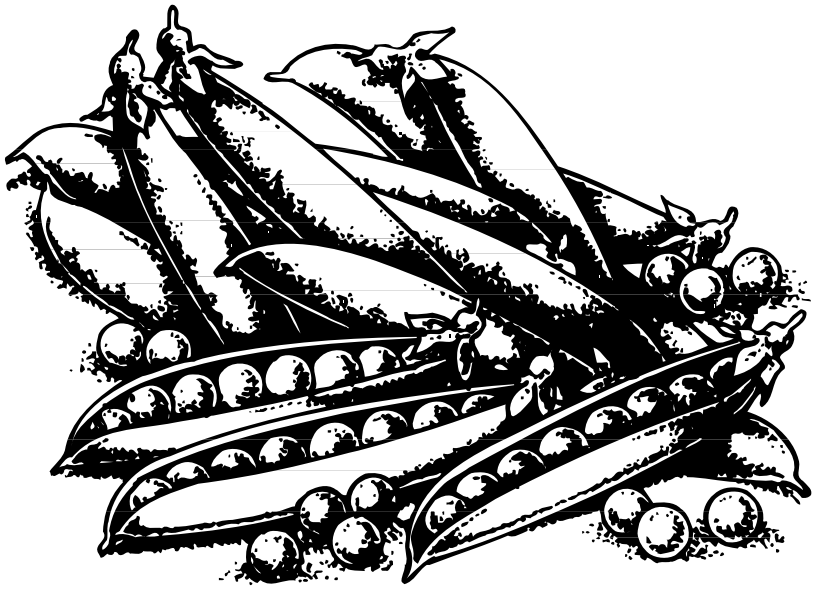
- Field workers
- Equipment dealers
- Fuel companies
- Seed companies
- Processor fieldworkers
- Truckers
- Farm owners and managers
- Fertilizer companies
- Canning and freezing companies and their employees
- Producers of freezer containers and tin cans

Contacts and other resources:

BC Ministry of Agriculture and Lands

Nutritional Facts

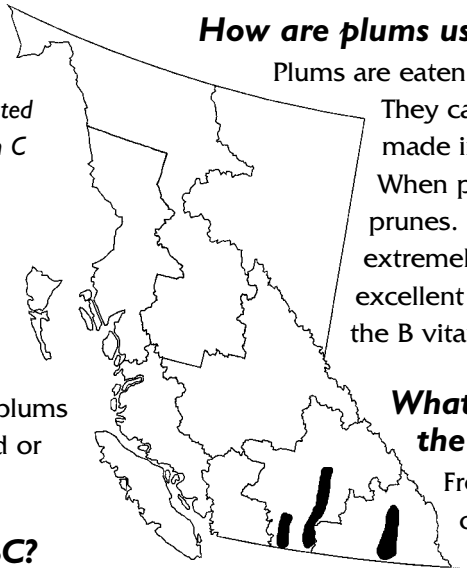
A 100 gram serving of cooked peas has 70 calories and 30% of the recommended daily allowance of vitamin C. The same size serving of snow peas has 42 calories and 100% of the recommended daily allowance of vitamin C.



Plums

Interesting Facts

Prune plums were introduced to North America by the Pilgrims. They have been cultivated for thousands of years. They are high in vitamin C and aid in digestion.



What are plums?

A plum is a smooth-skinned, elliptical, heart-shaped, oblong or round fruit with a flat seed. Prune plums are dark blue in colour with yellow flesh. Other plums have red, golden or black skins with red or yellow flesh.

Where are plums produced in BC?

Plums are grown in the Okanagan, Similkameen and Kootenay Valleys.

How many plums do we produce?

BC produces 1.1 million kilograms of plums, which is about 42% of the Canadian prune plum crop.

How are plums produced?

Once plum trees are in production, the orchardist each year must prune, fertilize, and keep weeds, insects and diseases under control. In dry areas, trees have to be irrigated. On an annual basis, trees are monitored to ensure they are still producing well. If they aren't, the orchardist will remove them and plant new trees. Prune plums are ripe and ready for drying when the pit separates easily from the flesh. This occurs in the fall. This easy separation is one reason why prune plums are used for prunes.

How are plums used?

Plums are eaten fresh, plain or in fruit salads. They can be canned, stewed or made into jellies, jams and syrups. When plums are dried they are called prunes. Fresh plums are 79% water, extremely high in fruit sugar, and an excellent source of vitamin A as well as the B vitamins.

What happens after the plums leave the farm?

Fresh plums are refrigerated or cooled immediately after harvest. Bins of plums are taken directly to the packinghouse, where the plums are graded, packed into boxes and placed in cold storage. They are usually shipped to market in refrigerated trucks within a few days of being picked.

What challenges do plum producers face?

Because fruit trees are subject to damage due to several different kinds of pests, growers must know if pests are present and if their numbers are likely to cause damage to crops. To do this, they use different detection methods. One such method is the use of pheromone traps. Pheromones are chemical substances secreted by insects to sexually attract others of their species. Pheromone traps will attract and trap insects. By examining and counting the insects caught, growers can assess which, if any, control measures need to be applied.

Nutritional Facts

Serving Size: 2 medium plums (132g)	
Calories	80
Total Fat	1g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	19g
Dietary Fibre	2g
Sugars	10g
Protein	1g
Vitamin A	6%
Vitamin C	20%
Iron	0%
Calcium	0%
Calories from Fat	10
Daily Value•	
Total Fat	2%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	6%
Dietary Fibre	8%

•Per cent Daily Values are based on a 2,000-calorie diet.

Who's involved in producing plums?

- Orchard owners
- Orchard workers
- Apiarists
- Fruit processors
- Equipment suppliers
- Transporters
- Grading and packinghouse managers
- Packinghouse employees
- Cardboard box manufacturers and suppliers
- Horticulturists, entomologists, pathologists and physiologists

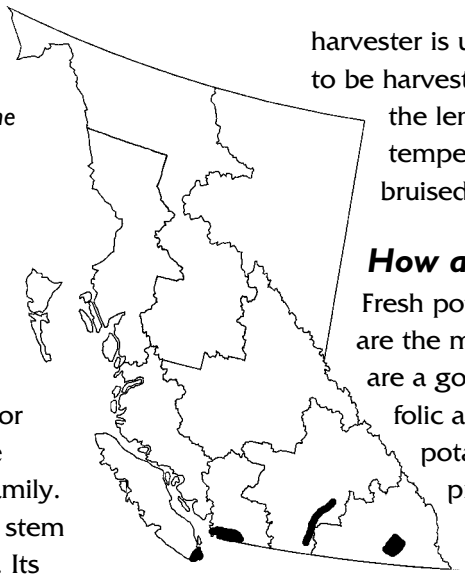
Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Fruit Growers' Association

Potatoes

Interesting Facts

Potatoes are grown more than any other vegetable both in BC and in the rest of the world.



What are potatoes?

Potatoes are edible tubers. A tuber is a thick rounded part of an underground stem. Potatoes have white, brown, purple or red skins and white or golden flesh. Potato plants are members of the Nightshade family. Above ground the plant has a stem and coarse, dark green leaves. Its flowers range from white to purple.

Where are potatoes produced in BC?

Potatoes are grown in the Lower Mainland, on Vancouver Island, and in the Okanagan and Kootenay regions.

How many potatoes do we produce?

BC annually produces 78,000 tonnes of potatoes, valued at $43 million.

How are potatoes produced?

The potato tuber has external buds or "eyes" that can sprout into new plants. These eyes, rather than seeds, are planted to grow a new crop. When the plants are 20 to 30cm high they must be "hilled". Hilling is done by covering the base of the plant with soil. This prevents the potatoes from being exposed to light, causing them to turn green and produce a poison called solanin. The berries formed on potato plants are poisonous as well as the green tubers. When the tops die back, a mechanical harvester is used to dig the potatoes. Potatoes need to be harvested at certain temperatures to maximize the length of time they can be stored. If the temperature is too cool, the potatoes are bruised during harvest.

How are potatoes used?

Fresh potatoes, potato chips and French fries are the most common uses for potatoes. They are a good source of potassium, iron, thiamin, folic acid and vitamin C. The nutritive value of potatoes is reduced the more the potato is processed. Thus, French fries have about one-half as much vitamin C as boiled or mashed potatoes. Potatoes are about 80% water.

What happens after the potatoes leave the farm?

Potatoes are harvested from early summer through late fall. Those harvested during the summer and early fall are trucked to on-farm packing operations or processors. At these facilities, the potatoes are washed, graded, packaged and distributed to buyers throughout BC and western Canada.

Potatoes harvested in the fall are put into storage. Loads are removed and distributed to wholesalers and processors as the market demands. Approximately 70% of the crop is sold for consumption as fresh market potatoes and 30% is grown as seed potatoes for local and export markets.

What challenges do potato producers face?

Potato late blight and insect pests are a concern for potato growers. A new program is in place to map the occurrence of plant diseases and insect infestation in a geographic information system. By knowing where disease and insect problems are likely to occur, Integrated Pest Management (IPM) can be utilized more efficiently.

- Field workers
- Seed potato producers
- Employees in processing plants
- Agri-business suppliers
- Financiers

Contacts and other resources:

BC Ministry of Agriculture and Lands
BC Vegetable Marketing Commission
BC Potato and Vegetable Growers Association
BC Certified Seed Potato Growers Association

Who's involved in producing potatoes?

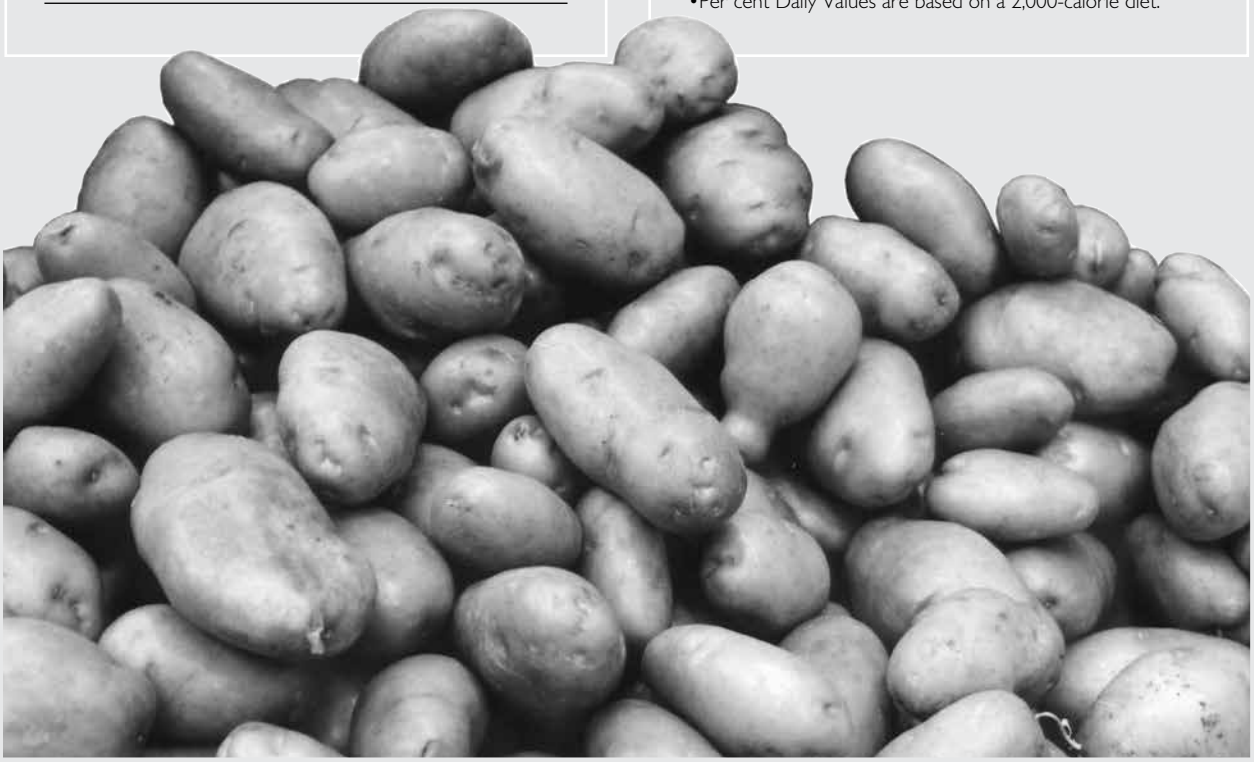
- Potato growers

Nutritional Facts

Serving Size: 1 medium potato (148g)

Calories	100
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	26g
Dietary Fibre	3g
Sugars	3g
Protein	4g
Vitamin A	0%
Vitamin C	45%
Iron	6%
Calcium	2%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	9%
Dietary Fibre	2%

•Per cent Daily Values are based on a 2,000-calorie diet.



Pumpkins

Interesting Facts

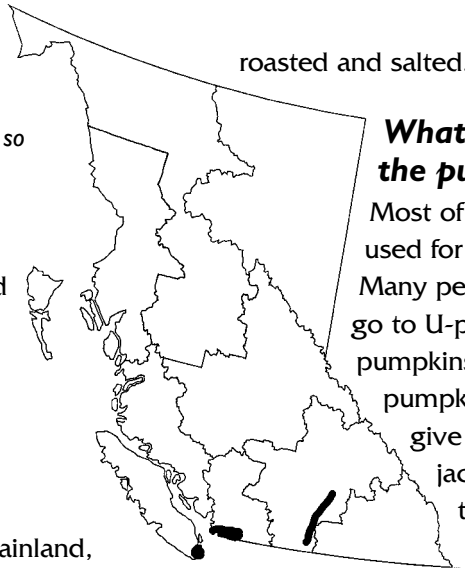
Pumpkins originated in southeast North America. Pumpkins have been cultivated for so long that a wild form no longer exists.

What are pumpkins?

A pumpkin is a member of the gourd family. Its fruit is large and round with a thick orange rind and edible flesh. Pumpkins grow on long vines.

Where are pumpkins produced in BC?

Pumpkins are grown in the Lower Mainland, on Vancouver Island and in the Okanagan Valley.



How many pumpkins do we produce?

BC produces over 10.5 million kilograms of pumpkins and squash per year. These are valued at over
$2.9 million.

How are pumpkins produced?

Pumpkin plants like warm weather. Pumpkins are usually seeded in late May after all danger of frost has passed. They can take 100 to 120 days to mature. Pumpkins are harvested in the late summer and fall. Once pumpkins turn colour, they will continue to do so after being picked. Pumpkins are windrowed in the fields after their leaves have died down, picked up by hand, and loaded onto trucks or wagons.

How are pumpkins used?

Whole pumpkins are hollowed out and used as jack-o-lanterns at Hallowe'en. Processed pumpkin is used for pie filling. Seeds are edible and can be roasted and salted.

What happens after the pumpkins leave the farm?

Most of the pumpkins grown in BC are used for Hallowe'en jack-o-lanterns. Many people, especially school children, go to U-pick farms to select their own pumpkins. Many farms hold special pumpkin tours and festivals. They even give lessons in carving and painting jack-o-lanterns. Farmers also sell their pumpkins in large bins at stores and roadside stands. Pumpkins, if fully ripened and cured, keep very well at room temperature.

What challenges do pumpkin producers face?

The greatest challenge pumpkin growers face is the controlling of weeds. Growers in BC are fortunate because there are very few pests and diseases that affect pumpkins so they rarely need to be sprayed with insecticides or fungicides.

Who's involved in producing pumpkins?

- Pumpkin growers
- Farm workers
- Seed suppliers

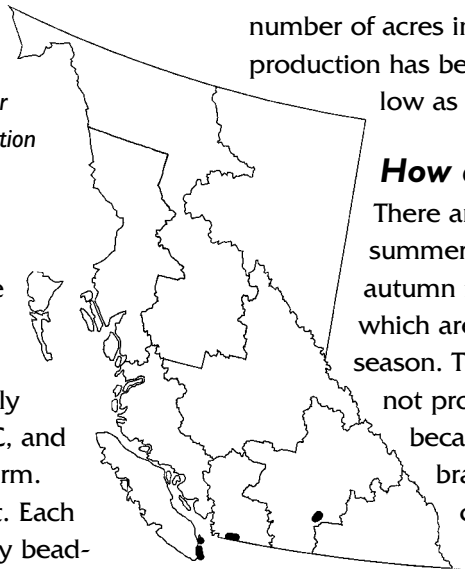
Contacts and other resources:

BC Ministry of Agriculture and Lands
Direct Marketing Associations/Guides in the Okanagan, Fraser Valley and on Vancouver Island

Raspberries

Interesting Facts

Although raspberries can be grown in all of the Canadian provinces, BC accounts for almost the entire annual Canadian production of raspberries.



What are raspberries?

Raspberries are perennial bush-type plants that produce fruit on woody stems or canes. The fruit may be red, yellow, black or purple, but only the red raspberry is important in BC, and worldwide it is the most popular form.

Raspberries are an aggregate fruit. Each raspberry is a fruit cluster with many bead-like fruits, called drupelets, clustered around a core or receptacle. Each drupelet contains one seed and a well-developed berry generally has 100 to 120 seeds. When the berry is picked the receptacle remains on the bush. The berry resembles a hollow cone.

Where are raspberries produced in BC?

Crops can be grown in all but the harshest parts of the province, but over 75% of raspberries are produced near Abbotsford in the central Fraser Valley. Minor centres of production are in the Salmon Arm/North Okanagan area and southeastern Vancouver Island. Raspberries are a temperate-season crop. Production will decrease as a result of very cold winters or hot summers. The plants are very susceptible to root rot, and thus, are usually grown on sandy, well-drained soils.

How many raspberries do we produce?

BC's raspberry production varies depending on winter injury, growing conditions, markets and the number of acres in production. In the last few years, production has been as high as 11 million kg and as low as 10 million kg.

How are raspberries produced?

There are two types of red raspberries: summer fruiting, the most common, and autumn fruiting, or primocane fruiting, which are used to extend the fresh market season. The summer fruiting raspberries do not produce fruit in the first year. This is because the fruit is produced on side branches or laterals on one-year-old canes.

Raspberries are planted in rows about 3 metres apart and in solid hedges. The canes must be supported and held in an upright position by a trellis system of posts and wires. The flowers appear in May. Bumblebees and other wild bees pollinate the flowers. If there are insufficient wild pollinators, hives of honeybees are rented and moved into the fields to ensure good pollination. Repeated bee visits produce more and larger berries. About 75% of BC's raspberries are harvested mechanically over a six to eight week period from late June to mid-August. All fresh-market berries, and the remaining berries for processing, are hand picked.

After harvest, or during winter, the canes that produced fruit are cut off at the soil. The new replacement canes that grew from the roots are tied to wires and topped in preparation for the next growing season.

The primocane type of raspberry is one that will also produce fruit on the tips of the new canes (primocanes) each summer. Recent development of improved varieties has resulted in primocane

varieties that will start producing fruit during August and continue until fall rain or frost stops production. This may be as late as the end of October in some years.

How are raspberries used?

Approximately 90% of the raspberries grown are processed and consumed as jam, juice, yogurt flavouring, and whole frozen berries, and about 10% are eaten fresh.

What happens after raspberries leave the farm?

The bulk of the berries are delivered to one of a dozen different processing facilities located in the central Fraser Valley. Here the fruit is vacuumed and washed prior to being inspected, packaged and frozen. BC berries are shipped to eastern Canada or to buyers across the United States for manufacturing into jam, yogurt flavouring or other products. Fresh-market fruit, after cooling, is repackaged and inspected prior to being shipped in refrigerated trucks or in air cargo containers to major markets across Canada and the United States. Some fresh and/or processed raspberries are also sold to overseas markets.

What challenges do raspberry producers face?

Winter injury, root rot and the availability of suitable soil are all major factors limiting local production. Growers face this challenge by gradually concentrating production in the sandy, well-drained soils of the central Fraser Valley. The availability of thousands of people for hand picking the crop was a major constraint in the past, but by the late 1980s the problem was largely solved by the development and refinement of several makes of mechanical harvesting machines.

Who's involved in producing raspberries?

- Raspberry growers
- Field workers
- Pickers
- Processing plant workers
- Truckers
- Marketers
- Farm machinery suppliers
- Fertilizer and pesticide suppliers
- Sugar and packaging materials manufacturers

Contacts and other resources:

BC Ministry of Agriculture and Lands
Raspberry Industry Development Council

Nutritional Facts

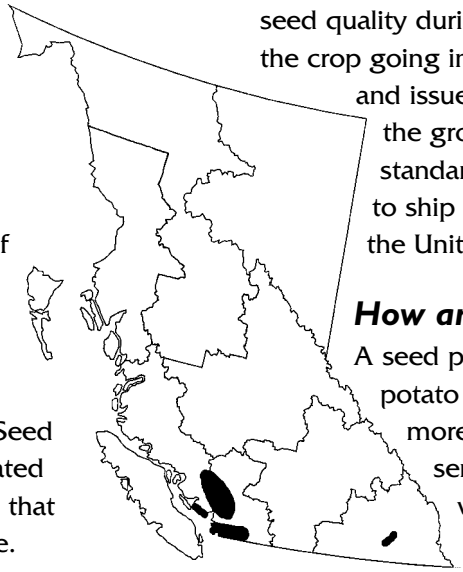
Serving Size: 1 cup raspberries (125g)	
Calories	50
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	17g
Dietary Fibre	8g
Sugars	12g
Protein	1g
Vitamin A	0%
Vitamin C	40%
Iron	2%
Calcium	2%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	6%
Dietary Fibre	9%

•Per cent Daily Values are based on a 2,000-calorie diet.

Seed Potatoes

Interesting Facts

Potatoes grow well in almost every part of this country, even up to and within the Arctic Circle.



What are seed potatoes?

Potatoes grow from eyes–pieces of tuber used to clone the parent plant. Each seed potato can be a small whole potato or a part of a potato, but it must have at least one eye to produce new growth. Seed potatoes are grown under a regulated certification program to make sure that they are as disease-free as possible.

Where are seed potatoes produced in BC?

Seed potatoes are grown in the Pemberton Valley, the Lower Mainland, the Kootenay region, the Okanagan Valley and on Vancouver Island.

How many seed potatoes do we produce?

There are approximately 800 hectares (2,000 acres) of seed potatoes grown in BC, producing 20,000 tonnes of seed potatoes worth about $6 million annually.

How are seed potatoes produced?

Seed pieces are sown into carefully prepared soil with the appropriate amount of fertilizer. The grower carries out pest control and hilling operations, and irrigation is supplied to the crop as necessary. Fields must be inspected to ensure that they meet certification standards. The crop is harvested in the fall and stored in special buildings that maintain seed quality during the winter. Inspectors examine the crop going in and coming out of storage, and issue a phytosanitary certificate to the grower if the crop meets certain standards. This certificate allows growers to ship their product across the border into the United States.

How are seed potatoes used?

A seed potato is a small potato or a larger potato cut into pieces. While cut seed is more widely used, whole seed is less sensitive to tuber decay. Cut pieces weigh about 202g. Consumers can buy seed potatoes for their home gardens, but the majority of seed potatoes are bought by growers of fresh market and processing potatoes.

What happens after the seed potatoes leave the farm?

The seed is removed from storage in the spring and loaded into large bulk trucks that take the seed to its intended markets in western Canada and the Pacific Northwest. BC exports two-thirds of its crop of seed potatoes to the United States.

What challenges do seed potato producers face?

Because potatoes grown in most places in BC can become infected with virus diseases, special precautions have to be taken. The best way to avoid certain viruses and other diseases is to use special potato seed and maintain good management practices. Seed growers use tissue culture plantlets derived from mother tubers that have been tested and found to be free of diseases. This is the start

of the seed multiplication process that eventually results in the availability of certified seed for regular potato growers.

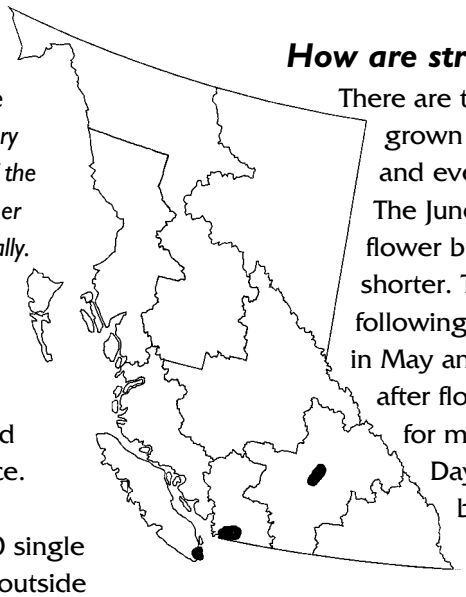
Who's involved in producing seed potatoes?

- Potato growers/farmers
- Field workers
- Field inspectors
- Agri-business suppliers
- Financiers

Contacts and other resources:

BC Ministry of Agriculture and Lands
Agriculture and Agri-Food Canada, Food Production and Inspection Branch
BC Seed Potato Growers' Association

Strawberries



Interesting Facts

Strawberries are a member of the rose family. Cultivation began in 13th century France. Today, strawberries are one of the most popular fruits in the world, and per capita consumption is increasing annually. "Strawberry" is the most popular yogurt flavour in North America.

What are strawberries?

Strawberries are red cone-shaped fruits with a seed-studded surface. Each berry is an aggregate fruit comprised of approximately 100 single seeded fruits. Each seed on the outside of a strawberry is technically a fruit and must be pollinated separately. The red fleshy part we eat is the swollen central part of the flower, or the peduncle, to which the seeds are attached.

Where are strawberries produced in BC?

Strawberries can be grown from the Peace River North East area to southern BC. Most commercial growers are in the Fraser Valley, where the weather is moderated by the Pacific Ocean. There are also centres of commercial production in Salmon Arm/ North Okanagan and on Vancouver Island.

How many strawberries do we produce?

BC contributes one-twelfth of the Canadian production of strawberries. This is 1.5 million kg of strawberries, worth $5.2 million. However, Canada consumes far more strawberries than it produces. The bulk of fresh imports come from California and Mexico, with processed imports originating from California, Poland, Mexico and China.

How are strawberries produced?

There are two main types of strawberries grown in BC–June bearing or short-day, and everbearing or day-neutral varieties. The June bearing varieties initiate their flower buds in autumn, when days become shorter. These buds remain dormant until the following spring when they produce flowers in May and June. The fruit ripen 4 to 6 weeks after flowering and the harvest season lasts, for most varieties, about 3 to 4 weeks. Day-neutral varieties will initiate flower buds at any time during the growing season, regardless of the day length. Thus, they will produce flowers and fruit throughout the growing season.

The most common growing method is the matted row. The plants are transplanted into a field where they produce runners, thereby increasing the plant density and yield. Matted row plantings are generally planted one year and harvested for the following 2 or 3 years.

The use of the hill row system is increasing for growing day-neutral strawberries for the fresh market. In this system the transplants are set out at much higher densities and the runners are removed. Generally, black plastic mulch is used to control weeds. The fruit is kept clean by keeping the plant from contacting the soil.

How are strawberries used?

Fresh frozen strawberries are popular for short cake and other desserts. Jam and yogurt are also very popular uses, with additional uses being sauces, toppings and ice cream flavouring. About 75% of the crop is processed–the rest is sold fresh.

Traditionally, strawberries were mainly eaten

fresh during a relatively short growing season or preserved by freezing or jamming. More recently, fresh strawberries have been available in BC any month of the year due to new varieties and advances made in the growing and shipping of berries both locally and from other areas.

What happens after the strawberry leaves the farm?

Strawberries are harvested (picked) by hand. Strawberries destined for the fresh market are picked with the cap (the small green leaves and stem) attached. On the larger farms, the fruit is rushed to on-farm coolers to remove the field heat. Every hour delay in removing the field heat results in about a one-day loss of shelf life. The fruit is kept cool until it is delivered to customers. On smaller farms the fruit is usually not cooled, and is sold directly to the consumer for immediate use.

Strawberries destined for processing are picked with the caps removed and put in re-usable plastic picking trays or flats. Truckload lots are delivered to processors for grading, washing, inspection and freezing. Strawberries are usually frozen whole, sliced or as puree. Some berries are packed whole and individually quick-frozen for retail use.

Some fruit is packaged in retail-sized containers of up to one kilogram. Berries for the food service industry (bakers, restaurants, caterers, etc.) are packed in up to 13kg containers. Most berries slated for jam, yogurt flavourings and other products are generally preserved in larger containers (up to 180kg) for manufacturing at a later date.

What challenges do strawberry producers face?

BC growers face stiff competition from imported berries. In order for BC growers to retain their existing markets and/or expand their markets, new higher-yielding, hardier varieties for the fresh and processing markets are being developed. New production techniques that will extend the fresh market season and reduce the per unit cost of production are also in the development stage. In order to lead the way in the reduction of the use of pesticides, considerable research and development work has gone into an Integrated Pest Management (IPM) program, which maximizes the use of naturally occurring biological control agents.

Who's involved in producing strawberries?

- Strawberry growers
- Field workers and pickers
- Processing plant workers
- Carton manufacturers
- Sugar producers
- Researchers

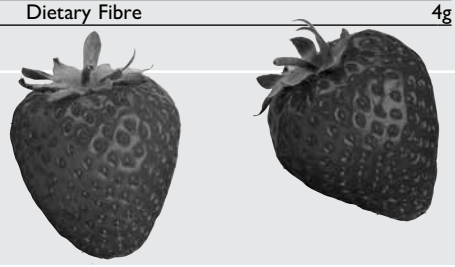
Contacts and other resources:

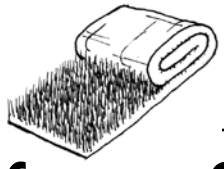
BC Ministry of Agriculture and Lands
Fraser Valley Strawberry Growers' Association

Nutritional Facts

Serving Size: 8 medium strawberries (147g)	
Calories	45
Total Fat	0g
Saturated Fat	0g
Cholesterol	0mg
Sodium	0mg
Total Carbohydrate	12g
Dietary Fibre	4g
Sugars	8g
Protein	1g
Vitamin A	0%
Vitamin C	160%
Iron	4%
Calcium	2%
Calories from Fat	0
Daily Value•	
Total Fat	0%
Saturated Fat	0%
Cholesterol	0%
Sodium	0%
Total Carbohydrate	4%
Dietary Fibre	16%

•Per cent Daily Values are based on a 2,000-calorie diet.

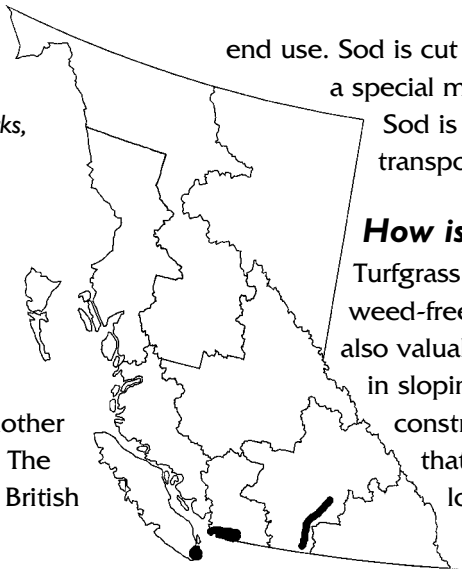




Turfgrass Sod

Interesting Facts

Turfgrass sod is not only used for home lawns, but for green turf on golf courses, parks, roadsides and playing fields.



What is turfgrass sod?

Turfgrass sod is a mature grass cover that is produced in an intensively managed agricultural operation, removed intact with a minimum amount of soil and transplanted in another location to form an instant turf cover. The primary market for sod production in British Columbia is in the housing industry.

Where is turfgrass sod produced in BC?

Two-thirds of the sod in BC is grown in the Lower Mainland, on Vancouver Island and in the Okanagan. In part, this is because sod is used primarily for new housing in those highly populated areas. There are other isolated farms throughout the province.

How much turfgrass sod do we produce?

BC grows about 640 hectares of sod.

How is turfgrass sod produced?

A field is prepared for seeding. This involves ensuring that all perennial weeds and old sod are removed or chemically killed. Organic material, such as sand, sawdust, compost or manure, is sometimes placed on the field to replace soil that was removed in previous harvests. The soil is then worked and fertilizer is applied. A mixture of perennial grasses is seeded and left to grow for about one year. The mixture of seeds used will depend on the desired end use. Sod is cut and rolled by a sod harvester, a special machine used for this purpose. Sod is then placed on pallets, ready for transport to the installation site.

How is turfgrass sod used?

Turfgrass sod is used to create an instant, weed-free turfgrass area or lawn. It is also valuable for control of soil erosion in sloping landscapes and roadside construction areas. It arrives in rolls that are 0.5m wide and 2 to 3m long.

What happens after the turfgrass sod leaves the farm?

To prevent damage sod must be moved quickly after harvest, as it is living plant material. The sod is trucked to the site on pallets where it is unrolled and fitted into the prepared area. Sod is used to create soccer fields, parks, golf courses or lawns for homes.

What challenges do turfgrass sod producers face?

One challenge that sod growers face is that the demand for sod is dependent on the housing market. The acreage to be planted can dramatically affect the price of turfgrass sod. Some producers have diversified into sand-based sod, which is used for sports fields and golf courses.

Who's involved in producing

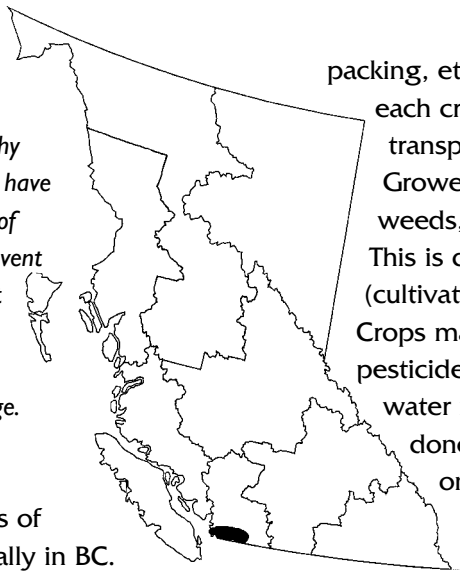
turfgrass sod?

- Sod producers
- Fertilizer, seed and chemical company representatives
- Crop advisors
- Truck drivers
- Farm labourers
- Landscape companies
- Machinery dealers
- Accountants

Contacts and other resources:

BC Ministry of Agriculture and Lands
Pacific Turf Growers' Association
Western Canada Turfgrass Association

Vegetables



Interesting Facts

Vegetables have long been known to be an important part of a healthy diet. Many recent scientific studies have shown that frequent consumption of vegetables can actually help to prevent diseases such as cancer. The latest Canada Food Guide advises us to eat more vegetables, particularly those that are dark green or orange.

What are vegetables?

There are more than 50 types of vegetables grown commercially in BC. These range from asparagus to zucchini and include such diverse and important crops as celery, broccoli, cauliflower, parsnips, radishes, beets, Brussels sprouts, eggplant, leeks, dill, spinach, turnips and rhubarb.

Where are vegetables produced in BC?

Vegetables are grown throughout the province. 90% of the field-grown vegetables are grown in the Fraser Valley.

How many vegetables do we produce?

There are over 6,600 ha of land in BC devoted to growing vegetables. From this land comes about 64 million kilograms of fresh and processed vegetables. This provides over $77 million of income to BC farmers.

How are vegetables produced?

The process of growing vegetables will vary depending on the crop. Generally, a field is prepared with a minimal number of tillage operations (plowing, discing, cultivating, packing, etc.) and careful fertilizing based on what each crop needs. Crops may be started by transplanting or seeding directly into the soil. Growers must carefully manage crops, ensuring weeds, insects and diseases are controlled. This is done through various cultural methods (cultivating, hoeing, and using resistant varieties). Crops may also have to be sprayed with pesticides to prevent serious damage. Irrigation water may have to be applied. Harvesting is done either by hand or machine, depending on the particular crop.

How are vegetables used?

Vegetables are eaten fresh, frozen, canned, pickled or dried. They can be eaten raw or cooked. Vegetables provide vitamins, minerals, proteins, carbohydrates and fibre.

What happens after vegetables leave the farm?

Vegetables are handled in a variety of different ways, depending on the particular crop, and for which market it is being grown. Vegetables for processing go directly from the fields to the processing plant where they are immediately packed to preserve freshness and quality. Vegetables destined for the supermarket are graded, washed, trimmed, cooled, packed and shipped in refrigerated trucks. Most fresh vegetables are very perishable. Careful handling is very important to ensure good quality at the time vegetables reach the consumer. Some vegetables, such as potatoes and onions, are placed in cold storage where they can be kept for several months and sold as the market requires. Many vegetables in BC are sold direct from the farm through farm stands and U-picks.

What challenges do vegetable producers face?

BC has some excellent land for growing vegetables, but compared to some other areas in North America, it is a small player. California the dominant vegetable growing area in North America, has the advantage of being able to grow vegetables all year round. Many of the vegetables that we eat, especially in the winter, are grown in California and shipped to BC in refrigerated trucks. BC growers must compete with California and other major growing areas. To do this, they must continually strive to be more efficient and grow better quality vegetables. They are constantly investing in better equipment, trying new varieties, new fertilizers and pest control strategies and other new technologies. They also participate in promotional campaigns that try to persuade people to buy BC grown products.

Who's involved in producing vegetables?

- Truckers
- Field workers
- Equipment dealers
- Seed companies

Contacts and other resources:

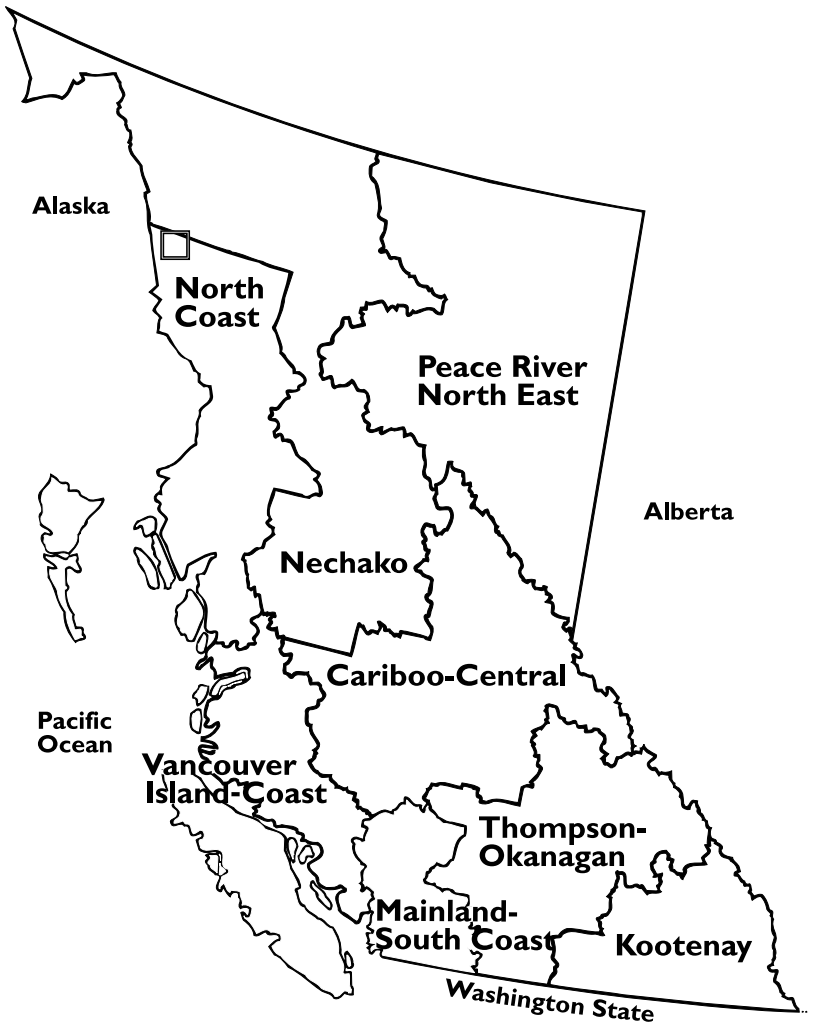
BC Ministry of Agriculture and Lands
BC Vegetable Marketing Commission

BC Vegetables

Asparagus
Cucumber
  slicing
  pickling
  Long English
Parsnips
Carrots
  Baby carrots
Eggplant
Peas
  pod
  shelled
  snow
Corn
  baby corn
  corn on the cob
Endive
Fennel
Peppers
  green
  red
  orange
  yellow
  chili
Beans
  wax
  green
  broad
  runner
Garlic
Potatoes
  seed
  table
Beets
Kale
Bok choy
Kohlrabi
Pumpkins
  pie
  jack-o-lanterns
Leeks
Radicchio
Broccoli
Lettuce
  Boston
  Butter
  green leaf
  Iceburg
  red leaf
  Romaine
Radishes
Brussels sprouts
Rhubarb
Cabbage
  Chinese
  red
  green
  savoy
Rutabagas
Shallots
Spinach
Cantaloupe
Lo bak
Squash-(several varieties)
Marrow
Sui choy
Cauliflower
Tomatoes
  cherry
Celery
Turnips
Onions
  white
  yellow
  green
  silverskins
  red
Watercress
Watermelon
Parsley
Zucchini

The Regions

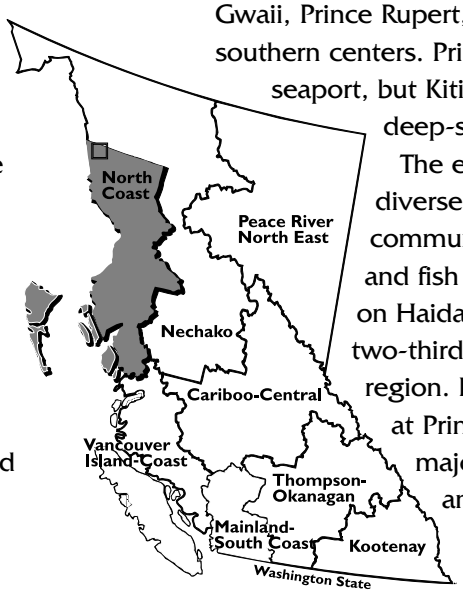
This section gives a general summary description of each region, what grows in that region, and the characteristics of the region that affect the agriculture and food industry.



North Coast Region Agriculture Profile

Key Features:

- Rainfall varies considerably within the North Coast region.
- Climate varies considerably.
- River valleys comprise most of the farm land.
- Ranching dominates agricultural production.
- Large commercial fishing industry represents 65% of salmon and 85% of halibut landings in British Columbia.
- Fish processing dominates the food processing industry.



Population	56,145
Number of Farms	126
Land in ALR	109,207 ha
Area of Farms	8,439 ha
Total Farm Capital	$76.1 million
Jobs	638 weeks paid labour annually
Gross Farm Receipts	$2.4 million
Annual Farm Wages	$440,183

The North Coast Region

The North Coast region borders the Pacific Ocean and the Alaska Panhandle and includes the Haida Gwai. It is the fourth largest of the eight regions, covering 12.5% of the province. The region includes only 1.3% of the provincial population and most of the residents are concentrated near Prince Rupert, Terrace, Kitimat and Hazelton. Rugged mountains and deep-cut river valleys characterize the diverse topography of the region.

Highways 16 and 37 provide east-west and north-south links, respectively. CN Rail provides rail transport; scheduled air service links the Haida Gwaii, Prince Rupert, Terrace and Kitimat with southern centers. Prince Rupert has the largest deep seaport, but Kitimat and Stewart also boast deep-sea facilities.

The economy of the region is as diverse as its topography. The coastal communities rely heavily on fishing and fish processing. There is logging on Haida Gwaii and in the southern two-thirds of the mainland portion of the region. Pulp and paper mills are located at Prince Rupert and Kitimat, and major sawmills at Terrace, Kitwanga and Hazelton. Mining and forestry are the chief economic activities in the Stewart area. Prince Rupert and Terrace are the leading administrative and service centers for the region. Kitimat was established in the early 1950s to house Alcan's aluminum smelter complex, but its industrial base has since expanded to include forest products and petrochemical production. Tourism is providing new opportunities in much of the region.

Land

Most of the best quality agricultural land in the region is found in the Kitimat-Stikine district, where there are 61,700 ha of Class 1-4 land. Another 42,000 ha of land, of Class 4 or better, are located in the Skeena-Queen Charlotte Regional District. Most of this land is forested. The areas of highest potential are the valleys of the Skeena, Stikine, Kispiox and Nass rivers. Good quality land can also be found on Haida Gwaii, but high rainfall limits the variety of crops that can be grown.

The North Coast Development Region covers an area of 11,885,290 hectares. Of this, less than 1% (109,207 hectares) is within the Agricultural Land Reserve (ALR). This represents about 2.4% of the province's total ALR.

Agriculture

Agriculture in the North Coast Region is dominated by cattle ranches. Farming in the region generates sales of about $2.4 million yearly. Prince Rupert, with the largest market in northwestern BC, buys the additional dairy products it needs from the Nechako region. In turn, the Nechako region benefits from horse-breeders in the North Coast region that buy hay from Nechako farmers.

About 8,400 ha are under cultivation, mostly in tame hay and other forage crops. Other crops grown in the region include many types of vegetables and small fruits. Most of this produce is sold at the roadside. Other large enterprises include a major egg producer and several small sheep and swine operations.

Much of the region has a short frost-free period and relatively low average growing-season temperatures. Coastal areas experience extremely high annual rainfall, limiting the types of crops that can be grown. Dense forest cover and often remote locations with limited access make clearing and breaking land uneconomical in most cases. The distance of the North Coast region from large urbanized centers does not make transportation of produce economical to these markets. That same isolation is an opportunity for local farmers to increase their shares of local market sales at competitive prices.

The Terrace area is in a particularly advantageous position. Located within reach of Smithers, Kitimat and Prince Rupert, Terrace enjoys a relatively mild climate and better soil compared to Smithers and Vanderhoof. Therefore, this part of the region has considerable potential for increased production for local sale.

Ranching in the region benefits from the opening up of land by logging activity. Integrated resource use by foresters and agriculturalists on logged areas benefit both the ranchers and the forest industry. Game farming of species such as bison, deer, and reindeer offers an opportunity for the production of high value meat products that would be economical to transport for sale elsewhere. Most of the venison currently consumed in BC is imported from New Zealand.

Aquaculture

Aquaculture in the North Coast region is limited to a few small trout farms. However, the abundance of cool clean water, both fresh and marine, and the availability of space, makes the North Coast area a rich, untapped resource for future aquaculture endeavors.

The North Coast region supports a large commercial fishery. The harvest includes a variety of species including salmon, herring, halibut, many groundfish and shellfish. Three principal methods are used in coastal commercial fishing: seining, gillnetting and trolling. Seiners account for about one-half of salmon landings, with the remainder being divided equally between gillnetters and trollers. Annual harvests of salmon, herring and most shellfish species are considered to be at or near maximum allowable catch. This is not expected to increase without significant investment in resource enhancement. There are, however,

opportunities to harvest substantial quantities of some currently under-utilized species of groundfish and shellfish, including Pacific hake and offshore flying squid. These species are underutilized because of harvest and processing technological difficulties, environmental concerns, and underdeveloped market demand. Some government programs such as the Salmonoid Enhancement Program (SEP) are helping increase the total stocks of salmon available for harvest.

Fish processing is a major industry with about 13 fish processing plants. There are opportunities for further growth in fish processing. This includes production of higher-value products that convey the unique character of the region such as smoked salmon packed in wooden gift boxes and salmon paté.

Selected Crop and Livestock Inventories (2006 Census)

Grains	320 ha
Hay and Pasture	9,500 ha
Alfalfa	279 ha
Hay	339 ha
Potatoes	7 ha
Fruits, Berries and Nuts	10 ha
Field Grown Vegetables	14 ha
Nursery Products	3 ha
Sod	1 ha
Greenhouses	433 m^2
Christmas Trees	36 ha
Hens and Chickens	2,751
Cattle and Calves	1,084
Pigs	49
Sheep	304
Horses and Ponies	408
Rabbits	74
Goats	173

Source: Statistics Canada-Census 2006

Estimated Gross Farm Receipts

Community	Number of Farms	Gross Farm Receipts
Regional District of Kitimat-Stikine	106	$2,065,279
Regional District of Skeena-Queen Charlotte	20	$300,956

Nechako Region Agriculture Profile

Key Features

- Growing season varies considerably throughout the region.
- Precipitation varies throughout the region with a trend of increasing rainfall to the westward.
- Frost-free days: 52-90 (varies significantly across the region depending on geographic characteristics).
- Annual precipitation (mm) 464-522.
- Agricultural production takes place mainly in the flat river valleys and is primarily forage (feed) for beef and dairy herds.
- Agricultural production in the form of feeder cattle is sold to feedlots in southern BC and Alberta. Dairy processing occurs in Prince George and Telkwa.
- Cereal grain production is increasing.

Population	39,837
Number of Farms	840
Land Actively Farmed	251,422 ha
Land in ALR	373,260 ha
Total Farm Capital	$850 million
Jobs	12,033 weeks paid labour annually
Gross Farm Receipts	$54.2 million
Annual Farm Wages	$5.32 million

The Nechako Region

The Nechako region is the second largest of the development regions, containing 20.7% of the provincial land area, but only 1% of the population. The bulk of the population lives in communities along the rail-highway corridor from Smithers to Vanderhoof and Fort St. James. A primary transportation link between these communities is Highway 16, running east-west.

The terrain is composed of a high, rolling or hilly plateau bound by rugged mountains on the west and northeastern borders. There is little or no commercial forest cover in the northern half, but forests are extensive in the south where they support a large part of the local economy. The mining industry has provided the economic base in Atlin, Dease Lake and Fraser Lake.

Land

The Nechako region covers an area of 20,931,500 ha. Approximately 1.5% (364,721 ha) of the region is in the Agricultural Land Reserve (ALR). This represents 2.6% of the total provincial ALR. The major farming areas in the region are in the Bulkley Valley-Lakes District and around Vanderhoof. Agriculture occurs mainly in the river valleys, where the land is relatively flat and the soil is fertile. About 50,000 ha of land are cultivated, the main crops being forage for beef and dairy herds.

Agriculture

Ranching has increased dramatically in the Nechako region since the late 1970s. Almost 80% of the increase in the BC cattle herd since 1976 has occurred north of the traditional Thompson/Cariboo-Central beef regions.

At the same time, new land has been cleared for crop production. The Vanderhoof district has a significant amount of cereal crops, possibly more than any other area outside the Peace River North East region. Agriculture in the region is still

characterized by enterprising part-time farmers.

The 840 farms in the Nechako region generate sales of about $54 million, from an investment of about $850 million in land, livestock, buildings and machinery. Much of this investment is new and has yet to realize its full potential. The high level of off-the-farm work, the tremendous agricultural potential and the relative infancy of the agricultural service sector in this region all point to significant potential for growth.

Cereal production in the region is increasing, particularly near Vanderhoof. Other short-season crops are also grown in the Nechako region. Although much new land has been made available to agriculture by clearing forested areas, the cost is very high. The local market for fresh, in-season fruits and vegetables is not developed.

The winter feeding period, which lasts from mid-November to mid-May, results in high feed costs. Future increases in local feed production are expected to help resolve this problem.

Transportation costs to markets are high. For example, shipping costs to the Lower Mainland or Kamloops are higher than that for producers farther south. With only a small local market available, shipping commodities to markets outside the region is a limiting factor on increasing production in the region. In the dairy and egg sectors, which are under supply management, producers have to buy quota to enter the industry. As for many other regions, some of consumer demand is being met by producers in the southern parts of the province who have an advantage in feed costs and production capability.

The biggest advantages that the Nechako region enjoy over the southern regions are the low cost of land and the availability of range. For example, the average cost of land in the Vanderhoof area is about 10 to 15 times lower than land near Abbotsford. Working with the forestry industry is beneficial for ranchers because it opens up range for grazing. Vegetative growth in clearcuts is quite vigorous and many of the plants make very good forage for ruminants.

The Prince Rupert grain port is a significant terminal for grain exports from across Canada. It may offer good access for commodities produced in this region at some time in the future. Production of field crops requires refined management because of unique geographic and climatic characteristics. This is contributing to a larger livestock industry for ranchers. Despite the fact that backgrounding (feeding calves for feedlot) is well established here, some 70% of calves leave the region to be backgrounded and finished in other areas, particularly in Alberta. Expanded backgrounding could reduce this figure.

New areas of agriculture that are economically feasible are game farming and fur farming due to low land costs. Low population densities in the region mean that such enterprises could operate with little conflict. Several major salmon rivers originate in the Nechako. Thirty per cent of all BC salmon spawn in the region.

Food Processing

Food and beverage processing in the region is limited. However, continued expansion of agriculture in the Nechako region will undoubtedly lead to increased processing activity. Slaughterhouses and feed mills will be required to service the beef herd industry in the future. There is currently a small local slaughter plant and a dairy processor in the region. The regional market is already large enough to warrant local processing of dairy and poultry products. The existing quota system allows for most of the local consumption of dairy and poultry products to be met by local production.

Selected Crop and Livestock Inventories (2011 Census)

Grains	9,700 ha
Hay and Pasture	176,000 ha
Alfalfa	32,935 ha
Hay	49,584 ha
Potatoes	15 ha
Fruits, Berries and Nuts	9 ha
Field Grown Vegetables	21 ha
Nursery Products	3 ha
Greenhouses	12,213 m^2
Christmas Trees	21 ha

Hens and Chickens	9,046	Rabbits	298
Cattle and Calves	61,525	Goats	998
Pigs	459		
Sheep	2,690		
Horses and Ponies	3,021		

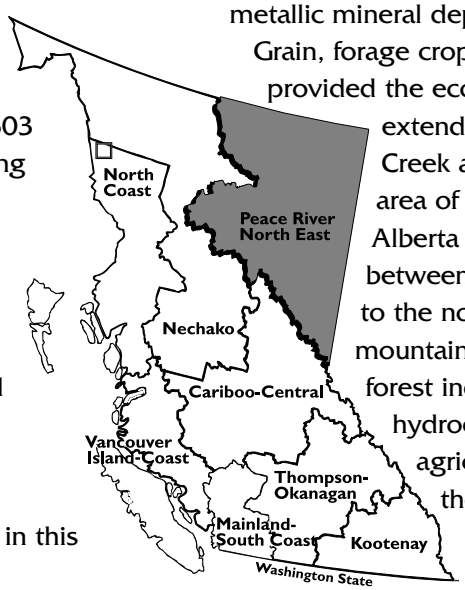
Estimated Gross Farm Receipts (2011 Census)

Community	Number of Farms	Gross Farm Receipts
Regional District of Bulkley-Nechako	840	$54,186,702

Peace River North East Region Agriculture Profile

Key Features:

- Temperatures vary greatly throughout the region.
- Frost-free days: 90-115
- Annual Precipitation (mm): 446-503
- Long daylight hours in the growing season compensate for the short growing season.
- Terrain is very similar to that of the Prairies.
- Supports a variety of enterprises including forage, beef, honey and game animals.
- Produces 77% of the province's grains.
- Honey is a million dollar industry in this region.
- Some commercial vegetable production for local markets.



Population	65,660
Number of Farms	1,560
Land in ALR	1.337 million ha
Area of Farms	831,566 ha
Total Farm Capital	$1.87 billion
Jobs	21,864 weeks paid labour annually
Gross Farm Receipts	$144.9 million
Annual Farm Wages	$8.60 million

The Peace River North East Region

The Northeast region is the largest of the province's regions. It represents 21.8% of the land area of the province and 1.5% of the population. Generally, the terrain is flat in the north and east, and mountainous in the south and west. The central part of the region extends westward beyond the Rockies into the Omineca Mountains, an area where lode gold mining has commenced and a number of promising metallic mineral deposits have been discovered.

Grain, forage crops and beef cattle traditionally provided the economic base of the triangle extending from Chetwynd to Dawson Creek and Fort St. John. The agricultural area of the BC Peace extends from the Alberta border on the east, halfway between Fort St. John and Fort Nelson to the north and the foothills of the mountains to the west and south. The forest industry, oil and natural gas, hydroelectric power projects and agriculture have provided much of the region's economic growth. In the 1980s, growth was largely due to the development of coal mines southwest of Dawson Creek, in the vicinity of the new community of Tumbler Ridge. Tourism is increasing in significance in the Northeast region.

Land

The Peace River North East region covers an area of 20,494,470 ha. Approximately 7.5% (1,523,581 ha) of the region is within the Agricultural Land Reserve (ALR). This represents 32% of the total provincial ALR.

Some select short-season crops, such as potatoes, rutabagas, carrots, beets, cabbage, lettuce, peas and even tomatoes and sweet corn, can be commercially grown in areas adjacent to the Peace River North East and its major tributaries at elevations below 800m. The bulk of the land is suitable for conventional prairie crops, such as wheat, barley, canola and forage. Just under half the ALR land (490,000 ha) is Class 3 or better.

Agriculture

Unique among the eight regions of BC, the Peace River North East region is generally considered a prairie region. Agriculture is important to the Peace River. During the recession of the early 1980s, it was one of the few sectors of the regional economy that remained strong.

Some 12% of the population is involved in food production. There are about 1,560 farms generating total cash receipts each year of just over $145 million.

More forage, grain (barley, oats, wheat), seed, canola and honey are produced in the Peace than in any other region. Most grain, oilseed and forage seed production occurs in the Peace. Beef production is also important here, as in the other northern regions. Game farm production is growing significantly in this area, particularly bison production. Temperature variations in the Northeast are very wide, with long winters and a short growing season. The low-temperature growing season, with long hours of daylight, dictates the choice of crop types. Early-maturing crops that can perform well at lower temperatures and take advantage of long daylight hours produce good yields in the Peace.

Barley

Wheat

Some of the soils in the area have a low pH (acidic) and most of the soils are prone to water erosion. Coping with this requires special management and as a result many farmers have adopted soil conservation techniques. Good soil management, including crop rotation, zero-till (seeding directly into previously cropped land), reduced summer fallow and improved tillage practices on slopes, has helped improve soil conservation.

The advantages that the Peace River North East region offers over the southern regions are the low cost of land and the lower overall cost of production for both livestock and grains. There are also fewer urban-rural land use conflicts in the Peace, resulting in fewer pressures on agricultural land for nonagricultural uses.

The abundant land, coupled with a low population density, makes the North east an ideal area of the province for expansion of cattle and hog feeding enterprises, as well as dairy production.

There is a well-established cow/calf industry in the area, with some finishing and backgrounding. Currently, 90% of calves leave the region to be finished elsewhere, particularly in Alberta. There is potential growth in the livestock finishing industry with access to locally produced feed grains.

Promising areas of agriculture with future potential include continued expansion of the beef industry, hog production, game farming, forage seed production, pulse crops, other oilseeds and organic products. Secondary processing of primary products is another area of future opportunity in the Peace River North East region.

Photo by: Geoff Hughes-Games

Zero-till Seeding

Harvesting

The local production of fresh, in-season fruits and vegetables is not well developed. Dairy products and eggs are largely brought in from Alberta. Opportunities exist for increased local production of these commodities.

Food and beverage processing is relatively small. There are some livestock processors and several honey and sugar processors.

Selected Crop and Livestock Inventories (2011 Census)

Grains	74,000 ha
Hay and Pasture	453,000 ha
Alfalfa	93,673 ha
Hay	139,087 ha
Potatoes	12 ha
Fruits, Berries and Nuts	18 ha
Field Grown Vegetables	16 ha
Nursery Products	36 ha
Greenhouses	6,531 m^2
Christmas Trees	28 ha
Hens and Chickens	43,749
Cattle and Calves	101,251
Pigs	7,387
Sheep	7,673
Horses and Ponies	8,407
Rabbits	178
Goats	976

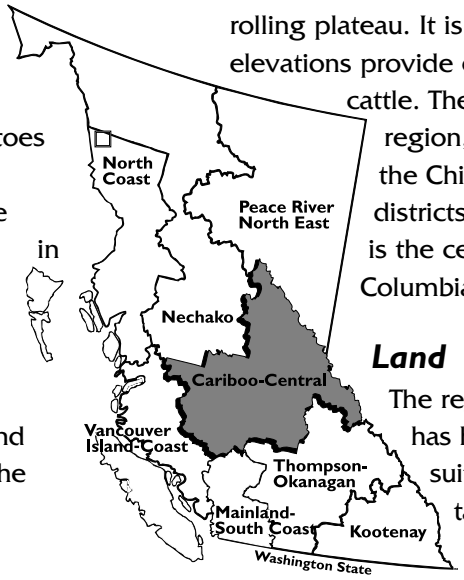
Estimated Gross Farm Receipts (2011 Census)

Community	Number of Farms	Gross Farm Receipts
Northern Rockies Regional District	28	555,958
Peace River Regional District	1,532	$1144,384,333

Cariboo-Central Region Agriculture Profile

Key Features

- Relatively short growing season with moderate rainfall.
- Alfalfa, root vegetables and potatoes do well in river bench soils.
- Frost-free days: 85-120. There are significant differences in climate in this region. For example, there are different micro-climates in Prince George, where the river valley's frost-free period is significantly longer than the upland benches adjacent to it. As well, the Williams Lake area further south experiences longer and earlier growing seasons.
- Annual precipitation (mm) 250-630
- Produces high quality fodder crops to support the livestock industry.
- Terrain is characterized by rolling plains ideal for cattle and other livestock production.



Population	154,271
Number of Farms	1,681
Land in ALR	1.327 million ha
Area of Farms	493,612 ha
Total Farm Capital	$1.85 billion
Jobs	25,206 weeks paid labour annually
Gross Farm Receipts	$94.32 million
Annual Farm Wages	$19.24 million

The Cariboo-Central Region

The Cariboo-Central region includes 13.5% of the province's land area, and 3.5% of the population. Bounded by high mountains on the east and southwest, the region is primarily a high, rolling plateau. It is heavily forested, but lower elevations provide excellent areas for raising beef cattle. The Fraser River loops through the region, forming the boundary between the Chilcotin and Cariboo-Central districts. The region's southern portion is the center of cattle ranching in British Columbia.

Land

The region around Prince George has high, rolling plateaus. They are suited to cattle ranching, which takes place in the forested range and improved pasture uplands. Forage crops are produced in the valleys of the Fraser River and its tributaries. The Fraser River is the major waterway joined by the Nechako River at Prince George. The river bench soils are sandy or silty loams. They are excellent for producing alfalfa, potatoes, cabbage, turnips, cauliflower and carrots.The ancient glacial lake bottoms have a high clay content but with good soil management are very good for the production of crops such as timothy, brome grass, alsike and red clover, and oat-barley cereal silage or grain.

Agriculture

The Prince George area is in a period of farm turnover with many operators entering the farming sector. The area offers low-priced land next to a growing population center.

Production of milk, eggs and poultry is governed by provincial quotas. Vegetable and small fruit production is not governed by a marketing board, and sales are off-farm, direct to stores or at the Saturday Farmer's Market. The recent development

of a provincially-inspected slaughter facility will increase local meat and value-added sales of beef, bison, fallow deer, hogs, lamb and ostrich.

The main livestock and game farming operations are cow-calf, cow-yearling and purebred beef, with smaller numbers of dairy, bison, finished beef, ostrich, sheep and horses.

The Robson Valley (Fraser-Fort George) is located southeast of Prince George in the Rocky Mountain Trench. It is primarily a narrow valley along the Fraser River from Dome Creek to Valemont. The area is very productive for canola, wheat, barley, oats, specialized forage seed and forage crops. Livestock operations are primarily cow-calf, cow-yearling, dairy, horses and increasing numbers of bison. Problems in the area include rancher/elk conflicts and the high price of land near the mountains. Advantages include low transportation costs to Alberta and a favourable climate for high-value field crops like wheat and canola.

The economy of the Cariboo-Central Region is resource-based, with strong agriculture, forestry, mining and tourism sectors. Agriculture provides a stable and long-term financial base for the regional economy. The beef industry forms the backbone of the agriculture industry. Beef production is based on the region's extensive rangelands, which provide a seasonal supply of forage. In addition to cattle ranching, the agriculture industry includes dairy, sheep, game farming, horses, poultry, horticultural crops and forage production. Opportunities exist in all sectors. All sectors of the livestock industry can increase production of good quality forage for winter feeding.

Selected Crop and Livestock Inventories (2006 Census)

Grains	3,800 ha
Corn for silage	119 ha
Hay and Pasture	366,000 ha
Alfalfa	27,768 ha
Hay	68,895 ha
Potatoes	26 ha
Fruits, Berries and Nuts	32 ha
Field Grown Vegetables	90 ha
Nursery Products	394 ha
Greenhouses	230,263 m^2
Christmas Trees	101 ha
Hens and Chickens	22,648
Cattle and Calves	113,223
Pigs	895
Sheep	7,045
Horses and Ponies	6,770
Rabbits	496
Goats	1,340

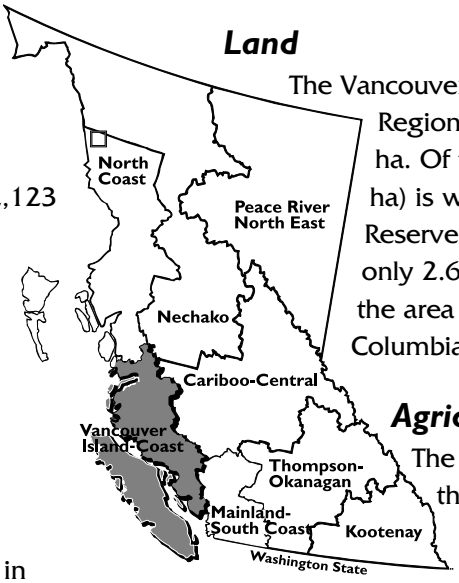
Estimated Gross Farm Receipts (2011 Census)

Community	Number of Farms	Gross Farm Receipts
Cariboo Regional District	1,123	$55,306,909
Regional District of Fraser-Fort George	558	$39,014,029

Vancouver Island-Coast Region Agriculture Profile

Key Features:

- Mild, moist climate-suitable for long-season specialty crops.
- Frost-free days: 158-201
- Annual precipitation (mm): 873-2,123
- Coastline is ideal for aquaculture
- Vegetables, berries, apples, and specialty crops such as kiwifruit are produced mainly for the local market.
- Livestock production-cattle, hogs and poultry.
- Dairy production dominates the region's farm-gate cash receipts.
- Aquaculture is rapidly expanding in value and scope.



Land

The Vancouver Island-Coast Development Region covers an area of 8,590,680 ha. Of this, only about 1.4% (117,222 ha) is within the Agricultural Land Reserve (ALR). Although this represents only 2.6% of the province's total ALR, the area accounts for over 6% of British Columbia's total farm receipts.

Agriculture

The major agricultural areas within the region are the Alberni, Comox and Cowichan Valleys, the Saanich Peninsula, the Gulf Islands and the Powell River Lowlands.

Food production has long been an important part of the regional economy. There are about 3089 farms (most of them small) in the Vancouver Island-Coast region. Farming, first introduced in the 1840s, has become a very sophisticated business.

In many Island communities, where either forestry or tourism are the major employer, agriculture and fishing provide a stabilizing influence. They tend to carry on steadily while forestry or tourism may vary due to seasonal and economic conditions. Many areas of land with particularly good agricultural capability are not being farmed due to land ownership patterns within the region. More land with good agricultural potential is owned by forest companies, and by non-farming residents than by farmers. Overall, only about 25% of the produce consumed in the region is grown locally. Even dairy products, which are the largest commodity produced in the region (in terms of value), satisfy less than half of the local demand.

Population	787,985
Number of Farms	3,089
Land in ALR	124,830 ha
Area of Farms	52,747 ha
Total Farm Capital	$3.67 billion
Jobs	67,498 weeks paid labour annually
Gross Farm Receipts	$170.1 million
Annual Farm Wages	$39.1 million

The Vancouver Island-Coast Region

The Vancouver Island-Coast region is made up of all of Vancouver Island, numerous smaller islands and a section of the coastal mainland stretching from Powell River to Bella Coola. Rugged mountains predominate, except for a narrow coastal plain extending along the east coast of Vancouver Island. The region covers almost 10% of the total land area of the province, and accounts for about 18% of the population, or about 787,985 people.

Island farmers face challenges in transporting basic needs like fuel and fertilizer from the mainland, and in shipping their commodities to mainland markets. The cost of transporting materials and products to and from these markets leads to high operating expenses in areas such as livestock production. Water availability can be a limiting factor in some areas. However, unique markets, excellent climate and soils, and the high cost for others to access Island markets, provide many opportunities for local farmers and businesses. The potential for direct marketing of local farm products to local consumers is high. Agriculture is being aggressively incorporated into tourism and local promotions by farmers, who sell products at the roadside to local consumers.

The climate, especially on the Island's east coast, from Nanaimo to Victoria is ideally suited to a wide range of crops. Blueberries and kiwifruit are grown on the Saanich Peninsula just north of Victoria and are becoming a popular Vancouver Island commodity in markets across the country.

Perhaps the greatest potential for Island farmers is in developing products that target local markets and tourists, and have a unique "Island" character. There are many commodities that could fit this character, with the traditionally strong dairy sector expected to continue to be prominent in these new markets.

Aquaculture

Aquaculture, or the farming of fish and shellfish, is a growing industry. Of all components of the food production industry in the Vancouver Island-Coast region, aquaculture has the highest potential for rapid growth.

Food Processing

Vancouver Island has a wide variety of food processing operations. The total value of shipments from food and beverage processors is about $165 million each year. There are growth opportunities for cottage wineries, cottage breweries and services to the hotel and restaurant industries, for specialty meats, vegetables, fruits and flowers. There is also potential for encouraging interest in locally-processed farm products, direct sales and guided farm tours.

Selected Crop and Livestock Inventories (2006 Census)

Grains	1,077 ha
Corn for silage	870 ha
Hay and Pasture	33,000 ha
Sunflowers	8 ha
Alfalfa	1,532 ha
Hay	14,322 ha
Potatoes	254 ha
Fruits, Berries and Nuts	1,175 ha
Field Grown Vegetables	715 ha
Nursery Products	322 ha
Sod	72 ha
Greenhouses	205,375 m^2
Mushrooms	1,141 m^2
Christmas Trees	390 ha
Hens and Chickens	640,921
Cattle and Calves	23,269
Pigs	2,066
Sheep	14,807
Horses and Ponies	3,556
Rabbits	830
Goats	1,706

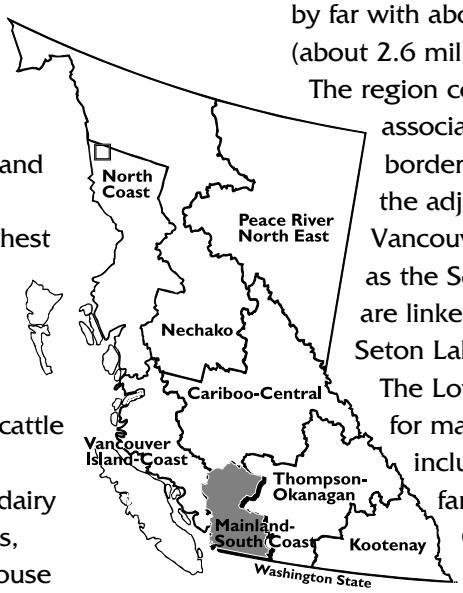
Estimated Gross Farm Receipts (2011 Census)

Community	Number of Farms	Gross Farm Receipts
Alberni Clayoquot Sound Regional District	93	$5,500,709
Capital Regional District	1,093	$50,874,004
Central Coast Regional District	27	$285,822
Cowichan Valley Regional District	685	$48,069,900
Regional District of Nanaimo	478	$26,913,383
Powell River Regional District	94	$1,348,646
Comox Valley Regional District	432	31,212,798
Strathcona Mount Waddington Regional District	98	4,344,725
Sunshine Coast Regional District	89	2,551,191

Mainland-South Coast Region Agriculture Profile

Key Features:

- Highest number of frost-free days and rainfall of all regions.
- Ideally suited for vegetable and berry crops.
- Dairy farms produce the highest farm cash receipts.
- Contains more than half of the province's population.
- Significant greenhouse production—poultry, hogs, cattle and sheep.
- Produces over 70% of BC's dairy products, berries, vegetables, poultry, eggs, pork, greenhouse vegetables, mushrooms, floriculture and nursery products.
- Primary site of the province's food and beverage processing industry.
- Annual precipitation (mm): 920-1,500.
- Frost free days: 174-200.



Population	2,629,092
Number of Farms	5,704
Land in ALR	158,038 ha
Area of Farms	125,142 ha
Total Farm Capital	$15.5 billion
Jobs	555,343 weeks paid labour annually
Gross Farm Receipts	$1.92 billion
Annual Farm Wages	$363 million

The Mainland-South Coast Region

The Mainland-South Coast region is geographically the smallest region, with only 4.2% of the province's land area. It is, however, the most populous region by far with about 60% of the province's population (about 2.6 million).

The region consists of the flat lower Fraser Valley, associated uplands, and the mountains that border them. It also encompasses part of the adjacent mainland coast connected to Vancouver by the coastal ferry system, as well as the Squamish and Lillooet River valleys that are linked to Lillooet through Anderson and Seton Lakes.

The Lower Mainland is the leading centre for many of the activities in the province, including manufacturing, services, trade, farming and fishing. In the Abbotsford-Chilliwack area, agriculture is the dominant resource activity.

The Lower Mainland-South Coast region covers an area of 3,733,052 ha, of which 250,731 ha (or 5.3%) are within the Agricultural Land Reserve (ALR). The latter portion represents 4.1% of the total provincial ALR (4,764,634 ha).

Land

The most fertile lands are located in the Fraser Valley. About 65,000 ha of the region's farmland is under cultivation, with the chief land-extensive crops in perennial forages (e.g. grasses and legume) primarily to feed the large dairy herds in the region. Considerable acreages are also planted with vegetables and berry crops.

Agriculture

Agriculture is a large industry in the Lower Mainland-South Coast region, with over one-half of BC's farm production value. Dairy products produce the greatest revenue of agriculture production and account for nearly one-quarter of farm cash receipts,

followed by poultry. The region also generates substantial revenues from greenhouse, nursery, vegetable and berry crops.

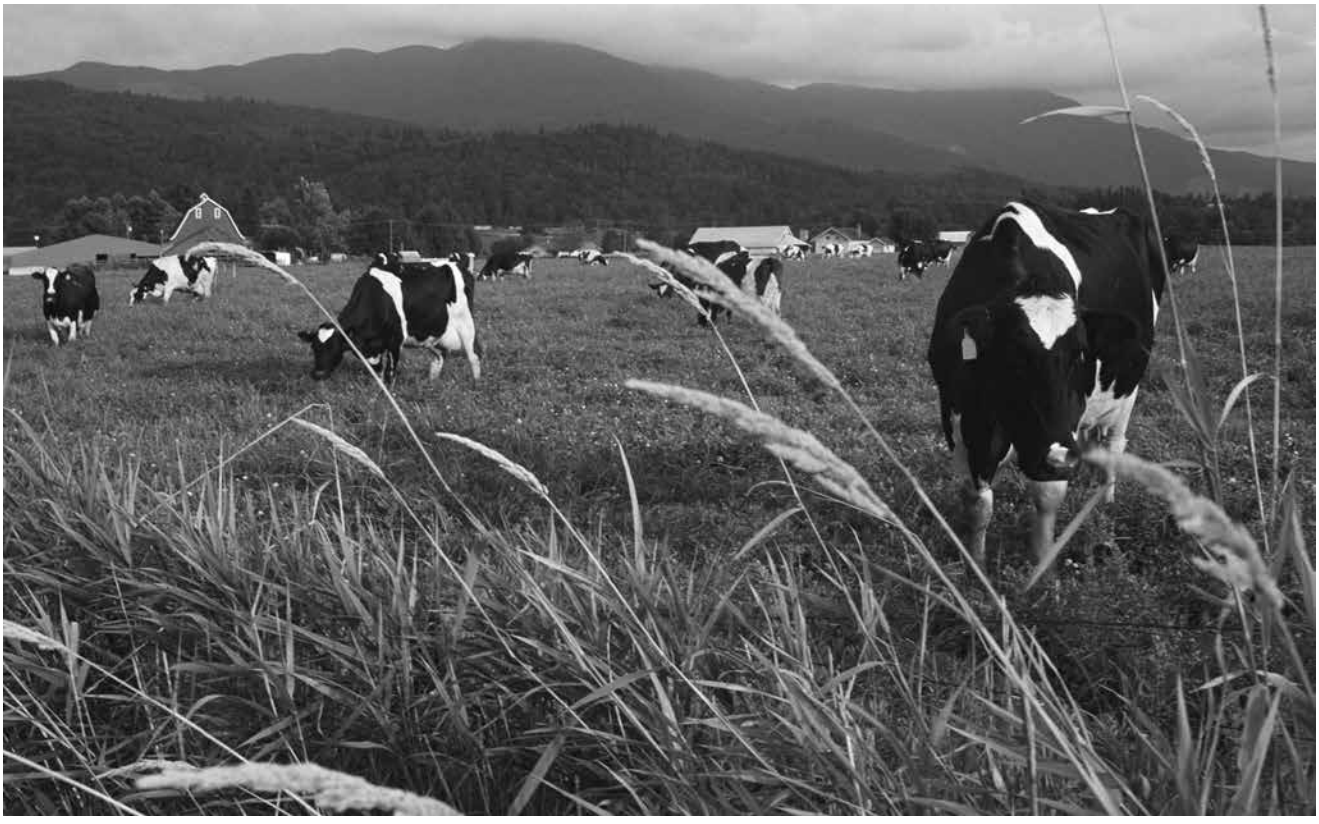
Vancouver is BC's largest city with about 2.3 million people in the metropolitan area. It is located at the west end of the Fraser Valley, which has the richest agricultural land in the province. As a result, urban expansion and development pressures on adjacent farmlands have resulted in the loss of farmland, land-use conflicts, nuisance restrictions on some types of agriculture (livestock, berries and greenhouses), land-use allocation issues and high land prices.

Water management is a major issue. There are drainage and irrigation challenges in several areas, and ground and surface water quality concerns throughout the region. Agricultural producers are required to follow environmental guidelines and proper practices in drainage and irrigation as well as waste management to protect groundwater.

With a large population base so close to the United States border, this region is seen as a good market for American imports, especially fruits and vegetables. This often affects prices of local products, making it challenging for local producers to compete with the large volumes of American imports during the peak summer crop season. The close proximity to the United States also results in cross-border buying of agricultural products, such as milk, and the loss of sales of BC products.

There are several factors that contribute to the significance of agriculture in this region. Mild climate, the diversity of crops, nearby areas of large and increasing populations, the ethnic diversity of populations, and the proximity to export markets (e.g. the United States and Asia) contribute to stable markets and the development of significant niche markets. Well-developed transportation systems enable rapid and lower cost movement of commodities.

A high level of technology is already in place in most sectors including greenhouse vegetables, floriculture, nursery, dairy, and poultry. Many of these industries use advanced technology in crop nutrition, climate control, plant and animal health, marketing and management. Being close to universities and research centres (e.g. Agriculture Canada) further facilitates product and



technology development. Access to food processors helps increase the production of higher value-added products for other markets.

Some sectors have potential for growth. These include the production of greenhouse vegetables on a ear-round basis which can help balance seasonal field vegetable production. Additional floriculture and ornamental production will help meet the demands of increasing populations and residential development. Other areas of potential are specialty vegetables to meet the needs of an ethnically-diverse population, and crops that benefit from the south coast's unique climate and soil conditions (e.g. cranberries, raspberries or nuts).

Among livestock commodities, broilers and dairy production have potential for growth due to expanding populations. Finally, agriculture has increasing tourist potential due to the scenic value of farmlands as part of the landscape. The influx of tourists can also result in increased direct farm sales of products and services (e.g. bed and breakfast, farm tours) to augment farm income.

Wholesale/Retail Markets

The food retail and food service industries are very important in the province. BC accounts for over 12% of the national receipts in the food service sector, with revenue of about $2 billion annually. Of particular interest is the fact that BC accounts for 14% of national receipts from taverns and 13% of caterers' receipts. Tourism is a major factor contributing to BC's high performance in these areas. The total value of sales from retail food outlets in metropolitan Vancouver is about $2.3 billion each year.

Food Processing

The Mainland-South Coast Region is the provincial leader in the food and beverage processing sector with annual shipments valued at about $2.8 billion. This makes up about 87% of the total provincial value of food and beverage shipments. Over $530 million of this is from seafood processing, the majority of which is salmon. There are about 260 food-and-beverage processing facilities in the south coast, not including seafood processors. There are about 90 fish processing facilities in the Lower Mainland.

The key to increasing the value of the food processing sector in all regions is increasing the value of the finished product, by specializing and producing gourmet or luxury products. Specialties such as salmon paté and gourmet dairy products are examples of these.

Selected Crop and Livestock Inventories (2011 Census)

Grains	2,700 ha
Corn for silage	9,102 ha
Hay and Pasture	48,000 ha
Sunflowers	5 ha
Alfalfa	4,816 ha
Hay	28,474 ha
Potatoes	2,316 ha
Fruits, Berries and Nuts	13,297 ha
Field Grown Vegetables	4,696 ha
Nursery Products	2,882 ha
Sod	407 ha
Greenhouses	3,120,278 m^2
Mushrooms	214,020 m^2
Christmas Trees	395 ha
Hens and Chickens	16,373,056
Cattle and Calves	117,304
Pigs	76,553
Sheep	8,983
Horses and Ponies	8.852
Rabbits	1,699
Goats	5,156

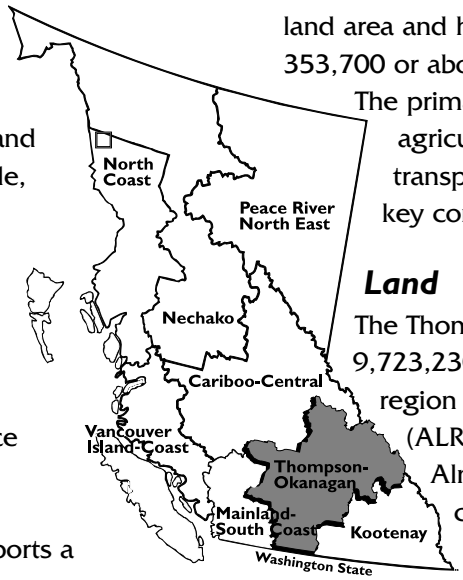
Estimated Gross Farm Receipts (2011 Census)

Community	Number of Farms	Gross Farm Receipts
Fraser Valley Regional District	2,743	$1,119,924,565
Metro Vancouver Regional District	2,821	$789,493,730
Squamish-Lillooet Regional District	12140	$8,718,071

Thompson-Okanagan Region Agriculture Profile

Key Features:

- Mild climate with low annual precipitation.
- Production varies from fruit and vineyards to field crops, cattle, hogs and poultry.
- Commercial, farm-gate and estate wineries produce award-winning premium wines for markets across North America.
- Commercial orchards produce over half of Canada's apple exports.
- Good quality rangeland supports a thriving cattle industry.
- Small aquaculture industry provides trout-for-fee fishing and for commercial sale.
- Frost-free days: 148-175.
- Annual Precipitation (mm): 257-534.



Population	520,803
Number of Farms	5,486
Land in ALR	809,145 ha
Area of Farms	700,210 ha
Total Farm Capital	$9.34billion
Jobs	176,122 weeks paid labour annually
Gross Farm Receipts	$481 million
Annual Farm Wages	$101.26 million

The Thompson-Okanagan Region

The Thompson-Okanagan region covers the Okanagan, Similkameen, Nicola and Thompson Valleys, as well as the Trans Canada Highway-CP Rail and CN Rail corridor from Revelstoke to the Fraser Canyon at Lytton. It contains 10% of the provincial land area and has an estimated population of 353,700 or about 12% of the provincial total. The primary industries are forestry, mining, agriculture and tourism. Manufacturing, transportation and trade services are also key contributors to the economy.

Land

The Thompson-Okanagan region covers 9,723,230 ha. About 8.2% (793,153 ha) of the region is in the Agricultural Land Reserve (ALR). This is 17% of the provincial ALR. Almost 83,000 ha of farmland are under crops. Approximately 9,000 ha is orchard. All types of tree fruits are grown, although apples are the main crop. Grapes for the wine industry are also dominant, and support the revitalized wine sector in BC. In the Okanagan, most agriculture is in the major valleys around Keremeos, from Osoyoos to Mara including Oliver, Penticton and Kelowna, and from Vernon east to Lumby.

Agriculture

Cattle ranching is important throughout the region, particularly in the Thompson and Nicola Valleys. Most ranching in this region is dependent on the use of forest Crown range for summer grazing. Ranching and logging are integrated and compatible uses of this land.

The Southern Interior area is classed as semi-arid, therefore agricultural production is dependent upon irrigation, except in the north east area. Livestock production is predominant in this area, with a number of feedlot operations. Other specialty crops, such as ginseng, are also grown as a result of the climatic and geographic characteristics.

Vineyards, orchards and cattle are a traditional part of the region's character.

The region generally has very good agricultural land and the Okanagan is ideal for tree fruit production. Intensive agriculture takes place in the valleys of the Okanagan, Similkameen, Shuswap and Salmon Rivers. Apples, grapes and 96% of BC's soft fruits are grown in the south-central Okanagan. Further north in the Kelowna-Vernon area, apples are the main tree-fruit crop. Fruit processing companies and wineries are common in this area.

In the North Okanagan and Columbia Shuswap areas, livestock operations, dairy production, grains and forage crops are the prevalent types of agriculture. The numbers of dairy cattle have increased significantly over the past 10 years, and one processor expanded its milk-processing facility in 1996. The dairy industry in the North Okanagan generates more cash receipts than any other commodity.

The natural grasslands and improved pastures of the Thompson-Nicola area support forage production and cattle ranching. Ginseng and other specialty operations are also suited to this area. Ginseng is becoming a major crop in this area with one of the larger operations in the country located near Merritt. Several smaller operations also exist throughout the region. Ginseng products are sold mainly to the Asian markets, although there is a developing market in Canada. There is active investigation into and development of other specialty commodities in this area.

Cattle producers benefit from high quality range suitable for livestock grazing and feeding. There is a potential for growth in cattle backgrounding operations, which involve the feeding of younger animals to a more mature stage, for feeding in a feedlot. Some new feedlots have been established. Land tends to be relatively expensive in this area due to pressure for residential development, especially around major centers. The cost of land can be as much as double the provincial average. Availability of water for irrigation is also a problem in some areas. The region is very dry, and improvement of land by irrigation and the ongoing use of irrigation is costly.

In the future, the rising cost of transportation may decrease the amount of inexpensive, imported produce sold in the region. This could improve the economic viability of irrigating land, for production of more agricultural crops such as storage and fresh vegetables. There is a growing trend to direct marketing of some crops to the local population, particularly vegetables. Tourism and a growing population provide a large market for local production. Farms, orchards and vineyards are becoming more closely integrated with tourism activities in the region.

Food Processing

Food and beverage processors sold about 7% of the provincial total. A total of about 900 full-time jobs are supported by these manufacturers. The fruit and alcoholic-beverage processors are the largest employers and play a vital role in the grape and tree fruit industry. Successful fruit juice firms, and producers of other specialty fruit products that are by products of the fruit industry (sweets, jams, fruit leather) have been established.

Wineries in the region have steadily increased sales and the quality of BC-grown products. Wineries produce a competitive line of award-winning wines under the VQA label. VQA wines are produced in accordance with Vintner Quality

Alliance Standards that are 100% British Columbian. These wines are gaining international recognition. Estate wineries are usually small and producer-owned. They must produce wine made mostly from their own grapes.

The keys to continued growth and viability of the wine industry in BC are an aggressive marketing campaign and continued improvement of the quality of BC wines.

Selected Crop and Livestock Inventories (2011 Census)

Grains	6,500 ha
Corn for silage	3,344ha
Hay and Pasture	437,000 ha
Alfalfa	42,418 ha
Hay	61,162 ha
Potatoes	170 ha
Fruits, Berries and Nuts	9,598 ha
Field Grown Vegetables	887 ha
Nursery Products	709 ha
Sod	132 ha
Greenhouses	77,837 m^2
Christmas Trees	284 ha
Hens and Chickens	1,808,625
Cattle and Calves	171,000
Pigs	1,135
Sheep	13,603
Horses and Ponies	11,672
Rabbits	987
Goats	3,534

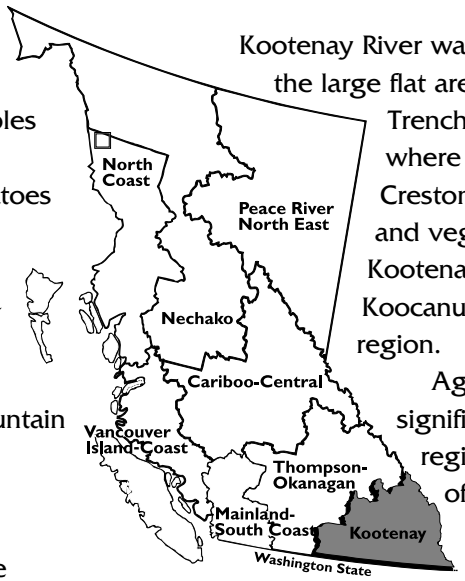
Estimated Gross Farm Receipts (2011 Census)

Community	Number of Farms	Gross Farm Receipts
Regional District of Central Okanagan	1,020	$96,546,394
Columbia-Shuswap Regional District	616	$52,619,759
Regional District of North Okanagan	1,167	$126,150,927
Regional District of Okanagan-Similkameen	1,506	$132,735,536
Thompson-Nicola Regional District	1,177	$72,642,138

Kootenay Region Agriculture Profile

Key Features:

- Moderate climate supports a wide range of crops such as apples and cereals, as well as many vegetable crops, including tomatoes and cabbage.
- Frost-free days: 110-160.
- Annual precipitation (mm): 370-569.
- Agricultural land is scattered through major river valleys, mountain slopes and grassland ranges.
- Ranching dominates agricultural activity.
- Meat, honey, fruit and vegetable processors utilize local product.



Population	146,264
Number of Farms	1273
Land in ALR	382,849 ha
Area of Farms	148,246 ha
Total Farm Capital	$1.58 billion
Jobs	22,859 weeks paid labour annually
Gross Farm Receipts	$71.10 million
Annual Farm Wages	$15.73 million

The Kootenay Region

The Kootenay region is located in the southeastern portion of the province, with the United States to the south, Alberta to the east and the Okanagan to the west. It represents 6.7% of the provincial land area and contains 3.3% of the population. A series of north-south valleys are separated by high mountain ranges and contain a number of reservoirs for power-generating facilities (Columbia and Kootenay River waterways). Agriculture dominates the large flat areas located in the Rocky Mountain Trench and the Grand Forks area, where cattle ranching is prominent. The Creston Valley is well known for its fruit and vegetable industry. Five large lakes–Kootenay, Arrow, Slocan, Duncan and Koocanusa–cover extensive areas of the region.

Agriculture and manufacturing make significant economic contributions regionally, as do growing populations of retired people in areas such as Creston, Nelson and Grand Forks. As the economy diversifies, tourism and the service industry are becoming substantial contributors. Cranbrook is the regional center for trade and services in the eastern part of the region, while Nelson serves as the main administrative center for the west Kootenay area.

Land

The Kootenay region covers an area of 5,902,490 ha, of which about 6% (382,849 ha) is within the Agricultural Land Reserve (ALR). This represents about 8% of the total provincial ALR. This region includes the lowlands of the Columbia and Kootenay Rivers. Agriculture is scattered throughout the region, in the major valleys. Mountain slopes and grassland ranges provide summer grazing for livestock; hay and cereal crops are grown (as winter feed for livestock) in the valley bottoms.

Agriculture

The agriculture sector of the Kootenay region accounts for 2.6% of the farm gate value of

sales in the province. Sales from approximately 1273farms in the region approach $69 million each year. Ranching is the primary activity of most of the farms. Fruit, field crops and poultry are also important products. There is extensive rangeland in the East Kootenays. In addition to the rangeland, there is a significant amount of land not under cultivation that has potential for perennial forage crops for livestock. The availability of abundant land for range and forage production makes possible significant future expansion of livestock farming. Natural resources from the land base (grazing land, water, recreational land, forest production, etc.) are managed in an integrated fashion, respecting the unique requirements and contributions of each.

Imported produce is subject to the relatively high costs of transporting commodities into the region. This tends to help local production and marketing of horticultural crops. However, local farmers usually face higher transportation costs for their products and are thus at a disadvantage when selling to the large Lower Mainland market. The topography of the Kootenays is very rugged. Horticulture is therefore largely confined to the sides and bottoms of the valleys. Stony soil and poor moisture-holding capability restrict cultivation on much of the ALR holdings. Roughly 140,000 ha, about one-third of the ALR in the region, is of the lower quality soil classifications (Classes 5, 6 and 7).

Food Processing

The food and beverage processing sector in the Kootenays is small, but diverse. Meat, honey, fruit and vegetable processors use local products. There are processing facilities for dairy products, brewing, and livestock feed in the region. There are about 300 people working in the food processing sector.

The high cost of transporting goods to market from the Kootenays is an incentive to produce high-value products in the region instead of shipping out unprocessed commodities. There are also opportunities to expand local processing of fruits and vegetables that are currently processed in the Okanagan.

Selected Crop and Livestock Inventories (2011 Census)

Grains	3,500 ha
Corn for silage	334 ha
Hay and Pasture	124,000 ha
Alfalfa	14,400 ha
Hay	21,198 ha
Potatoes	83 ha
Fruits, Berries and Nuts	356 ha
Field Grown Vegetables	196 ha
Nursery Products	217 ha
Greenhouses	46,602 m^2
Mushrooms	250 m^2
Christmas Trees	1,321 ha
Hens and Chickens	22,622
Cattle and Calves	32,696
Pigs	388
Sheep	2,152
Horses and Ponies	3,404
Rabbits	174
Goats	741

Estimated Gross Farm Receipts (2011 Census)

Community	Number of Farms	Gross Farm Receipts
Regional District of Central Kootenay	552	$34,353,451
Regional District of East Kootenay	396	$14,504,239
Regional District of Kootenay Boundary	325	$22,241,902

Careers in Agriculture and Food

Agriculture offers countless career opportunities. The agri-food industry encompasses production, processing and distribution systems; a whole network of industries that produce supplies for agricultural production, financial agencies, researchers, inspectors, regulators and advisors; and a whole range of marketers. Each of the commodity profiles in this handbook list a number of occupations under the heading, "Who's involved in producing it?". The following list is not comprehensive, but does give an indication of the great variety of jobs that are involved between the farmer's field or barn and the consumer.

Suppliers

Agriculture pilot (aerial applicator)
Artificial inseminator
Bank manager
Boat builder
Building supplies sales representative
Carpenter (construction)
Custom applicator (fertilizer, pesticide)
Farm accountant
Farm equipment and supplies sales representative
Farm machinery mechanic
Farrier (horseshoer)
Feed laboratory technician
Feed miller
Feed transporter
Fertilizer/chemical sales representative
Fish net manufacturer
Heating and ventilation equipment sales representative
Hydroponics technician
Irrigator
Lab technician (seed tester)
Land appraiser/assessor
Loans officer/credit officer
Management consultant

Researchers, Advisors

Agricultural economist
Agricultural engineer
Agricultural land use planner
Agronomist/plant scientist
Anatomist
Animal health technologist
Animal scientist
Animal standards coordinator
Architect/draftsperson (building and landscape)
Bacteriologist
Biochemist
Biologist
Bio meteorologist
Botanist
Cell biologist
Chemist
Climatologist
Clinical or community dietician
Crop specialist
Dairy herd improvement consultant
District Agriculturist/horticulturist
Ecologist
Entomologist
Environmental biologist
Environmental lawyer
Environmental planning analyst
First nations resource expert
Food or flavour chemist
Food scientist
Geneticist
Habitat restoration expert
Health and wellness consultant
Horticulturalist

Human or animal nutritional scientist
Hydrologist
Interior designer
International agriculture officer
International trade manager
Landscape designer
Marine biologist
Medicinal plant specialist
Microbiologist
Parasitologist
Plant biotechnologist
Research and development brewmaster
Resource-based tourism manager
Resource economist
Rural sociologist
Soil scientist
Statistician
Surveyor
Teacher
Toxicologist
Veterinarian

Producers

Agribusiness manager
Athletic Turf specialist
Arborist (tree expert)
Aquaculture manager
Beekeeper (apiarist)
Breeder (hogs or horses)
Broiler producer
Christmas tree farm operator
Commercial fisher
Commercial forage producer
Cow-calf operator
Dairy farmer
Egg producer
Feedlot operator
Field worker
Fish farmer
Floriculturist
Forage seed producer
Fruit farmer
Game farmer
Ginseng grower
Grain and oilseed farmer
Greenhouse production officer
Horse trainer
Mushroom producer
Nursery operator
Nut producer
Orchardist
Pedigree seed grower
Picker (fruit, vegetable and flower)
Pork producer
Poultry producer
Rancher
Sheep and goat farmer
Shellfish operator
Sod farmer
Vegetable farmer
Vineyard manager
Viticulturalist

Inspectors, Regulatory Agents

Animal health inspector
Brand inspector
Dairy inspector
Environmental conservation officer
Fisheries licensor and inspector
Fruit and vegetable inspector
Grain inspector
Health inspector
Honey grader/inspector
Meat grader/inspector
Plant product inspector
Poultry inspector

Processors, Distributors

Accountant
Auctioneer
Baker
Brewer
Canning and freezing plant manager
Container manufacturer
Dock worker
Environmental planner
Fashion merchandizer
Feed laboratory technician
Fish processor
Flavour technician
Flour miller
Floral designer
Food product development manager
Food microbiologist
Grain elevator manager
Home economist

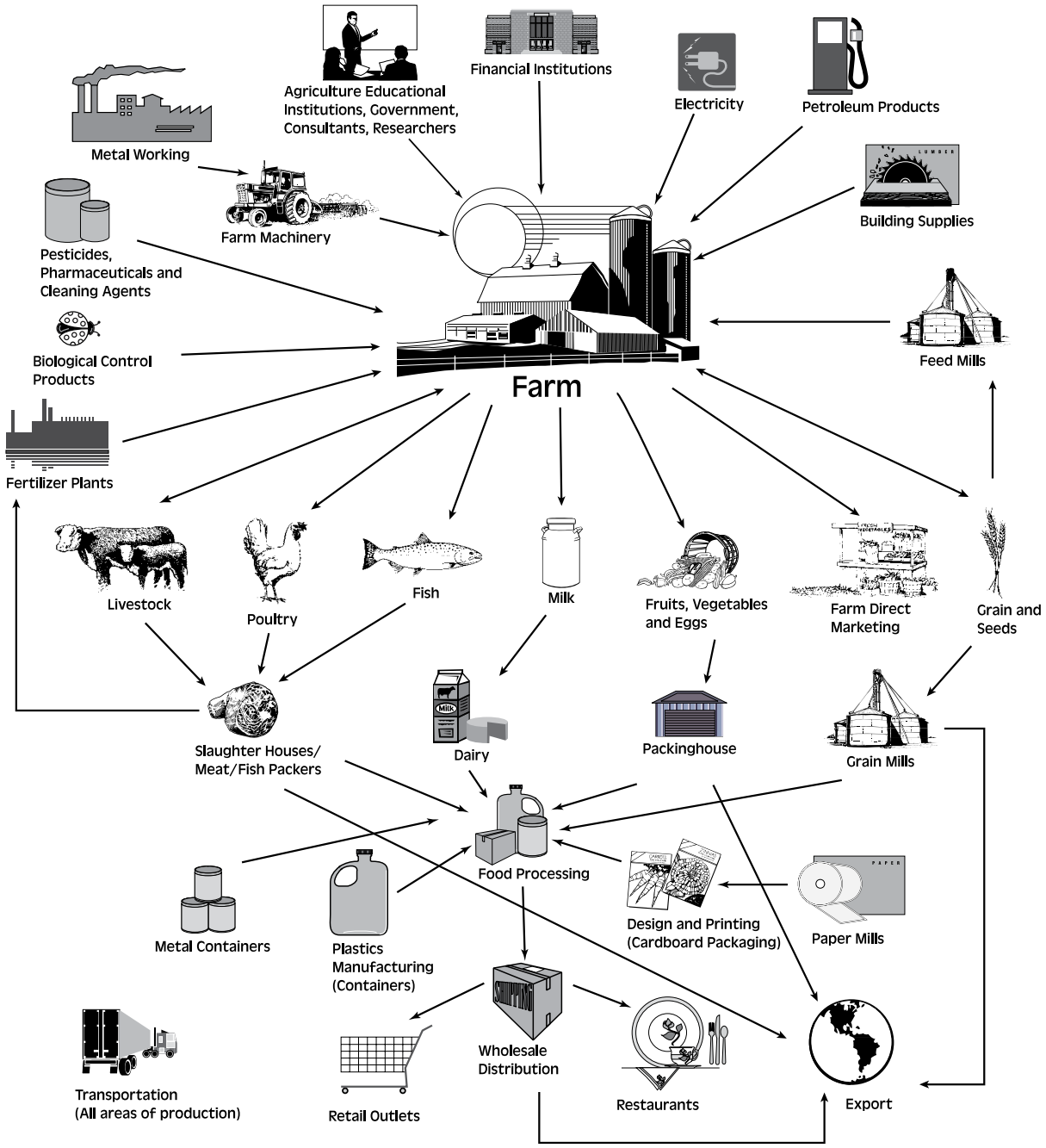
Landscape gardener
Livestock buyer (slaughterhouse)
Meat packing plant butcher and packager
Mechanic
Milk processing plant operator
Packinghouse employee
Quality assurance scientist
Seed cleaning technician
Seed packing plant operator
Sheep shearer
Ship crew member
Textile technician or designer
Trucker/transporter
Vintner

Marketing/Retail
Advertising sales agent
Auctioneer
Export manager
Farmers' market manager
Farm reporter (media)
Food critic
Food editor
Food stylist
Food marketing coordination
Food marketing manager
Graphic designer
Greenhouse operator
Hotel, restaurant and institution trade (chef)
Information officer
Instructor/teacher
Market researcher

The Farm Connection

Modern agriculture is much more than farming. It is a multi-faceted industry that is intricately connected with many other sectors of the economy. A great number of career possibilities are therefore associated with agriculture.

The following flow chart gives a visual impression of the interaction of the food industry with other industries. On the input side of the farm are industries that supply such items as farm machinery and fertilizer; on the output side are the food-processing industries. Connecting these various activities is a system of transportation and distribution.



Educational Institutions

The following table gives a list of most of the educational institutions in BC that offer courses or programs in an agriculture, fish or food-related area. This may help individuals interested in developing a career in this area.

Institution	Programs	Location	
British Columbia Institute of Technology (BCIT)	Fish Harvesting & Processing Technology Biotechnology Food Technology	Vancouver	www.bcit.ca
Camousun College	Horticulture	Victoria	www.camosun.bc.ca
Capilano College	Landscape Horticulture Fish Culture Technician	Vancouver	www.capilanou.ca
College of the Rockies (EKCC)	Horticulture	Cranbrook	www.cotr.bc.ca
Kwantlen College	Turf Management Greenhouse Management Commercial Floristry Nursery Equine Studies	Vancouver	www.kpu.ca
Malaspina College	Horticulture Aquaculture & Fisheries Technician Culinary Arts	Nanaimo	www.mala.bc.ca
North Island College	Aquaculture and Fisheries Technician	Courtenay	www.nic.bc.ca
Simon Fraser University	Pest Management Aquaculture Resource Management Agriculture degrees	Vancouver	www.sfu.ca
University College of the Fraser Valley	Horticulture/Ornamental Integrated Pest Management Milker Training Livestock Production	Chilliwack/Abbotsford	www.ufv.ca
University of British Columbia	B.Sc. (Agroecology) B.Sc. (Food, Nutrition & Health) B.Sc. (Global Resource Systems) B.E.D. (Environmental Design)	Vancouver	www.ubc.ca
University of Northern British Columbia	Biology Natural Resource Management	Prince George	www.unbc.ca
University of Victoria	Biology	Victoria	www.uvic.ca
Thompson Rivers University Animal Health Technology	Animal Biology Environmental Chemistry Natural Resource Sciences Ecology & Environmental Biology	Kanloops	www.tru.ca

Technology

Agriculture, fish and food production are complex businesses. Advanced technology is common throughout the agri-food business, from the farm to the consumer.

Farmers, processors, wholesalers and retailers today use modern equipment and systems, including leading edge computer technology in fields, barns, greenhouses, nurseries, fish operations, fish boats, processing plants and retail food stores. For example in many greenhouses computers control temperature, irrigation and CO_2 levels to optimize plant growth. On dairy farms many cows have computerized identification tags. Sophisticated technology is as important to the agri-food business as it is to any other business in society.

Information and its use is vital in the agri-food business. Communication through electronic and computer technology is a normal part of business for farmers. Management decisions are made based on quick access to markets, prices and production information.

Technological advances in production have dramatically improved the turnaround time of certain products from the research table to the consumer. Biotechnology has created more exact methods for breeding better livestock and crop varieties that are more disease-resistant and better quality. Biotechnology has improved foods, feeds, fertilizers, disease vaccines and pest control products. Biotechnology, which has been around for thousands of years, uses biological processes to produce substances that help agri-food production, the environment, industry and medicine. Some traditional methods include yeast to make bread and enzymes to make cheese.

Some modern examples of biotechnology at work in agriculture are:

- Tomatoes that ripen more quickly on the vine and maintain flavour and texture for several weeks, allowing time for transport, retail display and storage at home.
- Potato plants genetically bred to resist key diseases and thus provide an environmentally sound alternative to chemical control.
- Plants developed through genetics that are more nutritious when cooked.
- Animal feeds and vaccines developed using micro-organisms.
- Animals bred for resistance to disease and for leaner meat.
- Bacteria is used that takes nitrogen from the air more effectively to legume plants, and therefore, helps reduce the amount of nitrogen fertilizers needed.
- Certain crops bred with fewer undesirable components, i.e. Canola.

Modern transportation and storage systems make products from across the world available within hours. Health inspectors ensure that products are free of impurities and disease, before they reach the consumer.

Scientists work with farmers, processors and retailers in developing and demonstrating new techniques. This is expensive and often time consuming, but results in better quality products for consumers.

Conservation

BC Farmers and Fishers Work Toward A Clean Environment for Quality Food

BC farmers are faced with the challenges of producing high quality food at a reasonable prices while preserving the environment and meeting consumer's ever changing demands. BC farms produce over 280 commodities as a result of the province's diverse climate condition and landscape, abundant supply of water and fertile soils. Farmers are the first to acknowledge the need to not only maintain, but enhance water and soil quality by using effective conservation practices to control soil erosion and avoid water contamination (balanced with the need to increase productivity). Many farmers are working with researchers from agencies, industry, organizations and universities to develop and integrate farming practices that maintain and and enhance soil and water quality.

Some examples of methods that promote soil and water conservation are:

- use of cover crops
- use of crop rotation
- use of strip cropping
- zero till
- use of grass waterways
- use of beneficial insects

BC is recognized as a leader in North America in the development and use of creative technology that reduces pesticides use in food and ornamental crop production. Rigid inspection at processing facilities insures consumers get the highest quality and safest possible animal and fish products from BC processors.

Integrated Pest Management on Crops

BC is a North American leader in Integrated Pest Management (IPM). BC has led the way in adopting IPM in its food production systems. IPM involves a balance of biological controls, cultural practices, resistant crops and pesticides, to control rather than totally eliminate pests. The result is maximum control with no detrimental impact on the environment. Virtually all of BC's greenhouse sector, and much of its vegetable, berry and tree fruit industries, use IPM technology. This assures consumers that BC food products are high quality and wholesome.

Soil and Water–Our Basic Resources

Farmers across the province, especially grain and forage producers, are trying new practices such as "zero-till". This means farmers seed the new crop directly into uncultivated land that was previously cropped. This reduces potential damage to the soil by eliminating one step in the planting process. Zero-till seeding offers reduced wind and water erosion of soil. Results of these tests show that the yield and cost of producing the crop is similar to the conventional method, but with less soil loss. This system may not work for all farms, but is being used successfully in some areas.

As a result of increased urbanization, especially in the lower Fraser Delta region, important wildlife habitat is being lost. Many agencies and organizations are working along with the farming community in the Lower Mainland region and other regions on wildlife management projects. They are working on solutions to provide habitat for wildlife i.e. migratory birds, herons, wildflowers... that are practical and economically viable for farmers.

BC farmers are encouraged to follow defined codes of agricultural practices i.e. Waste Management Act, The Pesticide Control Act, Health Act, Fish Protection Act, and Farm Practices

Protection Act, to insure they are farming in an environmentally responsible way to maintain a healthy, compatible relationship with all of their neighbours both rural and urban.

Fish Farming – A New Resource

The fish industry is a major contributor to the BC economy. Highly valuable fish products are shipped to local and off-shore markets.

Aquaculture farms are sited along BC's vast, highly suited coastline, according to sophisticated biophysical criteria that take environmental concerns into account.

Fish Waste Handling

Over 100,000 tonnes of salmon are harvested from the wild and from aquaculture operations. However, the waste by-products from fish farms and processing plants must be handled in an environmentally acceptable way. The Ministry, along with the Federal Government, the fisheries industry and the University of BC are cooperating in a multi-year project to reduce the volume of these by-products in landfills.

The project will develop and refine the commercial viability of a cost-efficient process that converts fish waste into a high quality soil enhancer.

For more information:

For more information on programs and technology related to pest management, soil and water conservation, and fish production, contact:

Resource Management Branch of the
BC Ministry of Agriculture and Lands
1767 Angus Campbell Road
Abbotsford, BC
604-556-3001

Aquaculture and Commercial Fisheries Branch
Ministry of Fisheries
780 Blanshard Street
Victoria, BC, V8W 9B3

Courtenay Access Centre
2500 Cliffe Avenue
Courtenay, BC, V9N 5M6
250-897-7540
Fax: 250-334-1410

Products of BC

British Columbia's Commodities

British Columbia's agriculture, fisheries and food industry produces many things for consumers, many more things than most people realize. Here is a list of over 280 primary agriculture and fish commodities produced by BC farmers and fishers.

Agriculture Crops

Floriculture

- Bedding plants
- Dried flowers
- Fieldgrown cut flowers
- Foliage plants
- Greenhouse cut flowers
- Potted plants
- Vegetable transplants

Nursery

- Broadleaf evergreens
- Bulbs
- Christmas trees
- Deciduous shrubs
- Shade trees
- Flowering trees
- Fruit trees
- Ornamental cut foliage (holly, etc.)
- Herbaceous perennials
- Sod
- Spreading evergreens
- Upright evergreens

Berries, Grapes and Nuts

- Black currants
- Blackberries
- Blueberries
- Boysenberries
- Cranberries
- Gooseberries
- Hazelnuts
- Kiwifruit
- Loganberries
- Raspberries
- Red currants
- Saskatoons
- Strawberries
- Table grapes
- Wine grapes (many varieties)

Vegetables

- Asparagus
- Baby carrots
- Baby corn
- Beans, green
- Beans, wax
- Beets
- Bok choy
- Broad beans
- Broccoli
- Brussels sprouts
- Cabbage, Chinese
- Cabbage, green
- Cabbage, red
- Cabbage, savoy
- Cantaloupe
- Carrots
- Cauliflower
- Celeriac
- Celery
- Chili peppers
- Collards
- Corn
- Cucumber, pickling
- Cucumber, slicing
- Eggplant

Endive (chicory)
Fennel
Garlic
Kale
Kohlrabi
Leeks
Lettuce, Boston
Lettuce, butter
Lettuce, green leaf
Lettuce, iceburg
Lettuce, red leaf
Lettuce, romaine
Lo bak
Marrow
Onions, green
Onions, red
Onions, silverskins
Onions, white
Onions, yellow
Parsley
Parsnips
Peas, pod
Peas, shelled
Peppers
Potatoes, seed
Potatoes, table
Pumpkins
Radicchio
Radishes
Rhubarb
Runner beans
Rutabagas
Shallots
Spinach
Squash (several varieties)
Suey choy
Tomatoes, field
Tomatoes, cherry
Turnips
Watercress
Watermelons
Zucchini

Greenhouse Vegetables
Cucumbers
Lettuce
Peppers
Tomatoes

Mushrooms
Agraricus (button)
Morel
Pine
Shitake

Tree Fruit
Apples (over 20 varieties)
Apricots
Crabapples
Nectarines
Peaches
Pears
Plums
Prunes
Sour cherries
Sweet cherries

Grains and Oilseeds
Barley
Buckwheat
Canola
Caraway seed
Corn (grain)
Dry field beans
Dry field peas
Flaxseed
Grass and legume seed (many varieties)
Oats
Rye
Soybeans
Triticale
Wheat
Yellow mustard

Livestock

Dairy Cattle Products
Dairy breeding stock
Dairy cattle
Embryos
Cow's milk

Beef Cattle Products
Beef breeding stock

Bull semen
Feeder cattle
Slaughter cattle

Calves
Feeder calves
Veal

Hogs
Market hogs
Suckling hogs

Poultry
Capon
Cornish game hen
Duck
Fowl
Frying chicken
Goose
Guinea fowl
Partridge
Pheasant
Squab
Quail
Roasting chicken
Silkies
Turkey

Eggs
Chicken eggs
Hatching eggs
Quail eggs
Duck eggs

Apiculture
Bee pollen
Bees
Beeswax
Honey
Royal jelly

Miscellaneous Livestock and Associated Products
Bison
Chinchilla
Deer antler
Emu
Fallow deer
Fox
Goats
Goat's milk
Horses
Lambs
Manure
Mink
Ostrich
Ponies
Rabbits
Reindeer
Sheep
Wild boar
Wool

Miscellaneous Agricultural Products
Biological control agents*
Corn for silage
Edible flowers
Flower and vegetable seeds
Forest products
Ginseng root
Ginseng seed
Hay and clover
Herbs*
Hops
Organic fruits and vegetables

*Biological control agents include: ladybugs, spider mite predator, whitefly parasites, aphid predator, insect parasitic nematode, manure fly parasites and thrips predator.
*Herbs include: anise, arugula, basil, chamomile, chervil, chicory, chili, chrysanthemum, cilantro, dill, ginger, lavender, lemongrass, mint, oregano, rosemary, saffron, savory, tamarind, tarragon, thyme and watercress.

Fisheries

Fish
Anchovy
Arctic charr
Dogfish
Eulachons
Flounder

Cod, Pacific
Cod, ling
Hagfish
Hake
Halibut
Herring, bait
Herring, food
Idiotfish
Mackerel
Perch, Pacific Ocean
Perch, silver
Pollock
Rainbow trout, farmed
Red snapper
Sablefish
Salmon, Atlantic, farmed
Salmon, chinook, farmed
Salmon, chinook, wild
Salmon, chum, farmed
Salmon, chum, wild
Salmon, coho, farmed
Salmon, coho, wild
Salmon, pink, wild
Salmon, sockeye, farmed
Salmon, sockeye, wild
Shark, six-gill
Skate
Smelt
Sole, butter
Sole, dover
Sole, English
Sole, petrale
Sole, rex
Sole, rock
Steelhead, farmed
Steelhead, wild
Sturgeon
Tuna
Turbot
Yellow mouth
Yellow tail

Roe

Cod, Pacific
Herring
Pollock
Sea urchin, red
Salmon, farmed
Salmon, wild

Shellfish

Crabs
Crayfish
Krill
Prawns
Shrimp

Molluscs

Abalone
Clams, butter
Clams, geoducks
Clams, horse
Clams, little neck
Clams, manila
Clams, razor
Gooseneck barnacles
Mussel, blue
Octopus
Oysters, European, farmed
Oysters, Pacific, farmed
Scallops, Japanese
Scallops, pink
Scallops, spiny
Snails
Squid

Miscellaneous Seafood

Dulse
Kelp
Roe on kelp
Sea asparagus
Sea urchins, green
Sea urchins, purple
Sea urchins, red
Sea cucumbers

199 agricultural commodities and 83 fisheries commodities.

Source:
Statistics Unit, Public Affairs Branch, BC Ministry of Agriculture and Lands.

Glossary

Acidic soil - refers to a soil with a pH below 7

Agriculture - agriculture is an applied science that uses water, energy (heat and light) as well as soil nutrients to grow plants, raise animals and rear fish for food and other related products

Aggregate fruit - a clustered fruit composed of numerous fruitlets each with its own seed

Agri-business - the group of industries dealing with the produce of, and services to, agriculture

Apiarist - a beekeeper

Artificial insemination (AI) - the injection of semen into the vagina or uterus by instrumental means

Avian - of or relating to birds

BC's Farm Practices (Right to Farm) **Act** - protects farmers who use normal farming practices, creates a process to resolve complaints and encourages local governments to support farming

Beta-carotene - a plant form of vitamin A

Biodiversity - biological diversity-the variety of plants, animals and other organisms in an ecosystem

Biodynamic farming - involves restoring the soil to a balanced living condition through the application and use of stabilized humus (well rotted organic matter)

Biotechnology - the application of science and engineering in the direct or indirect use of living organisms, or parts or products of living organisms, in their natural or modified forms. Bio-(biology - the science of living things) Technology-(the tools and processes used to make products). Biotechnology is using biology to make new products.

Brassica - cruciferous plants with tap roots and erect branched stems, including cabbage, Brussels sprouts, mustard, rape, cauliflower and kale

Breeder operation - an operation in which poultry is bred to produce fertilized eggs

Brooder - a heated house for chicks, piglets, etc.

Castrated animal - an animal that has had its testicles removed

Cellulose - a carbohydrate that is the main constituent of plant-cell walls

Colostrum - the first secretion from the mammary glands after giving birth. This thick, yellow milk contains antibodies that are passed on to the young.

Compost - a combination of organic matter, soil, nutrients, moisture and lime in a state of partial and continuing decay used as a soil conditioner and/or fertilizer

Conservation - management of natural resources for present and future uses

Cover Crop - a crop grown to cover the soil and protect it from wind and water erosion

Cross pollinate - the passing of pollen from the

male part of one plant to the female part of another

Cruciferous - plants that have flowers with four petals arranged in the shape of a cross

Cud - a mouthful of previously swallowed food regurgitated from the first stomach of ruminants to the mouth where it is chewed slowly a second time

Culti-pack - a field preparation operation, often the last before seeding, which breaks up clods of dirt and firms and levels the soil surface

Cultivar - a plant variety produced by cultivation

Cultural practices - techniques used in growing a plant that include planting resistant varieties, rotating crops, spacing and pruning methods, providing good drainage and irrigation

Curing - to preserve meat, fruit or skins by salting, drying, etc.

Cutting - any part that can be severed from a plant and is capable of regeneration

Desiccate - remove the moisture from

Dioecious - having male and female organs on separate plants

Direct Marketing Board - an organization that controls the supply of a particular product (ie milk or eggs) by setting the prices for the product and by managing the sales of the product

Dressed weight - the weight of a meat cut after slaughter, defeathering or skinning and evisceration

Dwarfing rootstock - a root stock that limits the mature size of the plant that is grafted onto it

Ecology - the study of relationships between organisms and the environment

Entomologist - a specialist in the study of the forms and behaviour of insects

Estrus - a recurring period of sexual receptivity in many female animals; heat

Eviscerate - remove internal contents

Farm gate value - the cash value of a product when it leaves the farm

Feed-conversion rate - the rate at which feed is converted into weight gain

Fertile - a) of soil - capable of producing an abundance of crops, b) of animals and plants - able to reproduce

Fertilizer - a substance added to the soil to make it more fertile

Fertilization - the joining of male and female cells to produce offspring

Flora and Fauna - plant and animal life

Free Trade - international trade left to its natural course without tariffs, quotas or other restrictions

Free Trade Agreement - an agreement between countries of a particular region to allow certain goods and services to be traded among them without tariffs, quotas or other restrictions

Fructose - a simple sugar found in honey and fruits

Fungicide - a fungus destroying substance

Genetic modification (genetic engineering, genetic manipulation) - a series of techniques used to transfer genes from one organism to another or to alter the expression of an organism's genes.

Gestation period - the period between conception and birth

Gizzard - the second part of a bird's stomach used for grinding food, often with grit

Grafting - is a method of plant propagation

(reproduction) in which a scion (a bud or stem containing several buds) of one plant is inserted into the stock (root, stem or branch) of another plant so that they unite and grow as one plant

Green Manure - a growing crop plowed under and mixed with the soil to enrich it with organic matter

Grit - hard particles such as stone or sand

Habitat - a place where the needs for food, water and shelter of an organism are met

Harden off - acclimatize a plant to a change in its environment by gradual increase of its exposure to the new environment

Harrow - a heavy frame of iron teeth which is dragged over a field to break up clods of soil and to level freshly plowed farm land

Hatchery - a place for hatching eggs, especially of fish or poultry

Heat - the receptive period of the sexual cycle, especially in female animals

Herbaceous perennial - soft stemmed plants that live from year to year and which die down at the end of each growing season

Herbicide - a substance that kills unwanted plants

Horticulture - the science and art of growing fruits, vegetables, ornamental trees, shrubs and flowers

Hydro-cool - immerse in ice water to chill

Hydroponics - the technique of growing plants in a medium other than soil, using a feeding mixture of essential plant nutrients dissolved in water

Incubator - an apparatus used to provide a suitable temperature and environment to hatch eggs

Integrated Pest Management (IPM) - involves a balance of cultural, biological, chemical and other methods to control rather than eliminate pest populations with minimum impact on the environment

Insecticide - a substance that kills insects, bugs and larvae

Leaflets - any division of a compound leaf

Legume - a member of the pea family that has the ability to transform nitrogen from the air into a form that can be utilized by plants

Litter - (a) straw, hay, wood shavings or other materials used as bedding for animals, (b) the young born at one time by an animal that normally produces several young at birth

Maggot - larva of a fly

Mulch - a layer of material spread over the surface of soil to protect it and plant roots from erosion, crusting, drying and freezing

NAFTA - a trade agreement signed in November 1993 between the United States, Canada, and Mexico to establish free-trade guidelines between the three countries.

Pasteurized - subject to the process of partial sterilization by heating

Pathologist - a specialist who deals with the nature of disease, especially the structural and functional changes caused by disease

Pectin - a soluble fibre found in ripe fruit and used as a setting agent in jams and jellies

Perennial - a plant that lives from year to year

Pesticides - an insecticide, herbicide or fungicide. A substance, usually synthetic, which kills a selected type of living thing.

Pheromones - a chemical secreted and released by an animal for detection and response by another

Physiologist - an expert who deals with the function and vital processes of living organisms

Pollinate - the transfer of the pollen from one flower to the stigma of another flower, which is the first step in producing fruit

Pome fruit - a firm-fleshed fruit in which multiple seeds are protected by a central core

Profit margin - the profit remaining in a business after all expenses have been deducted

Pulse crop - the plant producing the edible seeds of various legume, e.g., chickpeas, lentils and beans

Quota - rules set on how much of a commodity a particular producer can produce

Refractometer - a hand-held instrument used to determine the level of sugar in fruit

Retail value - the cash value of a product sold to the final consumer, often in small volumes and sold through a retail outlet

Riparian area - the area that borders a stream, a lake or a wetland area.

Rootstock - the underground part of a plant including a short portion of a trunk onto which a cultivar can be grafted

Ruminant - a group of four-footed, hoofed, even-toed, cud-chewing mammals

Stone fruit - a fruit with a fleshy pulp that encloses a single seed in a hard shell

Strip Cropping - a soil conservation technique- alternating rows of grain/forage crops like rye or clover with cash crops like corn

Subsidy - a sum of money granted by the government or a public body to assist a business or an industry in keeping the price of a commodity or service low enough to remain competitive

Supply management - a distribution system in which the total quantity of a product produced in an industry is controlled, often through quota. This maintains a level of financial return to farmers.

Sustainability - a system that works in a healthy state indefinitely

Taproot - a tapering root that grows vertically downward in which a plant stores food

Tariff - a tax or duty to be paid on a particular class of imports or exports

Tuber - a fleshy, food-storing swelling of an underground stem

U-pick - a pick-your-own operation in which customers go to the producer's farm and pick their own produce

Variegated - leaves with two or more colours

Vegetative propagation - to cause to generate or multiply plants by asexual means such as layering, cutting or grafting

Watershed - the entire land surface from which water ultimately drains into a particular stream or river system.

Wean - accustom a young mammal to food other than its mother's milk

Whorled leaves - a ring of leaves round the stem of a plant

Wildlife - non-domesticated plants and animals

Windbreak - vegetation barriers used to protect crops from dessication and breakage and soil from wind erosion

Windrowed - placing the crop into rows to dry before it is collected

Resources and Contacts

For more information and resource materials both from inside and outside BC, please contact the following agencies directly. Although this not a complete list of every agency in BC related to the agri-food industry, it represents the key agencies, which could offer help to educators.

Some may have educational materials, while most do not. However, they may help with other contacts or general information.

Often, the marketing board, if one exists, or the marketing agency for a particular commodity is the better source of information, while the producer group is generally an administrative membership office.

Animal

BC Bison Association
21845 Hwy 97S
Prince George BC V2N 6A3
www.bcbuffalo.ca

BC Broiler Hatching Egg Commission
180 - 32160 S. Fraser Way
Abbotsford BC V2T 1W5
604-850-1854
www.bcbhec.com

BC Cattlemen's' Association
#4-10145 Dallas Dr.
Kamloops BC V2C 6T4
250-573-3611
www.cattlemen.bc.ca

BC Chicken Grower's Association
PO Box 581 Abbotsford BC V2T 6Z8 604-859-9332
www.bcchicken.ca

BC Chicken Marketing Board
101 - 32450 Simon Ave
Abbotsford BC V2T 4J2
604-859-2868
www.bcchicken.ca

BC Dairy Council
5805 Wales Street
Vancouver BC V5R 3N5
604-434-2434
www.bcdairycouncil.ca

BC Dairy Foundation
3236 Beta Ave
Burnaby BC V5G 4K4
1-800-242-MILK
http://bcdairy.ca/

BC Egg Marketing Board
#150 32160 South Fraser Way
Abbotsford BC V2T 1W5
www.bcegg.com

BC Fallow Deer Association
28481 Starr Rd
Abbotsford BC V4X 2C5

BC Goat Breeders Association
41690 No. 3 Road
Chilliwack BC V2R 5G1
604-823-7144

BC Goat Milk Producers Association
3421 Boundary Rd
Abbotsford BC V3G 2N1
Ph/Fax 604-823-0186

BC Hog Marketing Commission
2010 Abbotsford Way
Abbotsford BC V2S 6X8
604-864-9096
www.bcpork.ca

BC Livestock Producers Cooperative Association
#1 - 10145 Dallas Dr
Kamloops BC V2C 6T4
250-573-3939
www.bclivestock.bc.ca

BC Llama & Alpaca Association
www.bclaa.com

BC Milk Marketing Board
200 - 32160 S. Fraser Way
Abbotsford BC V2T 1W5
604-556-3444
www.milk-bc.com

BC Milk Producers Association
3236 Beta Ave
Burnaby BC V5G 4K4
1-877-462-2672
http://bcdairy.ca/dairyfarmers/

BC Pork Producers Association
2010 Abbotsford Way
Abbotsford BC V2S 6X8
604-853-9461
http://bcpork.ca/producers/bc-pork/

BC Purebred Sheep Breeders' Association
www.bcsheep.com

BC Specialty Birds Association
32351 Huntington Rd.
Abbotsford BC V2T 5Y8
604-854-6776

BC Stock Dog Association
PO Box 635 100 Mile House V0K 2E0
250-395-4785
http://www.stockdog.bc.ca/

BC Sustainable Poultry Farming Group
4582 Bell Rd Clayburn BC V3G 2M1
604-556-7781
www.sustainablepoultry.ca

BC Turkey Marketing Board
#106 - 19329 Enterprise Way
Surrey BC V3S 6J8
604-534-5644
www.bcturkey.com

Canadian Ostrich Association
www.ostrich.ca

Cattle Industry Development Council
#4-10145 Dallas Dr
Kamloops BC V2C 6T4
250-573-3611
www.cattlefund.net

Horse Council of BC
27336 Fraser Hwy,
Aldergrove BC V4W 3N5
www.hcbc.ca

Fish

BC Salmon Farmers Association
#302-871 Island Highway
Campbell River BC V9W 2C2
1-800-661-7256
www.salmonfarmers.org

BC Salmon Marketing Council
Ste. 1100 - 1200 W. 73rd. Ave Vancouver BC V6P 6G5
604-267-3030
www.bcsalmon.ca

BC Shellfish Growers Association
Unit F - 2002 Comox Ave
Comox BC V9M 3M6
250-890-7561
http://bcsga.ca/

Freshwater Aquaculture Association of BC
3104 Cardinal Dr.
Burnaby BC V5A 2T6
604-626-6747
www.aquaculturebc.com

Positive Aquaculture Awareness
Box 952 Campbell River BC V9W 6Y4
www.farmfreshsalmon.org

Plant

Associated Ginseng Growers of British Columbia
Box 241 Vernon BC V1T 6M2
250-545-4737
www.bcginseng.com/

BC Asparagus Growers Association
2651 Camp Road
Winfield BC V4V 1K4

BC Blueberry Council
Box 8000-730
Abbotsford BC V2S 6H1
604-864-2117
www.bcblueberry.com

BC Certified Seed Potato Growers Association
4119 - 40th St Ladner BC V4K 3N2
Ph/Fax 604-940-2024
http://bcseedpotatoes.com/

BC Cranberry Growers Association
#130 - 32160 South Fraser Way
Abbotsford BC V2T 1W5
604-854-4499
www.bccranberrygrowers.com/

BC Cranberry Marketing Commission
#71 - 4001 Old Clayburn Rd
Abbotsford, BC V3G 1C5
604-852-8585
bccranberries.com

BC Forage Council
www.farmwest.com

BC Fruit Growers' Association
1473 Water Street
Kelowna BC V1Y 1J6
250-762-5226
www.bcfga.com/

BC Grain Producers Association
Box 16 Dawson Creek BC V1G 4H3
866-716-7170
250-782-7170
www.bcgrain.com

BC Grape Growers Association
Box 2462, Stn R
Kelowna BC V1X 6A5
www.grapegrowers.bc.ca

BC Greenhouse Growers' Association
#108-7565 132nd St
Surrey BC V3W 1K5
604-591-5480
www.bcgreenhouse.ca

BC Hazelnut Association
6320 Wilson Road
Agassiz BC V0M1A1
604- 796-1066

BC Herb Growers Association
4020 Casorso Rd
Kelowna BC V1W 4N6
Ph/Fax 250-764-1263

BC Landscape & Nursery Association
102 - 5783 176A St
Surrey BC V3S 6S6
604-574-7772
www.bclna.com

BC Potato & Vegetable Growers Association
Box 18565 Delta BC V4K 4V7
Ph/Fax 604-940-2024

BC Raspberry Industry Development Council
#130-32160 South Fraser Way, Abbotsford BC V2T 1W5 604-854-8010
www.bcraspberries.com

BC Tree Fruits Limited
1473 Water Street
Kelowna BC V1Y 1J6
250-470-4200
www.bctree.com

BC Vegetable Marketing Commission
#207 - 15252 32nd Ave
Surrey, BC V3S 0R7
604-542-9734
www.bcveg.com

BC Wine Institute
Suite 107 – 1726 Dolphin Ave
Kelowna BC V1Y 9R9
1-800-661-2294
www.winebc.com

Canadian Grain Commission
Western Regional Office
300 – 333 Seymour Street
Vancouver BC V6B 5A6
www.grainscanada.gc.ca

Canadian Seed Growers Association BC Branch
c/o BC Ministry of Agriculture& Lands
4th Floor 1201 103rd Ave,
Dawson Creek BC V1G 4J2
http://seedgrowers.ca/

Canola Council of Canada
400-167 Lombard Ave.
Winnipeg MN R3B 0T6
204-982-2100
www.canolacouncil.org/

Certified Organic Associations of BC
3402 - 32nd Ave Vernon
BC V1T 2N1 250-260-4429
www.certifiedorganic.bc.ca

Flowers Canada
929 5th Avenue Suite 305
Ottawa ON K1S 5P5
www.flowerscanada.org

Fraser Valley Pea, Bush Bean, Cole Crop, Corn Growers Association
Tel: 604.946.2643

Fraser Valley Strawberry Growers Association
Suite 100-32160 South Fraser Way
Abbotsford BC V2T 1W5
604-864-0565
www.bcstrawberries.com

Grasslands Conservation Council of BC
954 A Laval Crescent
Kamloops BC V2C 5P5
250-374-5787
www.bcgrasslands.org

Invasive Plant Council
#104 - 197 N. 2nd Ave.,
Williams Lake BC V2G 1Z5
www.bcinvasives.ca/

Kiwifruit Association of BC
1485 Newton Heights Rd
Saanichton BC V8M 1T6
250-652-3745

Mushroom Industry Development Council
PO Box 356 151-32500 South Fraser Way
Abbotsford BC V2T 4W1
604-850-6670
www.mushrooms.ca/about.aspx

United Flower Growers' Co-operative Association
4085 Marine Way Burnaby
BC V5J 5E2 604-430-2211
www.ufgca.com

Western Canada Turfgrass Association
22097 Isaac Crescent
Maple Ridge BC VX 0V9
http://wcta-online.com/

Apiculture

BC Honey Producers Association
2810 Fairfield St.
Duncan BC V9L 6B9
www.bcbeekeepers.com

Education

BC Agriculture in the Classroom Foundation
Abbotsford Agri. Centre
1767 Angus Campbell Rd
Abbotsford BC V3G 2M3
604-556-3088
www.aitc.ca/bc

Other AITC groups across Canada
www.aitc.ca

BC 4-H Foundation
Box 490 #1-904 Maud St,
Enderby BC V0E 1V0
1-866-776-0373
www.bc4h.bc.ca/home

BC Ministry of Education
Curriculum Development
Science and Technology
620 Superior St
PO Box 9152 Stn. Prov. Gov't. Victoria, BC
V8W 9H1
www.gov.bc.ca

Other

Agriculture and Agri-Food Canada
www.agr.gc.ca

Agriculture Environment Initiatives
#102 - 1482 Springfield Rd
Kelowna BC V1Y 5V3
250-763-9790

Agricultural Labour Pool
#106-2669 Langdon St.
Abbotsford BC V2T 3L3
604-855-7281
www.agri-labourpool.com/

Agriculture Research & Development Corporation (ARDCOPR)
#140-32160 South Fraser Way Abbotsford BC
V2T 1W5 604-854-4483

BC Agriculture Council
102 -1482 Springfield Rd
Kelowna BC V1Y 5V3
250-763-9790
www.bcac.bc.ca

BC Association of Agricultural Fairs & Exhibitions
944 Brooks Place,
Courtenay BC V9N 9E3
Ph/Fax 250-898-8582
www.bcfairs.ca

BC Association of Farmers Markets
21845 Highway 97S
Prince George BC V2N 6A3
250-330-4465
www.bcfarmersmarket.org

BC Farm Fresh
www.bcfarmfresh.com

BC Farm Writers Association
Box 338 Chilliwack BC
V2P 6J4 604-858-9193
www.bcfwa.ca/

BC Food Processors Association

Suite 204 2929
Commercial Drive
Vancouver BC V5N 4C8
604-871-0190
www.bcfpa.ca

BC Institute of Agrologists
#205 - 733 Johnson St
Victoria BC V8N 3C7
250-380-9292
www.bcia.com

BC Ministry of Agriculture and Lands
PO Box 9043, Stn Prov Gov't
Victoria BC V8W 9B4
www.gov.bc.ca/al

BC Veterinary Medical Association
Suite 107-828
Harbourside Dr
North Vancouver BC
V7P 3R9
604-929-7090
www.bcvma.org

Delta Farmland & Wildlife Trust
#205 - 4882 Delta Street
Delta BC V4K 2T8
604-940-3392
www.deltafarmland.ca

Ducks Unlimited Canada
BC Western Region
Unit 511, 11370 - 78 Ave
Surrey BC V3W 0H6
604-592-0987
www.ducks.ca

Farm & Ranch Safety & Health Association (FARSHA)
Suite 311-9440 202nd St
Langley BC V1M 4A6
1-877-533-1789
www.farsha.bc.ca

Farm Folk/City Folk Society
1937 West 2nd Ave
Vancouver BC V6J 1J2
604-730-0450
www.farmfolkcityfolk.ca

Fisheries and Oceans Canada
www.dfo-mpo.gc.ca

Fraser Basin Council
1st Floor 470 Granville Street
Vancouver BC V6C 1V5
604-488-5350
www.fraserbasin.bc.ca

Fraser Valley Farm Direct Marketing Association
Box 327, #800-15355 24th Ave
White Rock BC V4A 2H9
604-535-5282
www.bcfarmfresh.com

InfoBasket
http://www2.gov.bc.ca/gov/topic.page?id=-C89E440D70E243D-98D67769EFABAEB84

Investment Agriculture Foundation
PO Box 8248 Victoria BC
V8W 3R9
250-356-1662
www.iafbc.ca

Irrigation Industry Association of BC
2330 Woodstock Dr
Abbotsford BC V3G 2E5
604-859-8222
www.irrigationbc.com

Pacific Agri-Food Research Centre
Agassiz Site
6947 No. 7 Highway/ P.O. Box 1000
Agassiz BC V0M 1A0
604-796-2221

Smart Growth BB
314 - 402 West Pender St
Vancouver BC V6B1T6
604-915-5234
www.smartgrowth.bc.ca

Western Canadian Farriers Association
10373 - 272nd St
Maple Ridge BC V2W 1R1
604-462-8572
www.WCFA.ca

Western Canadian Functional Foods Network Rm 218, Food, Nutrition & Health Building
2205 East Mall UBC
Vancouver BC V6T 1Z4
604-822-6920
www.bcfn2.com

Westgen
(Western Canada's Genetics Centre)
Box 40 Milner BC V0X 1T0
604-530-1141
1-800-563-5603
www.westgen.com