

Agriculture in the Columbia Basin Background Paper

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Executive Summary

Agriculture is an integral part of the history, culture, and social and economic fabric of the Canadian Columbia Basin region. For thousands of years prior to European settlement, local First Nations people inhabited the Columbia River's shores and utilized land and resources within the Basin for sustenance. In the late 1800s land was marketed to the original European settlers as agricultural property under the Pre-emption Act and they undertook subsistence farming activities. Over time, cultivated agriculture expanded to include mixed production and utilization of Crown range land to meet local needs for agricultural goods. Today, the region supports a diversity of farm operations producing a broad range of agricultural products including tree and bush fruits, vegetables, potatoes, poultry, eggs, milk and other dairy products, cereal grains, hay and Christmas trees, as well as beef cattle, hogs, sheep, goats, horses and specialty livestock.

Agricultural Resources

The generally mountainous topography of the Basin places a wide range of both climatic and soil limitations on land capability for agriculture. Farming and ranching occur primarily along the valley bottoms of the major drainages associated with the Rocky, Purcell, Selkirk and Monashee mountain ranges. Most locations have thermal climatic capabilities to support a broad range of crops, with some risk of spring or fall frost. The limiting factor is the climatic moisture deficit, which limits plant growth at some point during the growing season, unless irrigation water is applied. Soil capability is highly variable, with topography, insufficient moisture holding capacity and stoniness being the predominant limitations to agricultural capability.

A majority of the Basin region experiences a seasonal water deficit. As a result, irrigation is necessary in order to fully optimize production of field crops. Farms and ranches rely primarily on surface water licenses for irrigation and livestock watering needs. A total of 4,052 water licenses are currently permitted for agricultural purposes, with irrigation accounting for more than 99% of the total water volume on an annual basis.

Farm Characteristics

According to 2011 Census of Agriculture data, the RDEK accounts for approximately 58% of all census farmland within the Basin, but only about one-third of the total number of farms. Conversely, the RDCK is home to only 18% of the farmland, but almost half of the farm operations. Comparisons of 2011 and 2001 census data indicate a decline in both farmland area, from 161,747 ha in 2001 to 136,978 ha in 2011, and in the number of farms, from 1,296 in 2001 to 1,159 in 2011. Average farm size, which reflects the diversity in the predominant types of agriculture enterprises across the Basin, has declined from 125 ha in 2001 to 118 ha in 2011.

Natural rangeland and tame pasture for livestock production is the dominant agricultural land use in the Basin, occurring on 59% of the census farmland in 2011. Crops, which includes a broad array of grain, forage, vegetable, fruit and nursery products, account for 21% of farmland use. Woodlands, wetlands, Christmas tree operations, idle land and farm infrastructure account for the remainder.

The RDEK accounts for two-thirds of the natural and tame pasture land use and approximately one-third of the crop land use in the Basin. Almost 45% of RDCK census farmland is utilized for crop production; another 34% is used for pasture. Farmland uses in the RDKB and CSRD electoral areas within the CBT boundary account for 6% of all farmland uses within the Basin.

Hay and forage crops, predominantly alfalfa and alfalfa/grass mixtures, account for the majority of cultivated crop production in the Basin based on land use. The RDCK accounts for more than 55% of the field crop (grains, oilseeds, etc.) area; 92% of the area planted to fruits, berries and nuts; and 85% of the vegetable and nursery production. Commercial-scale greenhouse operations are located in both the RDCK and RDEK, with the majority of production focused on flowers and bedding plants. Comparisons with census data from 2001 and 2006 indicates that, in general, the area sown to hay crops has remained relatively static, field and fruit crops area have declined slightly, and vegetable and greenhouse/nursery production has increased.

All major classes of livestock, and several specialty classes, are produced within the Basin. Beef cattle and calves are the predominant type of livestock, with the RDEK accounting for 37% of the farms and 54% of the total animals. A majority of the poultry, pig and dairy cattle production occurs in the RDCK, predominantly in the Creston Valley. Comparisons with Census data from 2001 and 2006 indicates that all major classes of livestock have exhibited decline in the number of farms reporting and the number of animals on farms.

The average age of farm operators in the Basin increased from 54.8 years to 57.1 years of age between the 2006 and 2011 census years, and exceeds both the provincial and national averages.

Farm Economics and Profitability

Land and buildings represent 91.5% of the total farm capital value in the Basin, followed by farm machinery at 6.5% and livestock at 2%. Between 2006 and 2011 the value of owned land and buildings increased by 38.5% and 45.7% in the RDEK and RDCK respectively, and declined in the remaining regions of the Basin. The value of farm machinery and livestock and poultry declined in all regions over the same period. The average capital value of farms ranged from \$719,549 in the RDKB to \$1,718,919 in the RDEK in 2011.

The overall average gross farm receipts for the Basin was \$48,174 in 2011 compared to the provincial average of \$148,506. More than 50% of all census farms in the Basin reported gross farm receipts of less than \$10,000 in each of the past three census years (2001, 2006 and 2011). It is important to note that small, part-time, hobby and/or self-sufficiency operations that may not have much expectation of income are included in the census numbers, and there is no means of separating their data from commercial-scale farm and ranch operations.

Agricultural Commerce

An increasing number of farms and ranches marketing farm products directly to the public from the farm gate, offering products ranging from breads and grains to herbs, spices, fruits, vegetables, preserves, honey, eggs and meat. In addition, farmers' markets continue to grow in number and diversity, with more than a dozen seasonal markets in communities throughout the Basin offering local produce.

Value added processing and manufacturing of agriculture and food products is currently a very small sector in the Basin, with a focus on bakeries and small-scale food processors (e.g. honey, fruit and vegetable products) and wineries.

The majority of agricultural products produced in the Columbia Basin are processed and marketed outside the region. There are no longer any local or regional stockyards or auction markets to facilitate local sales of livestock. As a result, most livestock are shipped to Alberta for finishing and slaughter. Similarly, there is no commercial-scale infrastructure associated with grains (i.e. elevators, producer car load-out facilities), fruits, vegetables or forage production or processing.

Agricultural Planning

Agricultural plans have been developed by the RDCK, RDEK and RDKB. Commonly identified challenges, opportunities, and suggestions outlined in the three plans include:

- *Increasing Demand, Decreasing Supply* - The demand for locally grown and organic food is increasing and there are opportunities to expand local agricultural production. However, the area being farmed and the volume of agricultural produce offered for sale is decreasing.
- *Land Supply* - Agricultural land is becoming increasingly underutilized, often taken out of production or unavailable to farmers due to increasing land values which are often based on development or recreational uses as opposed to agriculture.
- *Farmers* - The number of farms and farm operators is decreasing, and the average age of farmers is increasing, suggesting that farm succession and transition may be issues in the future. However, increased interest in local food production suggests the next generation of farmers is available and interested. The challenge is connecting current and prospective farmers and facilitating transition.
- *Financial Viability* - Average profitability levels are not sufficient to sustain and grow a farm operation. If farming became more financially viable, more young people would be able to get into farming, more farmers would be able to keep farming, fewer farmers would have to look for off-farm work, more land would be put towards food production, and more food produced.

A synthesis of the recommendations in the three agricultural plans indicates that the strategies for addressing gaps and enhancing the agricultural industry can generally be placed in three separate, but related categories:

- *Information Needs* – There is an identified need for farm advisory services, new farmer training, market research, and additional information and research to address gaps in knowledge related to alternative land access models, irrigation efficiency, invasive weed management and climate change adaptation.
- *Policy* – While there are limited policy options for municipal governments to profoundly influence agriculture within the Basin, there are a number of regional taxation, zoning and bylaw revision suggestions that could enhance agriculture and/or reduce barriers.
- *Investment* - Significant investment of financial and human resources is needed to develop and sustain infrastructure that will support local food systems. This not only includes physical infrastructure such as storage, distribution and processing facilities, as well as tools and equipment, but also investment in marketing and brand development strategies, farm advisory services, education and training, information technology and research.

Emerging Trends and Opportunities

The development and implementation of a *regional agri-food system strategy* that encompasses the interests of all stakeholders is a critical step in ensuring a sustainable agricultural industry in the Columbia Basin. Public opinion surveys show that 92% of BC residents believe that BC should produce enough food to feed itself so the province does not have to rely on import products. In the Columbia Basin-Boundary Region, 75% of residents prefer to buy food that was produced locally, and more than two-thirds would be willing to pay extra for local food. The fact that approximately 95% of the food consumed in the Basin-

Boundary region is imported from other parts of the province, from other provinces, or internationally suggests there is enormous potential for local producers and processors to expand.

Consumers are now connecting personal health, food safety, and *environmental concerns*, and relying significantly on their *social values* and belief structure when making purchasing decisions. Purchasing trends are now partly driven by environmental concerns, in addition to concerns related to how far food travels and its overall ecological footprint, if foods can be sourced locally or in their own country, if they are grown using sustainable production methods, and whether a product's positioning on issues such as the environment or method of production, align with individual values, perceptions or knowledge.

Globally, *incentivizing the production of Ecosystem Services* is a concept that has been garnering a tremendous amount of interest. Ecosystem Services are benefits derived from ecological functions of healthy ecosystems, which are recognized as necessary for human health and well-being. The BC Ecological Services Initiative (ESI) is in the process of developing an incentive-based ecosystem services program for agricultural lands in BC and Alberta, focusing on a model that would function at the regional or watershed scale.

Research Needs

A number of key research needs have been identified within the context of the three agricultural plans of the Columbia Basin-Boundary regions. These include:

- Analysis of “agri-food systems” for key products and commodities that are currently produced and/or potentially adapted for production within the Basin;
- Agricultural water demand modelling for all watersheds within the Basin;
- Climate change trends and adaptation modelling;
- Agricultural, climatic and economic capability mapping/modelling that links soil and climatic data (including solar radiation), water demand/access modelling and economic/profitability data as a means of identifying the “best use” of available agricultural lands;
- Local/regional food supply capacity feasibility studies to determine what proportion of the total daily dietary requirements (according to the Canada Food Guide recommendations) of Basin residents could realistically be produced and processed locally;
- Collaboration with existing groups and organizations to research and facilitate the development agricultural policy and programming for Paid Ecosystem Services initiatives;
- Supporting local food safety and food security initiatives by assessing the potential for alternative farming/production systems (e.g., organic, GM-free, permaculture) that respond to local niche markets;
- Studies that explore the public amenity benefit associated with agricultural land, similar to those completed for Metro Vancouver and Fraser Valley-Abbotsford; and
- Opportunities for innovation and productivity enhancement in each segment of the agriculture and agri-food system: primary production, food processing, consumer services and food distribution.

Glossary

AAC	Agricultural Advisory Commission
AAFC	Agriculture & Agri-Food Canada
ALC	Agricultural Land Commission
ALR	Agricultural Land Reserve
ALUI	Agricultural land use inventory
APC	Advisory Planning Commission
APSC	Agricultural Plan Steering Committee
AWDM	Agriculture Water Demand Model
Basin	Canadian Columbia Basin region
BC	British Columbia
BCAC	BC Agricultural Council
BMP	Beneficial Management Practices
BRM	Business Risk Management
CABI	Canadian Agri-Food Policy Institute
CBT	Columbia Basin Trust
CFIA	Canadian Food Inspection Agency
CLI	Canada Land Inventory
CRT	Columbia River Treaty
CSA	Community Supported Agriculture
CSRD	Columbia-Shuswap Regional District
ESI	Ecological Services Initiative
FIRB	Farm Industry Review Board
FRPA	Forest and Range Practices Act
GREP	Grassland and Rangeland Enhancement Program
IAFBC	Investment Agriculture Foundation of British Columbia
MIR	Meat Inspection Regulations
OCP	Official Community Plans
OMRR	Organic Matter Recycling Regulation
PAO	Provincial Approving Officer
PARC	Pacific Agri-Food Research Centre
PAZWP	Provincial Agriculture Zone Wildlife Program
PES	Referred to as Paid Ecosystem Services
RD	Regional District
RDCK	Regional District of Central Kootenay
RDEK	Regional District of East Kootenay
RDFFG	Regional District of Fraser-Fort George
RDI	Rural Development Institute
RDKB	Regional District of Kootenay-Boundary
SGRC	Selkirk Geospatial Research Centre
UBC	University of British Columbia

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1. Introduction

1.1. Purpose

CBT has identified various topics, including agriculture for further investigation to better understand the Basin context and determine what, if any role may be appropriate for CBT. CBT will undertake research in the field of agriculture including economic, social and heritage aspects of agriculture to build a comprehensive picture of agriculture in the [Columbia Basin Trust region](#). The intent of this paper is to provide a foundation for internal discussions around existing agricultural activities, challenges and opportunities in the region; it does not identify or suggest a role for the CBT.

2. Agriculture in the Canadian Columbia Basin

2.1. History

Agriculture is an integral part of the history, culture, and social and economic fabric of the Canadian Columbia Basin region. For thousands of years prior to European settlement, local First Nations people inhabited the Columbia River's shores and utilized land and resources within the Basin for sustenance. In the late 1800s land was marketed to the original European settlers as agricultural property under the Pre-emption Act and they undertook subsistence farming activities. Over time, cultivated agriculture expanded to include mixed production and utilization of Crown range land to meet local needs for agricultural goods. Today, the region supports a diversity of farm operations producing a broad range of agricultural products including tree and bush fruits, vegetables, potatoes, poultry, eggs, milk and other dairy products, cereal grains, hay and Christmas trees, as well as beef cattle, hogs, sheep, goats, horses and specialty livestock. Agriculture has adapted to the topography in recognition of the constraints of localized soil capability and climate characteristics in the Basin. Farming and ranching occur primarily along the valley bottoms of the major drainages associated with the Rocky, Purcell, Selkirk and Monashee mountain ranges.

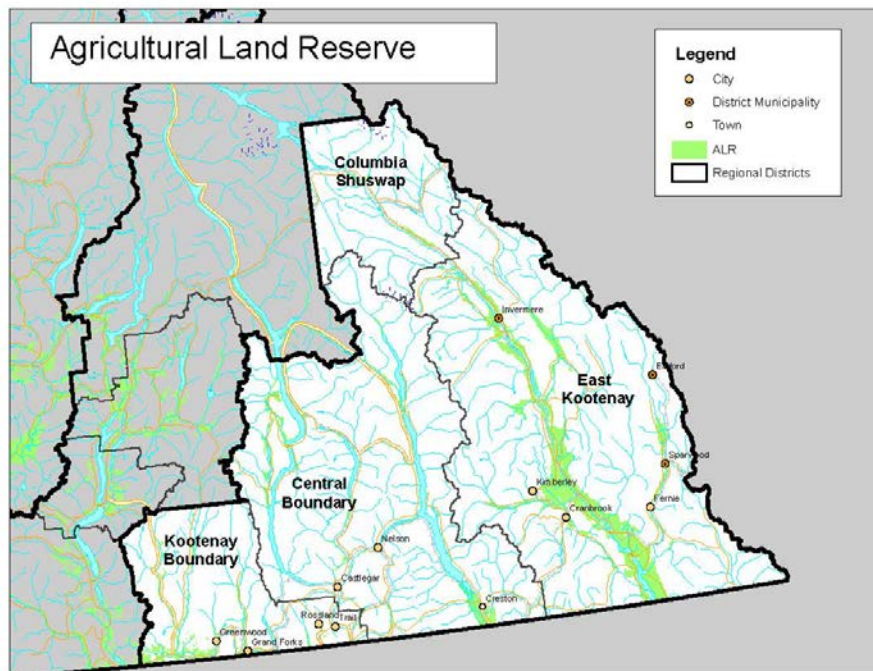


Figure 1. General distribution of agricultural land in the Basin

2.1.1. Columbia River Treaty Dams and Reservoirs

The 1964 Columbia River Treaty (CRT) and subsequent international water and energy management agreements were created to meet flood control and hydroelectric power generation needs at a time when society and governments focused on demographic growth, flood control, harnessing resources and economic development.¹ The CRT resulted in the development of four dams and related reservoirs: Duncan in 1967; Keenleyside (Arrow) in 1968; Mica in 1973; and the Libby Dam in Montana in 1973.

Flooding caused by the filling of the four Columbia River Treaty reservoirs and the non-Treaty Revelstoke Dam covered large sections of valley bottom land. Approximately 65,000 hectares (231 square miles) of valley land, and over 50,000 hectares of lakes, rivers, ponds streams and related fish, wildlife, waterfowl, bird and other species habitat were flooded. Approximately 2,300 people were displaced and more than a dozen small communities were inundated. Related economic activities and potential related to agriculture, forestry, recreation and tourism were lost. Flooding also impacted traditional First Nations' sites. The rise and fall of reservoir levels continue to affect the surrounding ecosystems, cultural, economic and recreation interests.²

Data compiled by the Selkirk Geospatial Research Centre (SGRC) provides an estimate of the total area of agricultural land lost due to the four reservoirs created by the four Treaty dams (Table 1).³ A total of 3,258 ha of land, including valley slopes up to 30%, was flooded.

Table 1. Agricultural land lost per CRT reservoir.

Reservoir	Cultivated Fields (ha)	Cultivated Orchards (ha)	Total Area (ha)*
Arrow Lakes	2,152.76	58.97	2,212
Duncan	48.33	4.40	53
Kinbasket	29.69		30
Koocanusa	963.98		964
Total:	3,194.76	63.37	3,258

* Totals may not add due to rounding

An interactive history of the geography and people of the Columbia Basin, including timelines for the Columbia River Treaty and the resulting hydroelectric developments, is accessible on the Columbia Basin Trust website, <https://www.cbt.org/BasinHistory/>.

¹ Heather C. Davidson and Richard K. Paisley, *The Columbia River Basin: Issues and Driving Forces with the Columbia River Basin with the Potential to Affect Future Transboundary Water Management* (Canadian Columbia River Forum, 2009), 6.

² George E. Penfold, *A Review of the Range of Impacts and Benefits of the Columbia River Treaty on Basin Communities, the Region and the Province* (2012), 6-7.

³ Penfold, 75-76.

2.2. Agricultural Resources

2.2.1. Climate

Climate constitutes the basic limitation for agricultural land uses regardless of soil conditions. Thus, it forms the basis for agricultural capability ratings. The Basin, due to its mountainous terrain, includes a wide variety of climates, categorized into climate capability for agriculture classes on the basis of freeze free period, number of growing degree days above 5°C, climatic moisture deficit (or surplus) and typical crop ranges. The classification system utilizes a numeric system with Class 1 having the highest climatic capability and Class 7 having the lowest (Table 2). Fairly extensive areas of Class 1 and 2 climatic capability occur on the valley floors. Apples, cherries, raspberries, strawberries and warm season vegetables such as lettuce, carrots, beets, radishes and turnips can be successfully grown in these areas. Class 3 climates also occur on valley floors, but further into the mountains and at slightly higher elevations. Typical crops that can be grown include cool season vegetables such as potatoes, lettuce, peas, spinach, cauliflower and cabbage. The shorter freeze free period of Class 4 permits only the cultivation of hardy varieties of cool season vegetables and forage crops. Only forage crops can be produced in a Class 5 climate. At higher elevations, only native forages suitable for grazing can be grown.

Table 3 indicates the thermal and moisture climatic capability ratings for agriculture for selected locations in the Basin. Most locations have thermal capabilities to support a broad range of crops, with some risk of spring or fall frost. The limiting factor for most locations is the climatic moisture deficit, which limits plant growth at some point during the growing season, unless irrigation water is applied.

The [Columbia Basin Rural Development Institute](#) at Selkirk College, as part of its ongoing Food Systems and Climate Change Adaptation research, is currently studying the impacts of key climatic trends on agricultural production within the Basin.

Table 2. Climatic Capability Classification System for British Columbia⁴.

Climatic Capability Class	FFP Freeze Free Period (days)	GDD Growing Degree Days Above 5°C	CMD Climatic Moisture Deficit (mm)	Range of Suitable Crops
1c	> 150	2060 - 2225	< 40	Hardy apples, strawberries, raspberries, cucumbers, melons, peppers, beans, asparagus, tomatoes, lettuce, potatoes, corn, carrots, beets, radish, peas, onions, leeks, spinach, cauliflower, cabbage, broccoli, turnips, Brussel sprouts, Swiss chard, cereal grains, forage crops
1b	> 150	1780 - 2059	< 40	Hardy apples, strawberries, raspberries, beans, asparagus, tomatoes, lettuce, potatoes, corn, carrots, beets, radish, peas, onions, leeks, spinach, cauliflower, cabbage, broccoli, turnips, Brussel sprouts, Swiss chard, cereal grains, forage crops
1a	120 – 150	1505 – 1779	< 40	Apples, strawberries, raspberries, beans, asparagus, tomatoes, lettuce, potatoes, corn, carrots, beets, radish, peas, onions, leeks, spinach, cauliflower, cabbage, broccoli, turnips, Brussel sprouts, Swiss chard, cucumbers, kohlrabi, parsnips, pumpkin, rhubarb, squash, cereal grains, forage crops
1	90 – 119	1310 – 1504	< 40	Tree fruits, strawberries, raspberries, beans, asparagus, tomatoes, lettuce, potatoes, corn, carrots, beets, radish, peas, onions, leeks, spinach, cauliflower, cabbage, broccoli, turnips, Brussel sprouts, Swiss chard, bulbs, filberts, cucumbers, kohlrabi, parsnips, pumpkin, rhubarb, squash cereal grains, forage crops
2	75 – 89	1170 – 1309	40 - 115	strawberries, raspberries, asparagus, lettuce, potatoes, carrots, beets, radish, peas, leeks, spinach, cauliflower, cabbage, broccoli, turnips, Brussel sprouts, Swiss chard, cereal grains, forage crops
3	60 – 74	1030 – 1169	116 – 190	strawberries, raspberries, lettuce, potatoes, peas, spinach, cauliflower, cabbage, cereal grains, forage crops
4	50 – 59	1030 – 1169	191 – 265	Hardy varieties of cool season vegetables (lettuce, peas, spinach, cabbage), forage crops and periodic production of cereal crops
5	30 – 49	780 – 1029	266 – 340	Forage crops
6	< 30	670 – 779	341 – 415	Browse/grazing of native species
7	< 30	< 670	> 415	No potential for agricultural crops

⁴ *Climatic Capability Classification for Agriculture in British Columbia*, BC Ministry of Environment and Ministry of Agriculture and Food, Kelowna, BC (1981).

Table 3. Climatic parameters and capability classification⁵ for selected weather stations in the Basin.

Weather Station Location	Elevation (m)	Climatic Parameters					Climatic capability classification	
		GDD Growing Degree Days above 5°C	FFP Freeze Free Period (days)	P Growing Season Precipitation (mm) ¹	PE Potential Evapo-transpiration (mm) ¹	CMD Climatic Moisture Deficit (mm) ²	Thermal Class	Moisture Class
Aberfeldie	805	1687	132	229	470	- 241	1aF	4A
Columbia Gardens	433	2075	133	211	607	-396	1aF	6A
Cranbrook	930	1550	91	179	532	- 353	1F	6A
Crescent Valley	610	1662	96	247	572	-325	1F	5A
Creston	598	1881	148	186	473	-287	1aF	5A
Elko	939	1709	131	261	461	- 200	1aGF	4A
Fauquier	473	1775	149	239	479	-240	1aGF	4A
Fernie	1003	1336	98	304	432	- 128	1GF	3A
Golden	788	1572	103	178	537	- 359	1F	6A
Kaslo	588	1651	144	242	422	-180	1bG	6A
Kimberley	915	1530	92	163	540	- 377	2F	6A
Revelstoke	456	1856	140	323	499	-176	1aF	3A
South Slocan	457	1960	140	243	598	-355	1aF	6A
Sparwood	1138	1268	89	302	589	- 287	2F	5A
Valemount	797	1288	73	215	449	-234	3F	4A
Waneta	588	1890	130	222	600	-378	1aF	6A
Warfield	606	2170	182	216	484	-268	1cG	5A

¹ May 1 to September 30

² CMD = P – PE

Capability class limitations:

1a, 1b, 1c: full capability can only be achieved if supplemental water is applied

A: Drought or aridity occurring between May 1 and Sept 30 results in moisture deficits that will limit plant growth

F: Minimum temperature near freezing will adversely affect plant growth during the growing season

G: Insufficient heat units (GDD) during the growing season

⁵ *Climatic Capability Classification for Agriculture in British Columbia*, BC Ministry of Environment and Ministry of Agriculture and Food, Kelowna, BC (1981).

2.2.2. Soils and Agricultural Capability (CLI)

The ability of any area to produce agricultural crops is based on limitations of the soil and climate. In many cases, soils can be improved by management inputs such as drainage, irrigation, and fertilization; however climate will ultimately limit the range of suitable crops for a geographic region. Land capability for agriculture ratings are determined by climatic capability for agriculture in combination with soil characteristics that limit the range of regionally suited crops. Distance to markets, available transportation infrastructure (roads, rail, etc.), location, size of farms, characteristics of land ownership, cultural patterns and the skill or resources of individual farmers are not criteria for determining agricultural capability.

The Canada Land Inventory (CLI) classification system, as modified for British Columbia's unique soil and climatic conditions, groups the general suitability of soils for agricultural use into seven classes based on their relative degree of limitation or hazard (Table 4). The intensity of the limitations or hazards becomes progressively greater from Class 1 to Class 7 as does the need for management practices to overcome the limitations. Capability subclasses are used to indicate lands with similar kinds but varying intensities of limitations and hazards. For example, a CLI classification of 5AP refers to Class 5 land with limitations due to insufficient water-holding capacity (A) and stoniness (P).

Table 4. Canada Land Inventory agricultural capability classification system⁶.

Capability Class	Description of capability limitations	
1	no or only very slight limitations that restrict use for the production of common agricultural crops;	
2	minor limitations that require good ongoing management practices and/or slightly restrict the range of crops;	
3	limitations that require moderately intensive management practices and/or moderately restrict the range of crops;	
4	limitations that require special management practices and/or severely restrict the range of crops;	
5	limitations that restrict its capability to producing perennial forage crops and/or other specially adapted crops;	
6	non-arable but is capable of producing native and/or uncultivated perennial forage crops; and	
7	no capability for arable agriculture or sustained natural grazing.	
Canada Land Inventory agricultural capability subclass limitations		
A	moisture deficiency/water-holding capacity	P stoniness
C	adverse climate	R depth to consolidated bedrock
D	undesirable soil structure	S combined limitations for A, D, F and N
E	existing erosion damage	T topography
F	low fertility	W excess water
I	inundation by streams or lakes	X cumulative minor adverse characteristics
N	salinity (soluble salts)	Z permafrost

⁶ *The Canada Land Inventory. Report No. 2 - Soil Capability Classification for Agriculture*, Lands Directorate, Environment Canada, Catalogue No. F063-2/1972, (1972).

The generally mountainous topography of the Basin places a wide range of both climatic and soil limitations on land capability for agriculture (Table 5). Data for the portions of the CSRD and RDFFG within the Basin are currently being analyzed and mapped by the [Selkirk Geospatial Research Centre](#). Class 1 capability occurs only in the Lower Kootenay valley of the Regional District of Central Kootenay near Creston. Classes 2, 3 and 4 only occur on the floors of valleys on stone free, relatively fine to medium textured soils developed on fluvial fans, floodplains and glacio-lacustrine terraces with favourable topography⁷. Class 5 soils occurs on the floors of larger valleys in the mountains (where climate is dominantly limiting), as well as in the Rocky Mountain Trench and Elk River Valley where soil limitations dominate. Class 6 and 7 soils occur throughout the mountainous areas, particularly on soils derived from colluvial deposits (unconsolidated sediment and rock) and on morainal (glacial till) materials.⁸

Table 5. Distribution of agricultural land capability classes (unimproved) in the Basin

Regional District	CLI Agricultural Capability Class (unimproved) (ha)							Other* (ha)	Total (ha)
	1	2	3	4	5	6	7		
CSRD ^{A, B}	data not currently available								
RDCK	5,026	12,975	12,875	36,330	118,087	237,722	1,781,696	96,216	2,300,930
RDEK	0	798	8,623	68,787	221,051	554,091	1,808,774	153,639	2,815,763
RDFFG ^{Ptn H}	data not currently available								
RDKB ^{A, B **}	0	0	0	6,178	11,556	51,825	42,151	?	

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Other includes water surfaces, unclassified urban areas, national parks and unmapped areas of the Basin.

** A weighted average methodology was used to assign a single capability rating to each parcel of land when two or more capability classes were present; e.g., a parcel rated 5⁷4³ would be assigned a weighted rating of 4.7 and reported as Class 4 even though 70% of the parcel is Class 5 land)⁹

Topography, insufficient moisture holding capacity and stoniness are the predominant limitations to agricultural capability in the Basin region. Class 5 lands with topography, stoniness and/or low moisture holding capacity limitations may be suitable for the production of grapes and tree fruits, or certain “non-soil bound” activities that do not rely on growing crops in soil on-site to support a specific agricultural enterprise. Examples of non-soil bound uses include beef or horse feedlots, hog production barns, poultry (eggs and meat birds) barns, veal production facilities, production of fur bearing animals, mushroom barns, greenhouses or potted nursery stock production.

⁷ L.E.H. Lacelle. *Biophysical Resources of the East Kootenay area: Soils*, (BC Ministry of Environment, Wildlife Technical Monograph TM-1, Report No. 20. Wildlife Branch, Habitat Inventory Section, Victoria, BC, 1990).

⁸ U. Wittneben. *Soil Resources of the Lardeau Map Area*, (Report No. 27, British Columbia Soil Survey. British Columbia Ministry of Environment, Kelowna, BC, 1980)

⁹ Racheal Roussin. *Agricultural Potential of the West Kootenay, B.C.* (2014)

2.2.3. Agricultural Land Base

Lands within the Basin were identified as “agriculture land” and designated to the Agricultural Land Reserve (ALR) when the [Agricultural Land Commission](#) (ALC) Act was introduced (Table 6). Note that the areas reported for the CSRD, RDFFG and RDKB represent all electoral areas in those districts, including areas outside the Basin. Between 1974 and March 31, 2014 all regional districts within the Basin except the RDFFG incurred a net reduction in ALR area.

Table 6. Agricultural Land Reserve in the Basin, in hectares

Regional District	Total Land Area	ALR Area at Designation	ALR Area at April 1, 2014	Estimated Net Change
CSRD*	2,892,913	67,409	54,554	- 12,855
RDCK	2,209,494	71,539	63,089	- 8,450
RDEK	2,754,269	272,510	264,521	- 7,989
RDFFG*	5,067,630	349,636	390,983	41,347
RDKB*	808,192	55,061	54,143	- 918

Source: ALC Annual Report 2014

* Values for the CSRD, RDFFG and RDKB represent all electoral areas, including areas outside of the Basin

2.2.4. Water Supply and Agricultural Irrigation

A majority of the Basin region experiences a seasonal water deficit (refer to Table 3). As a result, irrigation is necessary in order to fully optimize production of field crops. Farms and ranches rely primarily on surface water licenses for irrigation and livestock watering needs (Table 7). A total of 4,052 water licenses are currently permitted for agricultural purposes with irrigation accounting for more than 99% of the total water volume on an annual basis. A map showing water district boundaries is provided in Figure 2.

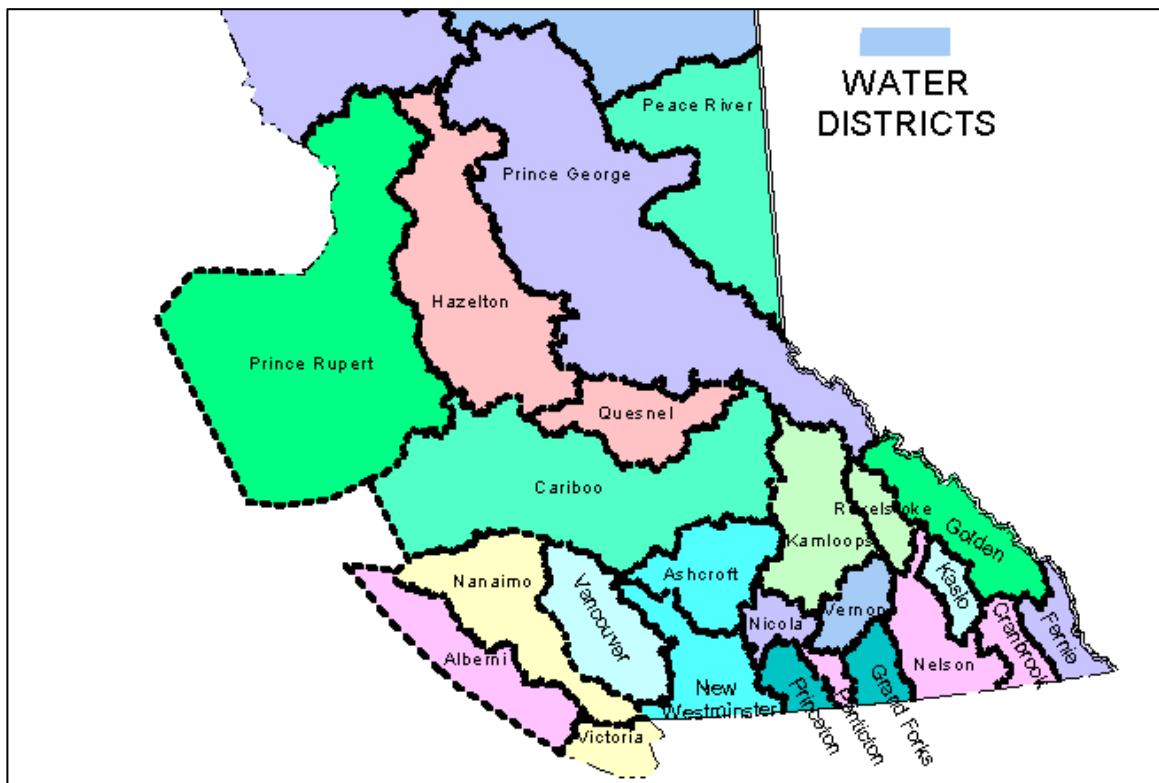


Figure 2. BC Water District map

2.2.4.1. Agriculture Water Demand Modelling

The BC Ministry of Agriculture has developed an [Agriculture Water Demand Model](#) (AWDM) to provide current and future agricultural water demands. The model calculates water use on a property-by-property basis for lands within the Agricultural Land Reserve, and sums each property to obtain a total water demand for the entire basin or each sub-basin. Crop, irrigation system type, soil texture and climate data are used to calculate the water demand.

The AWDM was developed in response to rapid population growth, drought conditions from climate change, and the overall increased demand for water. Climate change scenarios developed by the University of British Columbia and the Pacific Agri-Food Research Centre in Summerland predict an increase in agricultural water demand due to warmer and longer summers and lower precipitation during summer months in the future. Many of the watersheds in British Columbia are fully allocated or will be in the next 15 to 20 years. The AWDM helps to understand current agricultural water use and helps to fulfil the province's commitment under the [Living Water Smart – BC Water Plan](#) to reserve water for agricultural lands. The model can be used to establish agricultural water reserves throughout the various watersheds in BC by providing current and future agriculture water use data.

An AWDM report has been completed for the [Kettle River watershed](#) within the RDKB, and a report is currently being developed for the RDEK.

Table 7. Water licenses issued for agriculture and related uses in the Basin.

Water District/Precinct	# of Licenses	Quantity m³/year	Quantity m³/day
Cranbrook District			
Irrigation	221	21,588,266	
Irrigation Local Authority	1	3,083,700	
Stockwatering	49		324.35
Fernie District			
Greenhouses	2		4.55
Irrigation	322	31,317,675	
Stockwatering	52		318.80
Golden District			
Greenhouses	5		13.64
Irrigation	423	30,739,903	
Irrigation Local Authority	10	3,731,894	
Stockwatering	51		305.00
Kaslo District			
Irrigation	198	1,800,248	
Stockwatering	4		13.75
McBride precinct (portion of Prince George District)			
Irrigation	27	1,257,926	
Stockwatering	5		34.62
Nelson District			
Greenhouses	5		48.39
Irrigation	2481	19,117,557	
Irrigation Local Authority	121	13,441,302	
Nurseries	5	191,265	
Stockwatering	46		255.76
Revelstoke District			
Irrigation	23	382,899	
Stockwatering	1		2.27
Total			
<i>Greenhouses</i>	<i>12</i>		<i>66.58</i>
<i>Irrigation</i>	<i>3,695</i>	<i>106,204,474</i>	
<i>Irrigation Local Authority</i>	<i>132</i>	<i>20,256,896</i>	
<i>Nurseries</i>	<i>5</i>	<i>191,265</i>	
<i>Stockwatering</i>	<i>208</i>		<i>1,254.55</i>
Totals:	4,052	126,652,635	1,321

Source: Province of BC Water Licenses Database

2.3. Farm Characteristics

Notice to Readers:

Data for the subsequent discussions on Farm Characteristics, Land Use and Farming, and Economics have been acquired from Census of Agriculture data prepared by Statistics Canada in 2011, which is compiled for various pre-established statistical and administrative areas. Subject to confidentiality constraints, data are published at the national, provincial and territorial levels, as well as three sub-provincial levels: census agricultural region, census division and census consolidated subdivision. In most, but not all instances, the sub-provincial levels align with existing regional district administrative boundaries. The Columbia Basin boundary encompasses the entirety of the RDEK and RDCK, electoral areas A and B in the RDKB, electoral areas A and B in the CSRD, and the portion of electoral area H south and east of Tete Jaune Cache in the RDFFG. Census of Agriculture data is not available for CSRD electoral area B, which includes the Columbia River drainage from the Arrow Lakes to Mica, and the data for RDFFG Area H cannot be segregated by the Basin boundary. As a result, the numbers for CSRD are understated, while those for RDFFG are overstated.

Tabulated values may not add due to rounding or suppressed data. Where Census Totals are presented, they represent total values from Census of Agriculture data. Basin totals are calculated from the presented tabular data for each Regional District.

2.3.1. Number of Farms and Farm Size

The RDEK accounts for approximately 58% of all census farmland within the Basin, but only about one-third of the total number of farms. Conversely, the RDCK is home to only 18% of the farmland, but almost half of the farm operations (Table 8). Comparisons with 2001 census data indicate a decline in both farmland area, from 161,747 ha in 2001 to 136,978 ha in 2011, and in the number of farms, from 1,296 in 2001 to 1,159 in 2011. Average farm size, which reflects the diversity in the predominant types of agriculture enterprises across the Basin, has declined from 125 ha in 2001 to 118 ha in 2011.

Table 8. Total farmed area, number of farms and farm size in the Basin, 2011.

	RDEK	RDCK	RDKB ^{A, B}	CSRDA [*]	RDFFGH ^{**}	Basin
Total Farmland Area (ha)	80,072	24,733	1,377	6,897	23,899	136,978
Number of Farms	396	552	45	45	121	1,159
Average Farm Size (ha)	202.0	49.0	30.6	153.3	197.5	118.2

Source: Census of Agriculture, 2011

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRD reflect Electoral Area A only (Area B unavailable)

** Values for RDFFG reflect Electoral Area H, including non-Basin areas

2.3.2. Farm Tenure

Approximately two-thirds of census farmland is private land that is either farmed by the owner (74%) or by other individuals under some form of crop-share, rental or lease agreement (26%). The remaining one-third is leased from governments, primarily for seasonal livestock grazing; the largest portion (almost 75%) being in the RDEK (Table 9).

The area of owned farmland has been in decline for more than a decade, dropping from 75,745 ha in 2001 to 70,003 ha in 2011. Similarly, the proportion of land leased from governments has dropped by approximately 10% over the same time period, from 50,449 ha to 45,165 ha. Large declines in government leases occurred in the RDEK and RDFFG, which are predominantly cattle producing regions, while modest increases occurred in the Central Kootenay and Columbia-Shuswap regions.

Table 9. Farmland tenure in the Basin, 2011.

	RDEK	RDCK	RDKB ^{A, B}	CSRD ^{A*}	RDFFG ^{H**}	Basin
Owned						
Farms reporting	380	535	44	44	118	1,121
Total area (ha)	32,434	16,684	1,289	3,288	16,308	70,003
Government Lease						
Farms reporting	79	11	0	5	21	116
Total area (ha)	33,597	4,501	0	2,595	4,472	45,165
Private crop-share						
Farms reporting	8	21	0	0	10	39
Total area (ha)	457	1,064	0	0	476	1,997
Other Private Lease or Rent						
Farms reporting	104	108	6	2	33	253
Total area (ha)	14,951	3,884	X	X	3,368	22,203
Land used by someone other than Owner						
Farms reporting	41	37	2	6	11	97
Total area (ha)	1,367	1,401	X	32	725	3,525

Source: Census of Agriculture, 2011

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

X – data suppressed to meet the confidentiality requirements of the Statistics Act

* Values for CSRD reflect Electoral Area A only (Area B unavailable)

** Values for RDFFG reflect Electoral Area H, including non-Basin area

2.4. Land Use and Farming

2.4.1. Farmland Use

Natural rangeland and tame pasture for livestock production is the dominant agricultural land use in the Basin, occurring on 59% of the census farmland in 2011 (Figure 3). Crops, which includes a broad array of grain, forage, vegetable, fruit and nursery products, account for 21% of farmland use. Woodlands, wetlands, Christmas tree operations, idle land and farm infrastructure account for the remainder.

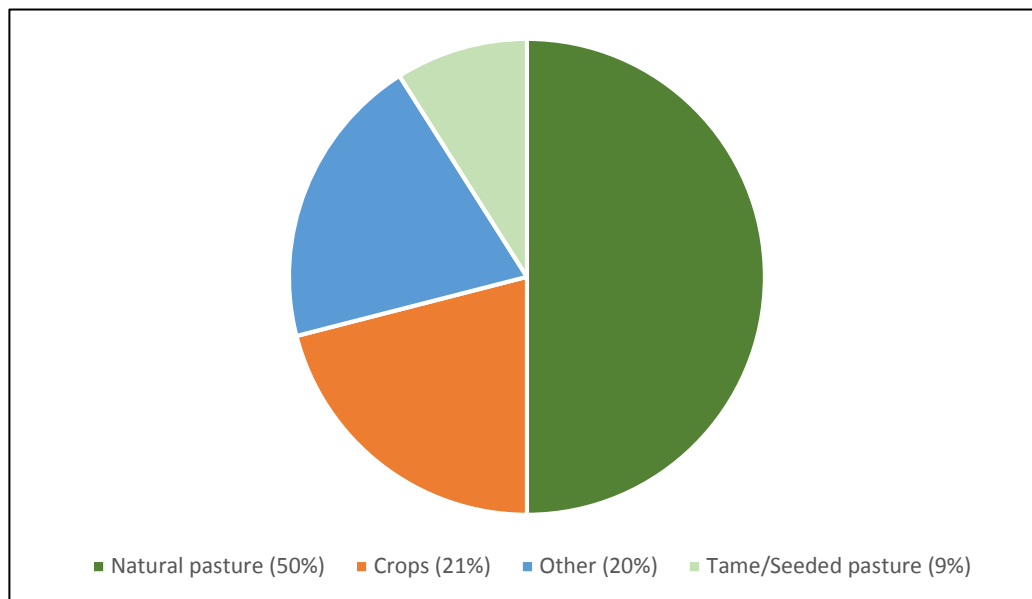


Figure 3. Census farmland use in the Basin, 2011.

The Regional District of East Kootenay accounts for two-thirds of the natural and tame pasture land use and approximately one-third of the crop land use in the Basin (Table 10). Almost 45% of RDCK census farmland is utilized for crop production; another 34% is used for pasture. Farmland uses in the RDKB and CSRD electoral areas within the CBT boundary account for 6% of all farmland uses within the Basin.

Table 10. Farmland use in the Basin, 2011 (hectares).

Use	RDEK	RDCK	RDKB ^{A, B}	CSRD ^{A *}	RDFFG ^{H **}	Basin
Crops	9,817	11,041	277	888	6,511	28,534
Summerfallow	55	121	-	X	4	180
Tame or Seeded Pasture	5,415	1,897	276	735	3,930	12,253
Natural Land for Pasture	48,831	6,491	449	3,268	10,002	69,041
All Other Land ¹	15,954	5,183	283	1,783	3,453	26,656
Total	80,072	24,733	1,285	6,867	23,899	136,856

Source: Census of Agriculture, 2011

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRD reflect Electoral Area A only (Area B unavailable)

** Values for RDFFG reflect Electoral Area H, including non-Basin area

X – data suppressed to meet the confidentiality requirements of the Statistics Act

¹ Includes woodland, wetlands, Christmas tree land, idle land and land with farm-related buildings

2.4.2. Cultivated Field Crops (Crop Type and Distribution)

Hay and forage crops, predominantly alfalfa and alfalfa/grass mixtures, account for the majority of cultivated crop production in the Basin based on land use (Table 11). The RDCK accounts for more than 55% of the field crop (grains, oilseeds, etc.) area; 92% of the area planted to fruits, berries and nuts; and 85% of the vegetable and nursery production. Commercial-scale greenhouse operations are located in both the RDCK and RDEK, with the majority of production focused on flowers and bedding plants.

Comparisons with Census data from 2001 and 2006 indicates that, in general, the area sown to hay crops has remained relatively static, field and fruit crops area have declined slightly, and vegetable and greenhouse/nursery production has increased.

Table 11. Crop area in the Basin, 2011.

		RDEK	RDCK	RDKB ^{A, B}	CSRD ^{A *}	RDFFG ^{H **}	Basin
Hay Crops	ha	9,166	7,098	264	829	5,207	22,564
Field Crops	ha	549	2,494	0	0	1,419	4,462
Fruits, Berries & Nuts	ha	10	311	8	2	4	335
Vegetables	ha	18	155	2	1	7	183
Nursery Products	ha	30	115	X	5	X	X
Sod Grown for Sale	ha	x	X	0	X	0	X
Christmas Trees	Ha	1,242	41	X	0	0	X
Greenhouse – Flowers	m2	16,508	16,501	X	X	X	X
Greenhouse – Vegetables	m2	x	6,691	X	X	X	X
Greenhouse – Other	m2	x	2,273	0	0	X	X
Greenhouse – Total	m2	22,964	25,465	0	0	X	X

Source: Census of Agriculture, 2011

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRD reflect Electoral Area A only (Area B unavailable)

** Values for RDFFG reflect Electoral Area H, including non-Basin area

X – data suppressed to meet the confidentiality requirements of the Statistics Act

2.4.3. Livestock

All major classes of livestock, and several specialty classes, are produced within the Basin (Table 12). Beef cattle and calves are the predominant type of livestock, with the RDEK accounting for 37% of the farms and 54% of the total animals. A majority of the poultry, pig and dairy cattle production occurs in the RDCK, predominantly in the Creston Valley.

Comparisons with Census data from 2001 and 2006 indicates that all major classes of livestock have exhibited decline in the number of farms reporting and the number of animals on farms.

Table 12. Livestock on farms in the Basin, 2011.

	RDEK		RDCK		RDKB ^{A, B}		CSRDA [*]		RDFFGH ^{**}		Basin	
	Farms	Number	Farms	Number	Farms	Number	Farms	Number	Farms	Number	Farms	Number
Hens/Chickens	65	3,725	158	10,854	15	936	10	424	29	1,942	277	17,881
Turkeys	9	122	16	207	1	X	1	X	5	85	32	X
Other Poultry	9	333	34	588	5	38	1	X	6	92	55	X
Cattle/Calves	148	17,320	153	7,401	16	204	16	1,112	69	5,926	402	31,963
Dairy Cows	2	X	19	1,498	0	0	0	0	7	X	28	X
Beef Cows	117	X	111	1,803	10	88	15	477	58	X	311	X
Pigs	12	62	14	148	2	X	0	0	5	X	33	X
Sheep & Lamb	19	375	34	729	5	93	3	66	10	938	71	2,201
Horses/Ponies	200	1,908	137	698	18	122	18	68	55	507	428	3,303
Goats	15	187	21	197	3	19	3	X	7	118	49	X
Bison	2	X	1	X	0	0	0	0	2	X	5	X
Llama/Alpaca	14	75	17	127	1	X	1	X	8	54	41	X
Rabbits	3	X	9	174	2	X	0	0	2	X	16	X
Bee colonies	14	295	26	358	1	x	2	x	3	9	46	X

Source: Census of Agriculture, 2011

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRDA reflect Electoral Area A only (Area B unavailable)

** Values for RDFFGH reflect Electoral Area H, including non-Basin area

X – data suppressed to meet the confidentiality requirements of the Statistics Act

2.4.4. Table Eggs

A total of 172 census farms produced 181,400 dozen eggs in 2011 (Table 13). The RDCK accounted for 60% of the farms and 55% of the total egg production. The RDEK was the next largest egg producer at approximately 33%.

Table 13. Table eggs (dozens) produced in the Basin, 2011.

RDEK		RDCK		RDKB ^{A, B}		CSRDA [*]		RDFFGH ^{**}		Basin	
Farms	Number	Farms	Number	Farms	Number	Farms	Number	Farms	Number	Farms	Number
33	58,707	103	100,307	11	7,562	8	4,393	17	10,431	172	181,400

Source: Census of Agriculture, 2011

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRDA reflect Electoral Area A only (Area B unavailable)

** Values for RDFFGH reflect Electoral Area H, including non-Basin area

2.4.5. Apiculture

A total of 46 census farms reported honeybee production in 2011, with the majority of the farms and colonies located in the East and Central Kootenay regions (Table 14).

Table 14. Honeybees in the Basin, 2011.

RDEK		RDCK		RDKB ^{A, B}		CSRDA [*]		RDFFGH ^{**}		Basin	
Farms	Colonies	Farms	Colonies	Farms	Colonies	Farms	Colonies	Farms	Colonies	Farms	Colonies
14	295	26	358	1	X	2	X	3	9	46	X

Source: Census of Agriculture, 2011

A, B, H refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRDA reflect Electoral Area A only (Area B unavailable)

** Values for RDFFGH reflect Electoral Area H, including non-Basin area

X – data suppressed to meet the confidentiality requirements of the Statistics Act

2.4.6. Organic Production

According to the 2011 Census of Agriculture data, the Central Kootenay region accounted for the majority of commercial-scale certified organic production (Table 15).

Table 15. Farms reporting certified organic production in the Basin, 2011

	RDEK	RDCK	RDKB ^{A, B}	CSRDA [*]	RDFFGH ^{**}	Basin
Hay or field crops	1	11	1	0	1	14
Fruits, vegetables, greenhouse products	1	13	3	1	1	19
Herbs, spices or garlic	1	10	1	0	1	13
Animals or animal products	1	3	0	0	2	6
Other	0	2	0	0	0	2

Source: Census of Agriculture, 2011

A, B, H refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRDA reflect Electoral Area A only (Area B unavailable)

** Values for RDFFGH reflect Electoral Area H, including non-Basin area

2.4.7. Irrigation

Approximately 71% of the land under irrigation is located in the East Kootenay region, with the majority being used for hay and forage crop production (Table 16).

Table 16. Area of agricultural crops under irrigation in the Basin, 2011 (hectares).

	RDEK	RDCK	RDKB ^{A, B}	CSRDA [*]	RDFFGH ^{**}	Basin
Field crops	618	267	X	X	27	X
Hay and alfalfa	6,096	921	127	504	381	8,029
Vegetables	14	45	X	X	X	X
Fruits	3	244	3	2	X	X
Other	44	135	X	X	0	X
Census Total:	6,774	1,611	144	539	410	9,478

Source: Census of Agriculture, 2011

A, B, H refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRDA reflect Electoral Area A only (Area B unavailable)

** Values for RDFFGH reflect Electoral Area H, including non-Basin area

X – data suppressed to meet the confidentiality requirements of the Statistics Act

2.5. Economics

2.5.1. Farm Capital

Land and buildings represent 91.5% of the total farm capital value in the Basin, followed by farm machinery at 6.5% and livestock at 2% (Table 17, Figure 4). Between 2006 and 2011 the value of owned land and buildings increased by \$244,790,915; this was comprised of increases of 38.5% and 45.7% in the RDEK and RDCK respectively, and declining values in the remaining regions of the Basin. The average capital value of farms ranged from \$719,549 in the RDKB to \$1,718,919 in the RDEK in 2011. Comparisons with 2006 census data indicate that the value of farm machinery and livestock and poultry declined in all regions between 2006 and 2011.

Table 17. Total value of farm capital in the Basin, 2011.

	RDEK	RDCK	RDKB ^{A, B}	CSRD ^{A*}	RDFFG ^{H**}	Basin
Land/buildings owned	\$463,974,053	\$386,829,093	\$27,963,193	\$37,689,345	\$72,866,960	\$989,322,644
Land/buildings leased/rented	\$168,225,771	\$92,552,190	\$1,230,000	\$3,798,100	\$35,249,000	\$301,055,061
<i>Total Land/Buildings</i>	<i>\$632,199,824</i>	<i>\$479,381,283</i>	<i>\$29,193,193</i>	<i>\$41,487,445</i>	<i>\$108,115,960</i>	<i>\$1,290,377,705</i>
Farm Machinery	\$34,463,908	\$39,872,177	\$2,786,025	\$3,146,900	\$10,827,927	\$91,096,937
Livestock & Poultry	\$14,028,031	\$7,925,591	\$400,479	\$873,734	\$5,018,465	\$28,246,300
Total Farm Capital	\$680,691,763	\$527,179,051	\$32,379,697	\$45,508,079	\$123,962,352	\$1,409,720,942
Average Farm Capital	\$1,718,919	\$955,035	\$719,549	\$1,011,291	\$1,024,482	\$1,216,325

Source: Census of Agriculture, 2011

A, B, H refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRD reflect Electoral Area A only (Area B unavailable)

** Values for RDFFG reflect Electoral Area H, including non-Basin area

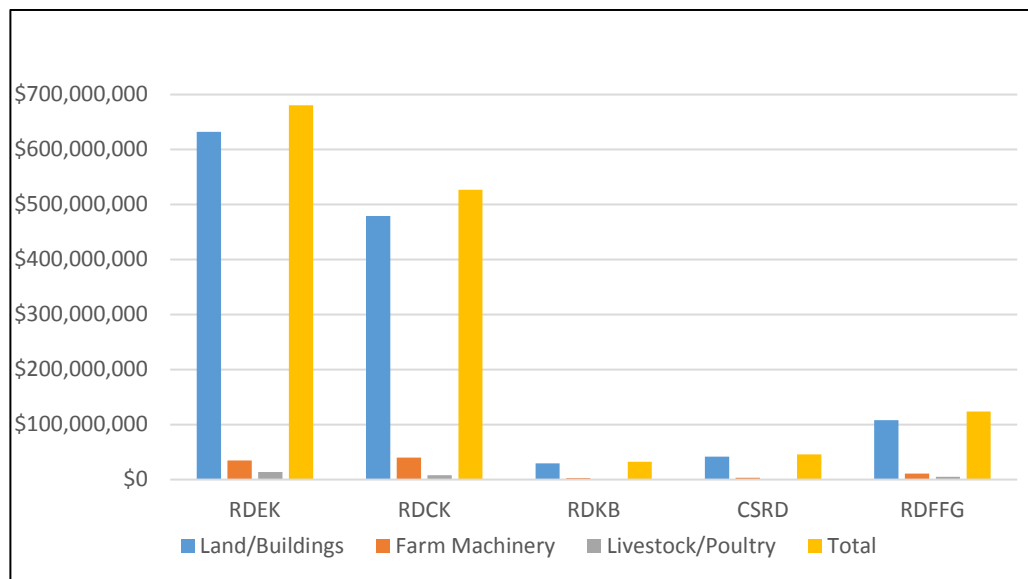


Figure 4. Total value of farm capital in the Basin, 2011.

2.5.2. Profitability (Gross Farm Receipts and Operating Expenses)

Average gross farm receipts in 2011 ranged from a low of \$21,476 in the Columbia-Shuswap to a high of \$62,235 in the Central Kootenay region (Table 18). The overall average gross farm receipts for the Basin was \$48,174 compared to the provincial average of \$148,506. In comparison to 2006 census data, gross farm receipts in 2011 increased by 16.5% in the RDCK, 25% in the CSRD and 3.5% in the RDFFG, while the RDEK and RDKB reported declines in farm receipts of 7% and 9.6% respectively. Operating expenses in 2011 exceeded receipts in all regions except for the Central Kootenay and Kootenay-Boundary. The overall average census farm income in the Basin was \$3,401 in 2011. More than 50% of all census farms in the Basin reported gross farm receipts of less than \$10,000 in each of the past three census years (2001, 2006 and 2011). It is important to note that small, part-time, hobby and/or self-sufficiency operations that may not have much expectation of income are included in the census numbers, and there is no means of separating their data from commercial-scale farm and ranch operations.

Table 18. Gross farm receipts and operating expenses in the Basin, 2011 (current dollars).

	RDEK	RDCK	RDKB ^{A, B}	CSRD ^{A*}	RDFFG ^{H**}	Basin
Gross farm receipts	\$14,504,239	\$34,353,451	\$1,360,091	\$966,438	\$4,649,020	\$55,833,239
<i>Average receipts /farm</i>	<i>\$36,627</i>	<i>\$62,235</i>	<i>\$30,224</i>	<i>\$21,476</i>	<i>\$38,422</i>	<i>\$48,174</i>
Operating Expenses	\$15,040,762	\$29,447,645	\$1,437,544	\$1,241,039	\$4,724,686	\$51,891,676
<i>Average expenses /farm</i>	<i>\$37,982</i>	<i>\$53,347</i>	<i>\$31,945</i>	<i>\$27,579</i>	<i>\$39,047</i>	<i>\$44,773</i>

Source: Census of Agriculture, 2011

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRD reflect Electoral Area A only (Area B unavailable)

** Values for RDFFG reflect Electoral Area H, including non-Basin area

2.5.3. Wages

Average wages and salaries paid to all farm owners and workers in 2011 for reporting census farms ranged from \$13,657 in the CSRD to \$39,569 in the RDCK (Table 19). It must be noted that interpretation of this data is limited by the fact that only 25% of census farms reported wages and salaries, and that data for the RDKB was suppressed to meet confidentiality requirements.

Table 19. Total farm wages and salaries in the Basin, 2011 (current dollars).

	RDEK	RDCK	RDKB ^{A, B}	CSRD ^{A*}	RDFFG ^{H**}	Basin
Farms reporting	84	151	13	9	29	286
Total wages and salaries	\$2,202,365	\$5,974,879	X	\$122,917	\$402,131	X
<i>Average wages & salaries/farm</i>	<i>\$26,219</i>	<i>\$39,569</i>	<i>X</i>	<i>\$13,657</i>	<i>\$13,867</i>	<i>X</i>

Source: Census of Agriculture, 2011

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRD reflect Electoral Area A only (Area B unavailable)

** Values for RDFFG reflect Electoral Area H, including non-Basin area

X – data suppressed to meet the confidentiality requirements of the Statistics Act

3. Jurisdiction and Government Regulations

The agricultural sector is regulated and influenced by a broad range of municipal, provincial, and federal legislation and policies.

3.1. *Regional District*

Management of agriculture at the local government level is principally through regional growth strategies, official community plans, and land use and zoning bylaws.

3.1.1. Regional Growth/Sustainability Strategy

Regional Growth and/or Sustainability Strategies (RGS) establish principles for evaluating land use changes and developing community plans throughout the Regional District. These strategies typically contain two types of policy: those that apply to the whole Regional District and policies that reflect sub-regional planning objectives.

The RDEK has developed a [RDEK Regional Sustainability Strategy](#), which includes Food and Agriculture as one of the key policy areas. Regional growth strategies are in various stages of development in other regional districts within the Basin.

3.1.2. Official Community Plans (OCP)

An OCP is a general statement of the broad objectives and policies of the local government with respect to the form and character of existing and proposed land use and servicing requirements. In the unincorporated areas of the regional districts (areas outside municipal boundaries), land use is also regulated through official plans and zoning bylaws. Agricultural land use objectives and policies vary between the different OCP and bylaw documents based on area-specific land use issues and planning priorities. In general, the OCPs and bylaws reinforce the following planning strategies:

- Support for agricultural activity and the protection of agricultural land;
- Identification of areas for potential future development and the conditions under which development of lands in the ALR may be supported;
- Identification of permitting land uses, activities and development;
- Establishment of minimum parcel sizes; and
- Minimizing conflict between agriculture and other potentially incompatible land uses on adjacent land through buffering (fencing), zoning setbacks and other measures.

Information on the Official Community Plans for the various regional districts within the Basin are available here: [CSRD OCP](#), [RDCK OCP](#), [RDEK OCP](#), [RDFFG OCP Area H](#), [RDKB OCP](#),

3.1.3. Land Use Strategies

Land Use Strategies are similar to OCPs but are adopted as policy documents rather than bylaws.

3.1.4. Zoning Bylaws

Zoning bylaws set out regulations for the use of land and the siting of buildings.

3.1.5. Land Use Bylaws

Land Use Bylaws are in place in areas with small population and where there is not a great diversity of land uses. These bylaws combine land use policies with zoning bylaws.

3.1.6. Delegated Decision Making Authority in the ALR

The RDEK and RDFFG have entered into Delegation Agreements with the ALC for certain types of ALR non-farm uses and subdivisions in certain areas within their respective regional districts. Unlike the standard ALR application process, under which the RD Board makes a recommendation and the final decision making authority rests with the ALC, applications considered under a Delegation Agreement are not forwarded to the ALC, unless otherwise required under the terms of the Delegation Agreement and the decision of the RD is final. When making decisions under a Delegation Agreement the RD adopts the role of the ALC and must consider the impact of the proposed application on agriculture. The application must also be carefully considered against the applicable RD policy documents that have been endorsed by the ALC.

3.1.7. Advisory Commissions/Committees

Most regional districts have two types of citizen based commissions that are provided an opportunity to review and comment on development applications being considered by the RD Board.

3.1.7.1. Agricultural Advisory Commission/Committee (AAC)

AACs are an effective way for local governments to link with their farm and ranch communities. An AAC is appointed and functions similarly to other advisory committees of councils or regional boards. A key asset is that the AAC members are predominantly drawn from the farm and ranching community and the committee focuses on agricultural issues. Although each AAC functions slightly differently, most advise local governments in two broad areas: day-to-day issues and broader initiatives.¹⁰

Day-to-Day Issues

- review proposed bylaws and official plans and rezoning applications
- advise on applications under the *Agricultural Land Commission Act*
- share insight on water supply and drainage issues
- give feedback on the effectiveness of insect and weed control programs
- provide input on parks and recreation, transportation, growth management plans and other land use proposals that impact agriculture

Broader Initiatives

- steer agricultural studies, economic plans, and agricultural area plans to completion
- assist with implementation of the plans for the agriculture and food sectors
- assist with the development of agricultural edge policies to enhance land use compatibility
- advise on the need for and appropriateness of farm bylaws
- steer studies and reports on farm infrastructure needs
- propose local government policies related to farming
- advise on opportunities for joint funding of drainage or irrigation works
- steer studies on the impacts of transportation corridors and park and recreation proposals
- raise agricultural awareness
- assist with farm tours and on-farm visits
- contribute to Agriculture in the Classroom initiatives

An AAC has been established for Electoral Areas B and C of the RDEK, the Creston Valley region of the RDCK and Electoral Areas D, E and F of the RDKB.

¹⁰ <http://www.agf.gov.bc.ca/resmgmt/sf/aac/>

3.1.7.2. Advisory Planning Commission (APC)

Each Electoral Area within a regional district is represented by an APC. The APCs are comprised of residents of the applicable Electoral Area. The APC provides community perspective on development applications such as development variance permits, ALR applications and rezoning amendments prior to their consideration by the RD Board.

3.2. Provincial

3.2.1. Strategic Initiatives

In 2008, the BC Ministry of Agriculture released a new Agriculture Plan for the province entitled [Growing a Healthy Future for BC Families](#). The plan outlined 23 strategies to sustain and facilitate the growth and diversification of the agriculture industry while increasing public awareness, understanding and support for the people who produce our food. The strategies were coordinated under five broad themes:

1. Producing local food in a changing world;
2. Meeting environmental and climate challenges;
3. Building innovative and profitable family farm businesses;
4. Building First Nations agricultural capacity; and
5. Bridging the urban/agriculture divide.

The [BC Jobs Plan Agrifoods Strategy](#), introduced in 2012, builds on the initiatives undertaken through the BC Agriculture Plan by setting priorities and actions to guide the growth of the agri-food sector for the next five years in three key areas:

1. Focus on high-quality, high value products;
2. Expand domestic and international markets; and
3. Enhance the agri-food sector's competitiveness.

In August 2012, the government of British Columbia announced a \$2 million investment in a [Buy Local](#) program to help BC producers and processors promote local foods. The funding assists local businesses and organizations to launch or expand their marketing campaigns, and allows BC's diverse food industry to use customized promotions specific to their market needs.

3.2.2. Agricultural Land Commission Act

The [Agricultural Land Commission Act](#), enacted in 1973 and amended in 2002, established the ALC as an independent provincial agency with responsibility for administering the [Agricultural Land Reserve](#) (ALR), a provincial zone in which agriculture is the priority land use and non-agricultural uses are controlled. The purpose of the Commission is:

- to preserve agricultural land;
- to encourage farming in collaboration with other communities of interest; and
- to encourage local governments, First Nations, the government and its agents to enable and accommodate farm use of agricultural land and uses compatible with agriculture in their plans, bylaws and policies.

Revisions to the ALC Act in 2002 increased the types of permitted uses in the ALR in order to expand economic opportunities for farmers. The updated Act also allowed local governments to enter into delegation agreements to exercise some or all of the Commission's power to decide applications for non-farm use or subdivision of lands in its jurisdiction. Local governments may also decide to refuse to refer applications for ALR exclusions or non-farm uses to the ALC. When an application is received by the ALC, it then makes the final decision on whether to permit the request based on accordance with the ALC Act.

The ALC Act takes precedence over, but does not replace, other legislation and bylaws that may apply to the land. Local and regional governments, as well as other provincial agencies, are expected to plan in accordance with the provincial policy of preserving agricultural land. Land in the ALR is subject to provincial regulation whether it is private or Crown.

3.2.3. Agricultural Land Reserve Use, Subdivision and Procedure Regulation

The [Agricultural Land Reserve Use, Subdivision and Procedure Regulation](#), adopted in 2002, specifies permitted land uses within the ALR. This regulation identifies farm activities and other, non-farm uses permitted in the ALR, notification requirements for soil removal and placement of fill, procedures for submitting applications and identifies filing requirements. Bill 24 – the [Agricultural Land Commission Amendment Act](#), adopted in 2014, introduced some major changes to how agricultural land will be managed. The legislation divides the province into two agricultural zones. Zone 1 will include the existing Island, South Coast and Okanagan; Zone 2 will include the existing North, Interior and Kootenay regions. The mandate in Zone 1 will be similar to the current process with primary focus being on the preservation of agricultural land. The mandate in Zone 2, which includes the Columbia Basin region, will be broadened from the preservation of agricultural land to include economic, cultural and social values in the area; regional and community planning objectives and other prescribed considerations.

3.2.4. Farm Practices Protection (Right to Farm) Act

The [Farm Practices Protection \(Right to Farm\) Act](#) applies to farmers who operate in the Agricultural Land Reserve or in other areas where farming is permitted by local zoning bylaws. When farmers operate using normal farm practices, defined as an activity “...that is conducted by a farm business in a manner consistent with proper and accepted customs and standards as established and followed by similar farm businesses under similar circumstances..”, the Act protects the farmer against nuisance actions, court injunctions, or specific nuisance bylaws related to the operation of the farm. To be eligible for protection, a farmer must be in compliance with the Health Act, Pesticide Control Act, Waste Management Act, the regulations under those Acts, and any land use regulation.

The Farm Practices Protection Act established the [Farm Industry Review Board](#) (FIRB) as the independent administrative tribunal that considers complaints from persons aggrieved by odour, noise, dust, or other disturbances resulting from farm operations, and encourages settlement of the complaints. The Board hears complaints and determines whether the disturbance in question results from normal farm practices.

3.2.5. Local Government Act

The [Local Government Act](#) provides the legislative framework for local governments to represent the interests and respond to the needs of their communities. Certain provisions address farming activities through community planning; zoning; nuisance regulations; removal and deposit of soil; weed and pest control; water use and drainage. [Part 26 Division 8 - Regulation of Farm Businesses in Farming Areas](#) provides for the creation of "farm bylaws" and allows for the establishing of agricultural standards for the guidance of local governments in the preparation of bylaws affecting agriculture.

3.2.6. Land Title Act

The [Land Title Act](#) gives Approving Officers the power to assess potential impacts of proposed subdivisions on farm land. Before subdivision approval is given, the Approving Officer may require adequate buffering of farmland from the subdivision or the removal of unnecessary roads directed to the Agricultural Land Reserve, to ensure no unreasonable interference with farm operations. Within the unincorporated (rural) portions of the RDEK, the Approving Officer is the Provincial Approving Officer with the Ministry of Transportation and Infrastructure. Each incorporated area or municipality has their own Approving Officer who is responsible all subdivision application within the municipal boundaries.

3.2.7. BC Assessment Act

Section 23 of the [Assessment Act](#) and [BC Reg 411/95](#), the *Classification of Land as a Farm Regulation* (the "Farm Class Regulation"), set out the requirements that must be met for land to be classified as "Farm" for assessment and tax purposes. Land classified as Farm must be used all or in part for primary agricultural production. All farm structures are classified as residential, including the farmer's dwelling. Farm class status results in a farm assessment that reduces property, school and hospital taxes. The Farm Class Regulation requires a producing farm to meet minimum gross income requirements, which vary with the size of the farm operation:

- \$10,000, if the total area of the farm operation is less than 0.8 ha (1.98 ac);
- \$2,500 if the total area of the farm operation is between 0.8 ha (1.98 ac) and 4 ha (10 ac); or
- \$2,500 plus 5% of the actual value of the area in excess of 4 ha (10 ac) if the total area of the farm operation is greater than 4 ha (10 ac).

Farm class is granted on an annual basis. Once land has been classified as farm, the minimum income requirements required for the farm operation must be met in one of two relevant reporting periods and a sale of a qualifying agricultural product must be made in every reporting period.

3.2.8. Water Act

The [Water Sustainability Act](#), adopted in 2014, is the principal water management legislation in BC and plays a key role in the sustainability of BC's water supply. The Act provides for the licensing of activities including use, diversion, and storage of water. The Act also addresses the nature of permitted changes to stream courses under application. Related water legislation in the [Water Protection Act](#) (RSBC) Chap. 484, provides the regulatory basis for the removal or transfer of water within and between jurisdictions. As part of its [Living Water Smart](#) vision, the province of BC is currently engaged in a process to modernize the Water Act.

A water license is required from the Ministry of Environment for use of any surface water under the BC Water Act. Water licenses are given for "beneficial use" of the water, such as domestic uses or irrigation for agricultural purposes. A water license protects rights to continued use of the water for the specified conditions and is attached to the land or "appurtenant" and not the owner of the land or license. If the land is sold the water license remains with the property. Part or all of the license may be moved ("transfer of appurtenancy") as long as the water can be accessed and used beneficially on the new land.

3.2.9. Wildlife Act

The British Columbia [Wildlife Act](#) establishes regulations and guidelines for the conservation and management of wildlife populations and habitats, the issuance of licenses and permits for fishing, game hunting, and trapping, guidelines for safe angling and trapping and outfitting policies. The [Provincial Agriculture Zone Wildlife Program](#) (PAZWP) was developed in 2009 to accommodate the special objectives in agricultural zones throughout BC and provide special opportunities for hunters. PAZWP helps coordinate crop damage prevention, mitigation and compensation strategies for damage done by certain species of wildlife. PAZWP has helped increase hunting opportunities in lower elevation agriculture and ungulate winter range zones, and promotes healthy landowner – hunter relationships.

3.2.10. Livestock Act

The [Livestock Act](#) defines Livestock Districts (areas where livestock may be at large) and Pound Districts (areas where livestock at large are subject to capture) and the conditions of capture, liability and trespass.

3.2.11. Forest and Range Practices Act and Range Act

The [Forest and Range Practices Act](#) (FRPA) and its regulations govern the activities of forest and range licensees in BC. The statute sets the requirements for planning, road building, logging, reforestation, and grazing. The [Range Act](#) gives the right to use Crown land for grazing or hay cutting. However, it is the FRPA and its various regulations that give direction on how and when rangeland may be used. The [Range Planning and Practices Regulation](#) requires that those who use Crown lands for livestock grazing must submit either a Range Use Plan (“RUP”) or Range Stewardship Plan (“RSP”) for approval by the Ministry prior to using rangeland. The Minister must approve a plan if it meets all requirements set out in the Regulation.

3.2.12. Weed Control Act

The [Weed Control Act](#) and [Weed Control Regulations](#) address the duty and responsibilities for designated noxious weed control, and the provision for local governments to appoint Committees and Inspection personnel to administer the provisions of the Act.

3.2.13. Environmental Management Act

Under the [Environmental Management Act](#), provisions are included to exempt the producer from obtaining permits if defined conditions are met. Nonetheless, two regulations are important for local farmers: the [Agricultural Waste Control Regulation/Code of Practice](#) (AWCR) and the [Organic Matter Recycling Regulation](#) (OMRR).

The AWCR prescribes the practices for using, storing and managing agricultural waste material in order to prevent pollution. The Regulation and the code of practice deal with waste storage and also with on-farm composting.

The OMRR prescribes how composting is conducted in commercial facilities, including feedstock allowed, size and technology, siting and procedures, and compost quality. While in most areas OMRR is within provincial jurisdiction, some municipalities and regional districts have taken over the administering of OMRR requirements.

3.2.14. BC Meat Inspection Regulations

The [Meat Inspection Regulations](#) (MIR) sets out the requirements for all provincially licensed slaughter facilities in British Columbia. The regulation came into force in 2004 in response to the discovery of BSE (Bovine spongiform encephalopathy) in Canada’s cattle herd in 2003, and compliance became mandatory on September 30, 2007. The MIR ensures that animals are humanely handled and slaughtered; carcasses are processed hygienically; and that meat is stored and packaged in ways that reduce contamination risks. The MIR introduced a provincial outcome-based standard for the safety of meat processing in the province, with the following objectives:

- Ensure food safety;
- Strengthen the meat processing sector;
- Rebuild consumer and international confidence in BC; and
- Adopt an outcomes-based approach to regulation.

The new graduated licensing approach includes several levels of slaughter operation for provincially licensed facilities:

- Class A facilities include slaughter and ‘cut and wrap’ services;
- Class B facilities include slaughter only;
- Class C was temporarily introduced in 2007 to make it possible for many slaughter operators to become fully licensed. These licenses are now being phased out;

- Class D - Retail Sales – permits direct producer sales to local consumers and to retail establishments with geographic restrictions. Restricts production to between one and 25 animal units (approximately 11,350 kg live weight); and
- Class E - Direct Sales –permits direct producer sales to local consumers. Restricts production to between one and 10 animal units (approximately 4,540 kg live weight). Class E licenses are also limited to the designated geographic areas but may be available to other rural and remote areas of the province on a case-by-case basis.

Class A and B slaughter licenses became mandatory for all provincially licensed slaughter facilities under the Meat Inspection Regulations in 2004. Unlicensed slaughter for personal consumption has always existed in the province and will continue.

3.2.15. Natural Products Marketing Act (Commodity Marketing Boards)

The [Natural Products Marketing Act](#) provides for the promotion, control and regulation of the production, transportation, packing, storage and marketing of natural products in British Columbia. The [Farm Industry Review Board](#) (FIRB) is responsible for the general supervision of BC's agricultural commodity boards, acting as a signatory to some agreements (e.g. federal-provincial), and for hearing appeals from any person aggrieved or dissatisfied by an order, decision or determination of a marketing board or commission.

In BC, broiler hatching eggs, chicken, table eggs, cow milk, and turkey are regulated both provincially and federally under a system of supply management by the respective boards and commissions:

- [BC Broiler Hatching Egg Commission](#)
- [BC Chicken Marketing Board](#)
- [BC Egg Marketing Board](#)
- [BC Milk Marketing Board](#)
- [BC Turkey Marketing Board](#)

Cranberries, hogs and vegetables are regulated provincially by the respective commissions. These commodities are not subject to the same production, import and price controls as supply-managed products.

- [BC Cranberry Marketing Commission](#)
- [BC Hog Marketing Commission](#)
- [BC Vegetable Marketing Commission](#)

In BC, boards and commissions, including those that are supply managed, set exemptions for personal consumption, farm gate sales, and small-lot production.

3.2.16. BC Environmental Farm Plan Program

The Canada-BC [Environmental Farm Plan](#) Program is a voluntary program that assists farmers in developing an environmental action plan for their farm that enhances natural resources and reduces the possibility of accidental harm to soil, air, water and biodiversity values.

3.3. Federal

3.3.1. Strategic Initiatives

[Growing Forward 2](#), the most recent national Agricultural Policy Framework agreement between the federal, provincial and territorial governments, is designed to help the agricultural industry position itself to respond to future opportunities and to realize its full potential as a significant contributor to the economy. *Growing Forward 2* will support BC's agri-food sector in three key areas:

- Innovation;
- Competitiveness and market development; and
- Adaptability and industry capacity.

In addition, *Growing Forward 2* will continue to provide funding for a complete suite of Business Risk Management programs to ensure farmers are protected against severe market volatility and disasters.

3.3.2. Canada Agricultural Products Act

The [Canada Agricultural Products Act](#) regulates the import, export and inter-provincial trade and marketing of agricultural products. The [Canadian Food Inspection Agency](#) administers many of the agricultural import and export activities. This Act standardizes agricultural grading and inspecting procedures across Canada.

3.3.3. Additional Federal Legislation Affecting Agriculture

Additional federal legislation that influences various aspects of the agriculture industry include:

[Canada Grain Act](#)

[Canada Wildlife Act](#)

[Consumer Packaging and Labelling Act](#)

[Customs Act](#)

[Excise Tax Act](#)

[Excise and Import Permits Act](#)

[Farm Debt Mediation Act](#)

[Farm Income Protection Act](#)

[Farm Products Agencies Act](#)

[Feeds Act](#)

[Fertilizers Act](#)

[Fisheries Act](#)

[Food and Drugs Act](#)

[Health of Animals Act](#)

[Migratory Birds Convention Act](#)

[Pest Control Products Act](#)

[Plant Protection Act](#)

[Seeds Act](#)

[Species at Risk Act](#)

[Transportation of Dangerous Goods Act](#)

4. Agricultural Commerce

A number of local and regional organizations are actively involved in promoting and developing a regional food economy strategy that encourages agricultural diversification, provides jobs, supports farmers and ranchers, enhances food security and builds a market for agricultural and cultural tourism.

4.1. Sales and Marketing

4.1.1. Retail and Wholesale

Five small-scale retail outlets offering locally and BC grown organic produce operate in the East Kootenay. The [Kootenay Food Directory](#) lists 30 specialty retail grocers and food stores in the Central Kootenay and Kootenay-Boundary regions. The largest of these is the [Kootenay Co-op](#) in Nelson, BC; a consumer owned cooperative offering a wide variety of healthy foods and wellness products, with a focus on locally grown or processed certified organic products.

There are a small but growing number of local restaurants throughout the Basin that feature and promote locally grown farm products and endeavor to source most of their raw materials locally.

4.1.2. Direct to Consumer

4.1.2.1. Farm Gate Sales

There are an increasing number of farms and ranches marketing farm products directly to the public from the farm gate, offering products ranging from breads and grains to herbs, spices, fruits, vegetables, preserves, honey, eggs and meat. The 2014 version of the [East Kootenay Local Food Guide](#) lists 18 producers offering on-site sales in the North Columbia Valley (Golden to Invermere), 23 in the Central Columbia Valley (Skookumchuk to Cranbrook and Bull River), 43 in the South Columbia Valley (Erickson to Wynndel), and nine in the Elk Valley (Mayook to Fernie and Baynes Lake). The range of available farm products includes breads, nuts, dairy, eggs, flowers, wine, honey, fruit, vegetables, preserves, tea, herbs, plants, grains and meats.

The [Kootenay Food Directory](#) is a searchable web-based directory of Central Kootenay and Kootenay-Boundary agricultural and food producers, retailers, food and farm groups, and ancillary product and service providers. The directory can be searched by category or location, and provides contact information, web links and brief descriptions of the products and services available.

4.1.2.2. Farmer's Markets

The [BC Association of Farmers' Markets](#) lists seasonal farmers' markets offering local produce in a number of communities in the Basin including [Jaffray-Baynes Lake](#), [Cranbrook](#), [Edgewater](#), [Fernie](#), [Invermere](#), [Nelson](#), [New Denver](#), [Rosland](#), [Golden](#), [Revelstoke](#) and [Valemount](#). Farmers' markets typically operate on weekends from mid-June to early September and feature seasonal produce as well as locally produced crafts and artwork.

A 2012 study commissioned by the [BC Association of Farmers' Markets](#) concluded that farmers' markets in BC continue to grow in number, producing 147% more sales in 2012 than 2006 and delivering \$170+ million in total economic benefits. The growth is attributed to three main factors: (1) more farmers' markets operating in the province; (2) more people shopping at farmers' markets; and (3) more money being spent by shoppers at farmers' markets¹¹.

¹¹ [http://www.bcfarmersmarket.org/sites/default/files/files/BCAFM%20Economic%20and%20Social%20Benefits-%20Final%20Report%202013\(2\).pdf](http://www.bcfarmersmarket.org/sites/default/files/files/BCAFM%20Economic%20and%20Social%20Benefits-%20Final%20Report%202013(2).pdf)

4.1.2.3. Community Supported Agriculture (CSA)

[Community Supported Agriculture](#) is an alternative, locally-based economic model of agriculture and food distribution. A CSA refers to a network or association of individuals who have pledged to support one or more local farms, with growers and consumers sharing the risks and benefits of food production. CSA members or subscribers pay at the onset of the growing season for a share of the anticipated harvest; once harvesting begins, they receive weekly shares of the produce. Many CSAs also include herbs, cut flowers, honey, eggs, dairy products, grains and meat. Some CSAs provide for contributions of labor in lieu of a portion of the annual subscription costs. There are currently CSA initiatives operating in the Columbia Valley ([Edible Acres](#)), Creston Valley ([Kootenay Grains](#), [Cherrybrook Farms](#)), Castlegar ([Mad Dog Farm](#)), Fruitvale ([Earthy Organics](#)), Valemount (Roger's Organics), Slocan Valley ([Ravine Creek Garden Farm](#)) and Kaslo ([Lofstedt Farm](#)).

4.1.2.4. Agri-tourism and culinary tourism

Growth in regional tourism creates potential for agri-tourism¹² and culinary tourism¹³, yet currently very little is being done to coordinate and promote this locally within the broader context of the tourism industry, so producers are not capitalizing on opportunities. Recent initiatives, such as food business incubator and commercial kitchen projects, are a positive step and will provide much needed business development support.

4.2. Value Added Processing and Manufacturing

Value added processing and manufacturing of agriculture and food products is currently a very small sector in the Basin, with a focus on bakeries and small-scale food processors (e.g. honey, fruit and vegetable products) and wineries.

4.2.1. Abattoirs

The changes to the meat inspection regulations in 2004 have severely limited the slaughter options available to small-scale producers (Figure 5). According to BC's [Meat Inspection and Licensing](#) web site, there are currently two Class B provincially licensed and inspected red meat slaughter facilities (Cranbrook and Creston), one Class B mobile red meat slaughter facility (Slocan City), one Class B provincially licensed and inspected poultry slaughter facility (Creston) and two Class B mobile poultry slaughter facilities (Cranbrook and Slocan Park) in the region. An additional Class B provincially licensed and inspected red meat slaughter facility was recently approved for development at Invermere. A Class B red meat facility at McBride services livestock producers in the northwestern portion of the Basin.

Class C licenses, issued as a temporary transitional measure to slaughter facilities that were upgrading to an A or B license, are being phased out and no Class C operations exist in the region. Class D licenses allow on-farm slaughter of 1 to 25 animal units for direct sale to consumers or retail sales to secondary food establishments (e.g., restaurants and meat shops) within the boundaries of the regional district where the meat was produced. Class D license holders may slaughter their own or other peoples' animals. Class D licenses are only available in 10 provincially designated regional districts ([designated areas](#)), selected using the following criteria: absence of licensed slaughter facilities; low population density; small livestock numbers; and transportation barriers (e.g., required marine transportation or seasonal road closures). None of the designated districts are within the Basin. Class E licenses allows on-farm slaughter of 1 to 10 animal units annually for direct sale to consumers. Sales are restricted to the regional district in which the

¹² Agri-tourism is a form of niche tourism that encompasses any agriculturally based operation or activity that brings visitors to a farm or ranch; [Agri-tourism Development in British Columbia](#)

¹³ Culinary or food tourism is defined by the World Food Travel Association (WFTA) as the pursuit of unique and memorable eating and drinking experiences, both near and far.

meat was produced, and operators are only permitted to slaughter their own animals. There are currently no Class D or E licenses in the Basin. There are also a number of small custom butcher shops who process (cut and wrap) meat for producers who have slaughtered their own animal. These operations do not require a license. Refer to section 3.2.14 for further information on BC’s meat inspection regulations.

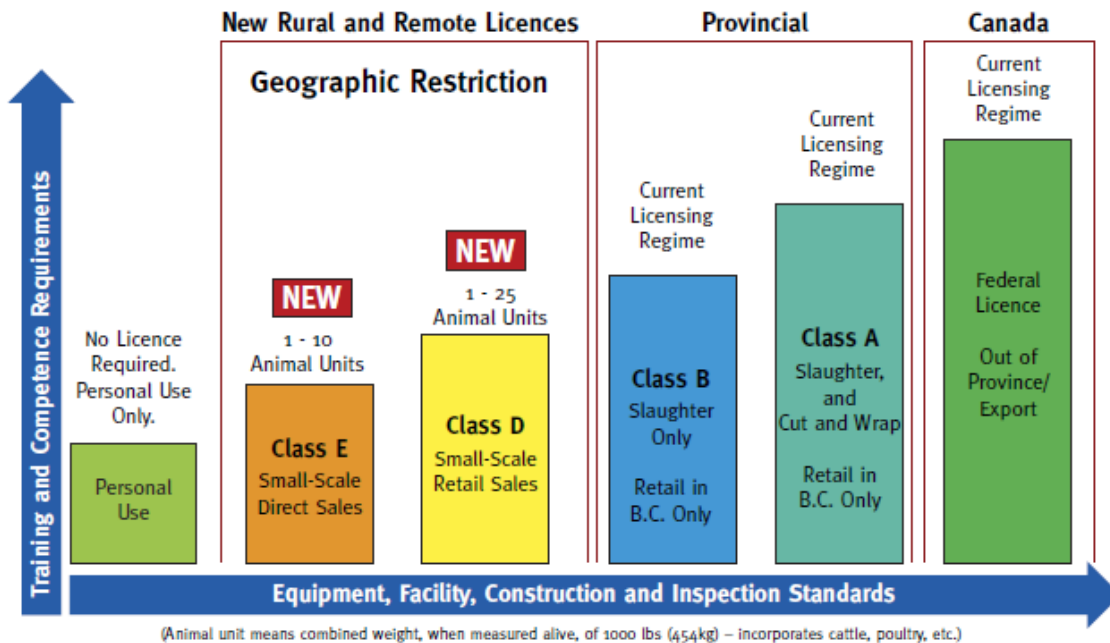


Figure 5. BC’s Graduated Livestock Slaughter Licensing System¹⁴

5. Industry Services

5.1. Infrastructure

5.1.1. Manufacturing, Processing, Storage and Distribution

The majority of agricultural products produced in the Columbia Basin are processed and marketed outside the region. There are no longer any local or regional stockyards or auction markets to facilitate local sales of livestock. As a result, most livestock are shipped to Alberta. Similarly, there is no commercial-scale infrastructure associated with grains (i.e. elevators, producer car load-out facilities), fruits, vegetables or forage production or processing.

5.1.2. Transportation

In general, the Basin is well serviced by transportation infrastructure. Major highway corridors run east – west through the northern (Hwy 1) and southern portion of the region (Hwy 3) and north-south through the Rocky Mountain Trench (Hwy 93/95), providing access to Alberta, the United States and the Interior and Coastal regions of BC. The mountainous terrain presents occasional road closure challenges and travel delays due to avalanche hazard and control measures, vehicle accidents, etc. Inland ferry services are available for crossings on Kootenay Lake, Arrow Lakes, as well as the Columbia and Kootenay Rivers. The Canadian Pacific Railway freight rail line services the East Kootenay and Columbia-Shuswap districts. Air passenger, charter and freight services are available at the Canadian Rockies International Airport near Cranbrook, West Kootenay Regional Airport in Castlegar and several smaller regional airports.

¹⁴ [Graduated Licensing Brochure](#), *Producing Livestock for Meat in British Columbia – What Producers Need to Know*.

5.2. Extension and Technology Transfer

The BC Ministry of Agriculture has changed the priorities for regional Agrologists and no longer provides individualized extension services to assist farmers and ranchers with production, marketing, business and financial planning information. The focus of the delivery mechanism for agricultural extension information has shifted to the internet, which occasionally presents accessibility and adoption challenges in rural communities due to internet capabilities, and for individuals with limited computer knowledge and/or outdated hardware and software platforms. In 2011, 56% of census farms in the Basin reported owning a computer, and only 40% reported access to high-speed internet connectivity (Table 20), which is increasingly becoming a requirement for timely web site access and document downloading.

Table 20. Computer and internet use for farm management in the Basin, 2011.

	RDEK	RDCK	RDKB ^{A, B}	CSRD ^{A*}	RDFFG ^{H**}	Basin
Total number of farms	396	552	45	45	121	1,159
Farms with computers	230	307	24	28	63	652
Farms with internet	218	294	22	27	55	616
High-speed internet	152	244	17	17	38	468

Source: Census of Agriculture, 2011

A, B, H refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRD reflect Electoral Area A only (Area B unavailable)

** Values for RDFFG reflect Electoral Area H, including non-Basin area

Due to the expanding interest in local food production and marketing, there is a trend towards small acreage market garden/hobby farm operations involving individuals with little or no agricultural experience. These individuals have diverse information needs related to production, economics, research and marketing. A number of local and regional food and environmental organizations have begun to address this need by organizing and facilitating workshops, seminars and field tours, and preparing information documents and resources.

5.3. Ancillary Services

The number of agricultural input suppliers located in the region has declined over time, with most of the farm inputs now being sourced in the Okanagan, Alberta, USA or on-line. Livestock feed, seed, fertilizer and petroleum and related products are available in communities within the Basin, as are custom seed/fertilizer application services. There are no commercial pesticide storage and distribution facilities or licensed custom application services for field crops.

Two farm equipment manufacturer sales, repair and parts businesses are located in the Basin region. There are a number of general parts supply companies and repair shops that provide services to the agricultural sector. The livestock sector is generally well serviced by veterinarians located throughout the region.

6. Workforce

6.1. Employment

In 2011, only 7% of Basin farms provided year-round employment, which averaged 35 weeks per employee. Twenty-one percent (21%) of farms reported seasonal or temporary employment, with an average of six weeks per employee. A total of 1,740 farm operators were reported in 2011, representing an average of 1.5 operators per census farm (Table 21).

Table 21. Farm employment in the Basin, 2011.

	RDEK	RDCK	RDKB ^{A, B}	CSRD ^{A *}	RDFFG ^{H **}	Total
<i>Paid work on a year-round basis (full-time or part-time)</i>						
farms reporting	31	34	4	1	11	81
number of employees	51	141	6	X	17	215
number of weeks for all employees	1617	5243	132	X	593	7585
<i>Paid work on a seasonal or temporary basis</i>						
farms reporting	67	136	11	9	21	244
number of employees	248	1077	87	X	38	1450
number of weeks for all employees	2262	5633	644	X	259	8798
<i>Total number of employees</i>						
farms reporting	84	151	13	9	29	286
number of employees	299	1218	93	15	55	1680
<i>Total weeks of paid work</i>						
farms reporting	84	151	13	9	29	286
number of weeks for all employees	3879	10876	776	125	852	16508
<i>Total number of farms and total number of operators, 2011</i>						
total number of farms	396	552	45	45	121	1159
total number of operators	605	815	70	70	180	1740

Source: Census of Agriculture, 2011

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRD reflect Electoral Area A only (Area B unavailable)

** Values for RDFFG reflect Electoral Area H, including non-Basin area

¹ Value reported is for entire Regional District, not the specified Electoral Areas

6.2. Demographics and Succession

6.2.1. Age of Farm Operators

The average age of farm operators in the Basin increased from 54.8 years to 57.1 years of age between the 2006 and 2011 census years, and exceeds both the provincial and national averages (Table 22).

Table 22. Average age of farm operators in the Basin.

	RDEK	RDCK	RDKB ^{A, B}	CSRD ^{A *}	RDFFG ^{H **}	Basin	BC	Canada
2011 Census	57.5	55.8	57.3	56.5	58.4	57.1	55.7	54.0
2006 Census	55.0	54.3	54.4 ¹	53.8 ¹	56.5 ¹	54.8	53.6	52.0

Source: Census of Agriculture, 2011

^{A, B, H} refers to the Electoral Areas in the identified Regional Districts that are within the Basin boundary.

* Values for CSRD reflect Electoral Area A only (Area B unavailable)

** Values for RDFFG reflect Electoral Area H, including non-Basin area

¹ Value reported is for entire Regional District, not the specified Electoral Areas

7. Existing Basin Agriculture Plans, Organizations and Activities

7.1. Agricultural Area Plans

The BC Ministry of Agriculture's Strengthening Farming program actively supports local government initiatives to develop [Agricultural Area Plans](#) that focus on a community's farm area to discover practical solutions to issues and identify opportunities to strengthen farming and ultimately to contribute to agriculture and the community's long-term sustainability.

7.1.1. Regional District of East Kootenay

The [RDEK Agricultural Plan](#) was initiated in the spring of 2011. The planning process was led by the RDEK and an Agricultural Plan Steering Committee comprised of members of the farm community, including local ranchers, producers, farmers and business owners. The steering committee provided technical advice and input to the planning process, in addition to liaising with the agricultural community.

The RDEK ag plan project was implemented in three phases. The first of these was the completion of a comprehensive agricultural land use inventory (ALUI) in partnership with the Ministry of Agriculture's Strengthening Farming Program. This involved a "windshield survey" of each property and observation of land use, land cover, and agriculture activity. For each property in the study area, data was collected on general land use and land cover. For properties with agriculture present, data was collected on agricultural practices, irrigation, crop production methods, livestock, agricultural support (storage, compost, waste), and activities which add value to raw agricultural products. In addition, the availability of non-farm use properties for future farming was assessed based on the amount of potential land for farming on the property and the compatibility of existing non-farm use with future farming activities. The ALUI data was supplemented with census data research from the 2011 Census of Agriculture. The second phase involved a series of community consultation and engagement activities that identified eight key issues, challenges and opportunities:

- Agricultural extension, networking and support
- Producer/Consumer relationships and education
- Improving economic viability
- Marketing/Branding (developing a local/regional agri-food economy)
- Government policies and regulations
- Diversification and value-added opportunities
- Farm demographics and succession
- Land access, value and utilization

Information from the first two phases was compiled into the [RDEK Agricultural Plan Background Report](#). The third phase involved the completion of the [RDEK Agricultural Plan](#), which identified and described five (5) key strategic goals focused on addressing the issues, challenges and opportunities identified throughout the consultation and engagement process.

1. *Enhance institutional support for East Kootenay agriculture.* The agricultural sector in the East Kootenay lacks the level of institutional, organizational or human infrastructure that is needed to address challenges and achieve many of the priorities identified by the agricultural community.
2. *Improve the economic viability of East Kootenay agriculture.* Agricultural Census data, supported by anecdotal information provided by producers during the development of the Agriculture Plan, indicates that many agricultural enterprises in the RDEK are facing ongoing profitability challenges. While diversification and value-added initiatives such as on-farm processing, direct farm marketing and agri-tourism are being successfully employed by some farmers, economic initiatives and regulatory efficiencies are required to improve overall sector viability.

3. *Encourage Agriculture on Agricultural Land.* Consistent land use policies and a decision making framework are needed to protect the agricultural land resource and foster the development of the agricultural industry. Initiatives are needed to support farm succession, enable and train new farmers, and improve linkages between those who own farmland and those who wish to farm.
4. *Increase Public Knowledge and Support of Agriculture.* Agriculture in the East Kootenay lacks a clear identity among the majority of its population and specifically, urban residents. People are not always aware of the contribution that agriculture makes to the economy, quality of life and environmental amenities that society enjoys and expects. Public support has become increasingly important to agricultural sector objectives, as the interests of community, farmland protection, local food and economic viability of farm operators have become more intertwined. Agriculture stands to gain from a closer relationship with the public as the importance to community well-being of economically sustainable local food and fibre production becomes more appreciated.
5. *An Agri-food Systems Strategy for the East Kootenay.* The development and implementation of a regional agri-food system strategy that encompasses the interests of all stakeholders is a critical step in ensuring a sustainable agricultural industry in the East Kootenay.

7.1.2. Regional District of Central Kootenay

The Regional District of Central Kootenay completed the [RDCK Agriculture Plan](#) in June 2011. The process involved an extensive community consultation and survey process to identify issues and possibilities, compilation of agricultural census data for the region, and the development of a background report that provided context for the plan. An ALUI was not conducted as part of the agricultural planning process. Key concerns identified within the region include:

- continuing loss of farmers and their expertise;
- fallow or abandoned farms increasing weed and pest pressures on the remaining farms;
- loss of biodiversity as farmers are forced to focus on high value crops;
- lack of retirement options and succession for farmers;
- farm income cannot support the purchase of land at residential / recreational market values;
- difficulty funding equipment and infrastructure needs for start-up farmers, even if they are able to acquire the land;
- the loss of regionally-based extension services, providing professional support to fledgling and established farmers;
- aging farmers and few new entries into the sector;
- limited local equipment, supplies and processing facilities;
- ongoing loss of farmland; and
- the shortage of seasonal and permanent local market options.

The Plan provides a number of recommendations around these broad goals and objectives:

- Support the viability of farming in the RDCK;
- Ensure that the agricultural capability of the RDCK is realized and protected;
- Foster a secure food supply for RDCK residents; and
- Implementation of the agriculture plan.

The RDCK plan has been endorsed by the board; implementation status is unknown.

7.1.3. Regional District of Kootenay-Boundary

The RDKB completed the [Boundary Area Agricultural Plan](#) in 2011. The plan focuses on Electoral Areas C, D and E, which does not encompass the portions of the RDKB within the Basin (Areas A and B). The plan identifies five overarching pillars of sustainable agriculture:

- Human Capital: Protecting people's skills and knowledge to produce local food in a changing world
- Natural Capital: Protecting the soil and water while meeting climate challenges
- Built Capital: Enabling farmers with tools & regulatory support
- Financial Capital: Building profitable family farm businesses & markets
- Social Capital: Embracing urban-agriculture relationships and building an engaged society

These five pillars are each supported by a set of strategic objectives and these objectives, in turn, are supported with specific recommendations for policy action. The key recommended policy action identified in the plan is the establishment of an Agricultural Development Coordinator. The majority of the remaining recommendations derived from the plan hinge somewhat upon the creation of this position. These other recommendations range from the revision of bylaws that pertain to agricultural land, through to the creation of an AAC and the creation of a local food charter.

The plan has been adopted by the RDCK board and has entered the implementation phase.

7.1.4. Columbia-Shuswap Regional District

The Columbia-Shuswap Regional District (CSRD) published an Agriculture Plan in 2014, however, it does not include the two electoral areas (Area A - rural Golden and Area B - rural Revelstoke) that fall within the Columbia Basin region because they were not deemed as agriculturally important.

7.1.5. Regional District of Fraser-Fort George

The RDFFG has discussed the need for an agricultural plan, but has not yet formalized the process. An RDFFG planner indicated that the focus area for a plan would be the portions of the RD from McBride to the west, which would not include the portion of Electoral Area H that is within the Columbia Basin.

7.1.6. Common Themes in Basin Agricultural Plans

The [Columbia Basin Rural Development Institute](#) (RDI) recently prepared a briefing document, [Common Themes in the Three Agricultural Plans of the Columbia Basin-Boundary Region](#) that highlights the commonly identified challenges, opportunities, and suggestions outlined in the RDCK, RDEK and RDKB regional agricultural plans in an effort to assist and promote the implementation of the most common and highest priority actions. Common themes include:

- **Increasing Demand, Decreasing Supply** - the demand for locally grown and organic food is increasing and there are opportunities to expand local agricultural production. However, the area being farmed and the volume of agricultural produce offered for sale is decreasing.
- **Land Supply** - Agricultural land is becoming increasingly underutilized, often taken out of production or unavailable to farmers due to increasing land values which are often based on development or recreational uses as opposed to agriculture.
- **Farmers** - The number of farms and farm operators is decreasing, and the average age of farmers is increasing, suggesting that farm succession and transition may be issues in the future. However, increased interest in local food production and participation in food related workshop, conferences and training events suggests the next generation of farmers is available and interested. The challenge is connecting current and prospective farmers and facilitating transition.

- **Financial Viability** - All three agriculture plans describe the financial challenges faced by farmers, and suggest that the core of the issue is that it is extremely challenging for farmers to make a living growing food. Average profitability levels are not sufficient to sustain and grow a farm operation. If farming became more financially viable, more young people would be able to get into farming, more farmers would be able to keep farming, fewer farmers would have to look for off-farm work, more land would be put towards food production, and more food produced.

7.2. Provincial and National Organizations

At the provincial level there are several key organizations involved in agricultural planning, regulation and service delivery, including the [BC Ministry of Agriculture](#), [BC Farm Industry Review Board \(FIRB\)](#), [Investment Agriculture Foundation of BC \(IAFBC\)](#), [Agricultural Land Commission \(ALC\)](#), and the [BC Agricultural Council \(BCAC\)](#), whose membership is comprised of more than 30 producer organizations. Within the province there are approximately 55 commodity/product specific associations for the various animal and plant production industries, several processing industry associations, and more than 20 general farm-related organizations. Comprehensive lists of these organizations can be accessed via the [IAFBC](#) and [BCAC](#) web sites.

National organizations include [Agriculture & Agri-Food Canada \(AAFC\)](#), which delivers a broad range of federal-provincial programs accessible via [AgPal](#), a web-based discovery tool developed to help farmers and others in the agriculture and agri-business sector find the federal and/or provincial programs and services that specifically apply to them; the [Canadian Federation of Agriculture \(CFA\)](#), a farmer-funded, national umbrella organization representing provincial general farm organizations and national commodity groups; and the [National Farmers Union](#), a direct-membership organization made up of Canadian farm families.

[Agriguide](#) provides a searchable directory including contact information for national, regional and provincial not-for-profit and publicly funded farm organizations and commodity groups.

7.3. Agricultural Producer and Community Organizations in the Basin

There are numerous local and regional organizations in the Columbia Basin with a focus on local food production, food security, networking, marketing and agricultural education of both producers and consumers. Examples include:

- Columbia Valley Food Corridor Association
- [Cranbrook Food Action Committee](#)
- [Creston Valley Food Action Coalition](#)
- [Groundswell Network](#)
- [Kaslo Food Hub](#)
- [Kootenay Food Strategy Society](#)
- Kootenay Livestock Association
- [Kootenay Local Agricultural Society](#)
- [Kootenay Food](#)
- [Kootenay Organic Growers Society](#)
- [Kootenay Permaculture Institute](#)
- [Slow Food Columbia Valley](#)
- Waldo Stockbreeders Association
- Windermere District Farmer's Institute (WDFI)
- [West Kootenay Permaculture Co-op Association](#)
- [Wildsight](#)
- [Young Agrarians](#)

7.4. Educational Institutions

At present, there are no formal post-secondary education institutions in the Basin offering agriculture-specific educational programs. Individuals wishing to study agriculture may enroll in the University of British Columbia [Faculty of Land and Food Systems](#) in Vancouver, the [University of the Fraser Valley Agriculture](#) program, short-course programs offered through colleges in other regions of the province, or programs in other provinces.

8. Programs and Funding

Most of the agricultural programs that farmers, ranchers and agri-food organizations may access in British Columbia are either administered through the [Investment Agriculture Foundation of BC](#), [BC Agricultural Council](#) (BCAC), or the [BC Agricultural Research & Development Corporation](#) (ARDCorp), a wholly owned subsidiary of the BC Agriculture Council that delivers programs and services that advance both the individual producer and entire agriculture sector while benefiting local communities. ARDCorp provides funding and assistance for a variety of producer-focused programs for which eligible BC farmers and ranchers are free to apply.

The [Columbia Basin Trust](#) (CBT) also provides program funding for certain agricultural initiatives, specifically the [Grassland and Rangeland Enhancement Program](#), which supports efforts to maintain and/or enhance grassland resources while meeting conservation, environmental and recreational objectives.

Joint Federal – Provincial programs are generally delivered through [Growing Forward 2](#), a five-year federal-provincial policy framework for Canada's agriculture and agri-food sector. Programs cover the following key areas:

- [Business Risk Management](#)
- [Innovation](#)
- [Competitiveness and Market Development](#)
- [Adaptability and Industry Capacity](#)

9. Information, Policy and Investments Needs/Gaps

The RDI briefing document on the three Agriculture Plans developed within the Basin provides a concise summary of the collective recommendations for addressing gaps and enhancing the agriculture industry, which can be placed in three separate, but related categories: information needs, policy suggestions, and investment and infrastructure needs.

9.1. Information Needs

9.1.1. Farm Advisory Services

There is an identified need for agriculture extension services and educational opportunities encompassing support services for existing farmers; business development and marketing training; and training and education of new farmers. Producers need access to the latest research on new crops and varieties, emerging technologies and industry trends, changing consumer demands, and changing regulations.

9.1.2. New Farmer Training

Training, education, mentoring and possibly internship and/or cooperative programs are needed to support new farmers and to facilitate effective succession and knowledge transfer from existing farmers and ranchers.

9.1.3. Land Use and Capability Information

There is a clearly identified need to create, update, and maintain agricultural land use and capability information across the Basin. This information is a prerequisite for effective land use planning, research, policy improvements, and bylaw development. A key element of this is modelling the projected impacts of climate change on crop adaptation and suitability.

9.1.4. Market Research

Producers need support in identifying and developing market opportunities for specific crops and livestock products. Detailed baseline economic studies are needed for each sector to determine the cost of production, revenues, profit margins, transportation and logistics, market potential, and best management practices. The market research should determine the size and scope of local or regional markets, how effectively local markets are currently served by local agricultural products, current and future production capacity, and potential economic returns and risks.

9.1.5. Alternative Land Access Models

Affordable access to farmland is a significant barrier to entering the agricultural industry for new farmers and existing farmers wishing to expand their operations. Research is needed to explore the feasibility of alternative land ownership models such as an Agriculture Land Trust or land cooperative model.

9.1.6. Climate Change Adaptation

The majority of climate scientists consider that climate change is a real phenomenon occurring due to many factors, including the impacts of greenhouse gas emissions and human activity on the environment. An appropriate strategic response is critical for agriculture in the Basin. There are significant opportunities for agriculture to assist in the mitigation of effects through changes in practices and adoption of technologies. The threat is that changes to climate may trigger more volatility in growing conditions and create constraints on agricultural resource availability in the future. Many farming operations are dependent on stream flows or stored water from glacier and snow melt runoff delivered to crops via irrigation during summer when precipitation and stream flow is lowest.

A project commissioned by the Water Initiatives Program of the CBT, with the assistance of the Pacific Climate Change Impact Consortium and a number of other scientific researchers, identified preliminary climate change impact and adaptation strategies for a variety of economic sectors including agriculture.

Relevant likely Environmental Changes and Possible Impacts on Agriculture	Potential Adaptations
<ul style="list-style-type: none"> ▪ Warmer temperatures and less summer precipitation may reduce soil moisture and increase evaporation, increasing irrigation needs at the same time of year that stream flows are expected to decline ▪ Warmer temperatures will increase the length of the growing season, potentially increasing crop moisture needs, and requirements for irrigation ▪ Warmer temperatures may improve the potential for high value crops, but this will be realized only if sufficient water is available ▪ Extreme events and more intense precipitation increases the potential for soil erosion and crop damage ▪ Smoke from wildfires may damage crops ▪ Warmer temperatures may favour weeds, insects and plant diseases 	<ul style="list-style-type: none"> ▪ More efficient irrigation (e.g. drip, scheduling, leak repair) ▪ Construct additional water storage facilities ▪ Crop diversification ▪ Grow higher value crops with low water needs ▪ Update erosion control practices ▪ Enhanced monitoring and refined practices to minimize damage from weeds, insects and diseases

Source: [Climate Change in the Canadian Columbia Basin - Starting the Dialogue](#)

9.1.7. Irrigation

Education and awareness of irrigation systems and management practices is required to ensure more efficient water use and irrigation effectiveness. Additionally, alternative policy options need to be explored to reduce costs for irrigation; increased access to municipal and Crown land water, and improve controls and management of new water licenses.

9.1.8. Invasive Weeds

Financial and administrative support is needed to ensure that existing regional invasive plant management programs within the Basin can continue to focus their efforts on education/outreach, monitoring and treatment.

9.2. Policy Suggestions

Agricultural issues and concerns should be fully integrated into the planning and decision making processes regarding zoning, land use planning, taxation, bylaws, and Official Community Plans. Additional policy suggestions within the purview of Regional Districts includes:

- reduce tax assessment rates or building code permit fees for farm structures that meet the National Farm Building Code of Canada;
- restrict the number and size of non-agriculture related secondary dwellings;
- utilize zoning and bylaw tools to reduce the potential for urban/rural conflict and the loss of agricultural land to urban expansion;
- review bylaws related to restrictions on livestock in backyards in non-agricultural zones;
- review agricultural zoning bylaws related to processing livestock and other agricultural crops, and on-farm businesses;
- consider policy or bylaw restrictions for maximum building footprint size and setbacks for residential buildings in agriculture zones to reduce the loss of agriculture lands;
- reduce subdivision, set minimum parcel sizes, and encourage amalgamation of contiguous parcels in agriculture zones (smaller parcels are less likely to be farmed);

9.3. Investment Needs

Significant investment of financial and human resources is needed to develop and sustain infrastructure that will support local food systems. This not only includes physical infrastructure such as storage, distribution and processing facilities, as well as tools and equipment, but also investment in marketing and brand development strategies, farm advisory services, education and training, information technology and research.

10. Emerging Trends and Opportunities

10.1. Local/Regional Food Systems

According to data presented by the [Columbia Basin Rural Development Institute](#), a recent public opinion survey shows that 92% of BC residents believe that BC should produce enough food to feed itself so the province does not have to rely on import products. In the Columbia Basin-Boundary Region, 75% of residents prefer to buy food that was produced locally, and more than two-thirds would be willing to pay extra for local food. The fact that approximately 95% of the food consumed in the Basin-Boundary region is imported from other parts of the province, from other provinces, or internationally suggests there is enormous potential for local producers and processors to expand. The development and implementation of a regional agri-food system strategy that encompasses the interests of all stakeholders is a critical step in ensuring a sustainable agricultural industry in the Columbia Basin.

The [Canadian Agri-Food Policy Institute](#), in a 2011 study entitled Canada's Agri-Food Destination¹⁵, stated: *"We need to stop talking only about sectors, value chains and product lines and start thinking more about agri-food "systems". Future success hinges on taking a systems approach that better understands the connections among many diverse players. Every ingredient and food relies on a productive ecological system managed by ranchers or farmers. Getting the ingredient or food to the consumer's plate takes a value chain, including input providers, producers, distributors, processors and retailers. All levels of government are also part of this system, acting as policy makers, regulators, funders and facilitators. As well, scientists, researchers and entrepreneurs contribute ideas and new technologies. Adjacent sectors (e.g., in the health, transportation and environment sectors) intersect with the agri-food sector in multiple ways. This goes well beyond a linear view of the sector. All these stakeholders have a leading role to play in food systems.*

*Each food system must work together to decide how to deliver on the promise to provide: **good food** (about having the most nutritious and safest foods), **responsibly produced food** (about lowering the ecological footprint and increasing operational efficiencies) and a **reliable food supply** (about better managing risks across the system and utilizing bio-solutions, among other responses). In short, this is about creating a "new contract" among industry and government. Currently, Canada is not organized or aligned to support food systems. A new food plan is needed."*

10.2. Environmentally and Socially Conscious Consumers

Over the last two decades, the globalization of the agri-food system has resulted in an increased diversity of food products being offered to consumers in all parts of the world. As consumer choice has expanded, so has consumer awareness of the important link between the agri-food system and the environment, thereby increasingly affecting their food choices.

¹⁵ http://capi-icpa.ca/destinations/CAPi-Agri-Food_Destination_FULL.pdf

Agriculture and Agri-food Canada (AAFC) commissioned a literature review entitled [Consumer Attitudes Toward the Agri-food System and the Environment](#), which concluded that production practices believed to be more environmentally friendly such as organic agriculture, “food-mile” diets designed to reduce the environmental impact of transporting foods from distant markets, and reduced packaging all have strong positive connotations for a growing number of today’s consumers.

Consumers are now connecting personal health, food safety, and environmental concerns, and relying significantly on their social values and belief structure when making purchasing decisions. Purchasing trends are now partly driven by environmental concerns, in addition to concerns related to how far food travels and its overall ecological footprint, if foods can be sourced locally or in their own country, if they are grown using organic production methods, and whether a product’s positioning on issues such as the environment or method of production, align with individual values, perceptions or knowledge.

10.3. Ecological Services/Paid Ecosystem Services

The [BC Ecological Services Initiative](#) (ESI) is in the process of developing an incentive-based ecosystem services program for agricultural lands in BC and Alberta. This concept is focusing on a model that would function at the regional or watershed scale. Ecological Services are benefits derived from ecological functions of healthy ecosystems, which are globally recognized as necessary for human health and well-being. Globally, incentivizing the production of Ecosystem Services is a concept that has been garnering a tremendous amount of interest. There are many long-term programs throughout the world that pay agricultural producers to maintain and enhance practices that result in an increase in Ecosystems Services. This type of incentive program is generally referred to as Paid Ecosystem Services (PES). Unfortunately Canada has lagged behind in establishing such programs. The ESI was created to demonstrate and test the concept to determine its viability in the Canadian context. The objective is; to research and demonstrate a voluntary incentive-based model that encourages farmers to adopt Beneficial Management Practices for the maintenance and enhancement of ecological services under their management control. The ESI’s main goal is to create and maintain an established, long-term, financially sustainable, ecological services program. Other aspects of the Initiative include research of PES efforts globally, research of long-term funding solutions, and an information project which will use collected information to establish a collaborative, web-based information exchange system for producers, government officials, NGOs, and other stakeholders.

11. Research Needs

A number of key research needs have been identified within the context of the three agricultural plans of the Columbia Basin-Boundary regions. These include:

- Analysis of “agri-food systems” for key products and commodities that are currently produced and/or potentially adapted for production within the Basin;
- Agricultural water demand modelling for all watersheds within the Basin;
- Climate change trends and adaptation modelling;
- Agricultural, climatic and economic capability mapping/modelling that links soil and climatic data (including solar radiation), water demand/access modelling and economic/profitability data as a means of identifying the “best use” of available agricultural lands;
- Local/regional food supply capacity feasibility studies to determine what proportion of the total daily dietary requirements (according to the Canada Food Guide recommendations) of Basin residents could realistically be produced and processed locally;
- Collaboration with existing groups and organizations to research and facilitate the development agricultural policy and programming for [Paid Ecosystem Services](#) initiatives;
- Supporting local food safety and food security initiatives by assessing the potential for alternative farming/production systems (e.g., organic, GM-free, permaculture) that respond to local niche markets;
- Studies that explore the public amenity benefit associated with agricultural land, similar to those completed for [Metro Vancouver](#) and [Fraser Valley-Abbotsford](#); and
- Opportunities for innovation and productivity enhancement in each segment of the agriculture and agri-food system: primary production, food processing, consumer services and food distribution.