

Growing Knowledge



Ministry of
Agriculture

Agricultural Land Use Inventory

Reference Number: 800.510-55.2016

Regional District of Central Kootenay Agricultural Land Use Inventory Summer 2016



**Strengthening Farming Program
British Columbia Ministry of Agriculture**

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Table of Contents

Acknowledgments.....	i
Citation.....	i
Contact Information.....	i
Table of Contents.....	ii
Acronyms	iii
Executive Summary.....	1
Agrologist Comments.....	4
1. General Information	6
1.1 Overview.....	6
1.2 Agricultural Land Reserve.....	7
1.3 Inventory Area.....	8
2. Methodology.....	9
2.1 Inventory Methodology.....	9
2.2 Description of the Data	10
2.3 Presentation of the Data	11
3. Land Cover and Farmed Area.....	12
3.1 Land Cover and Farmed Area	12
3.2 Status of the Effective ALR	14
4. Farming Activities.....	16
4.1 Cultivated Field Crops.....	16
4.2 Irrigation	21
4.3 Livestock	22
5. ALR Utilization	26
5.1 Parcel Inclusion in the ALR	26
5.2 Land Use and Farm Use	27
5.3 Farm Use & Parcel Size	29
6. ALR Availability for Farming.....	31
6.1 ALR Parcel Availability Overview	31
6.2 On Parcels Used For Farming	32
6.3 On Parcels Available For Farming.....	33
6.4 On Parcels Unavailable For Farming.....	35
7. Land Use Outside the ALR.....	36
7.1 Land Use and Farm Use Outside the ALR	36
Appendix A – Glossary	37

Acronyms

AGRI	BC Ministry of Agriculture
ALR	Agricultural Land Reserve
ALUI	Agricultural Land Use Inventory
AUE	Animal Unit Equivalent
GIS	Geographic Information Systems
OCP	Official Community Plan
RDCK	Regional District of Central Kootenay

Executive Summary

The Regional District of Central Kootenay (RDCK) is located in south eastern BC and is comprised of 11 electoral areas and 9 member municipalities. RDCK completed an Agricultural Area Plan in 2011 with an overarching goal of increasing the quantity and quality of agricultural production in the region¹.

In the summer of 2016, the BC Ministry of Agriculture and its partners conducted an Agricultural Land Use Inventory (ALUI) in the RDCK. The ALUI was funded by the RDCK, the Columbia Basin Trust, and Growing Forward 2, a federal-provincial territorial initiative.

ALUIs can be used to understand the type and extent of agricultural activities within the Agricultural Land Reserve (ALR). The ALUI data quantifies how much land is currently used for agriculture, how much land is unavailable for agriculture, and how much land may have potential for agricultural expansion. The data provides baseline information that can be used to track trends in agricultural land use and to measure changes over time. The data also enables the estimation of agricultural water demand with the use of an irrigation water demand model.

Highlights:

Within the RDCK:

- 30% of the effective ALR was in farmed land cover that includes cultivated crops and barns.
- There were 13,379 ha of cultivated crops in the ALR and 1,100 ha of crops outside the ALR.
- Forage & pasture accounts for 76% of all crops, while cereals & oilseeds account for 17%.
- Only 23% of the crops utilize irrigation. Most forage, pasture, cereals & oilseeds were not irrigated.
- Equine and beef were the most common types of livestock. Equine had the greatest number of estimated animal unit equivalents (6,340), followed by beef with 5,640 estimated animal unit equivalents.
- Most equine activities were small with < 25 animals, while beef activities were often much larger.
- There were 10 large scale beef, 6 large scale dairy, and 1 large scale ostrich activity in RDCK (> 100 animal unit equivalents).
- 23% of the ALR parcels were used for farming and 77% were not used for farming
- Of the ALR parcels, 34% (1,754 parcels) are unavailable due to an existing land use or low availability of suitable land, while 43% (2,265 parcels) may be available for farming.

Area of Interest and Methodology

Included in the inventory were all parcels:

- completely or partially within the ALR, or
- classified by BC Assessment as having “Farm” status for tax assessment, or
- containing an active water licence for farming or irrigation purposes, or
- zoned by local government bylaws to permit agriculture, and greater than 1 acre² and showing signs of agriculture on aerial photography

The ALR in RDCK consists of 63,086 ha. Of this area:

- 70% or 44,192 ha met one of the inventory criteria and was included in the survey
- 26% or 16,544 ha was outside of legally surveyed parcels in Crown land
- 4% or 2,350 ha was in Indian reserves

¹ Regional District of Central Kootenay Agriculture Area Plan, June 2011.

² One acre is approximately 0.404 ha.

This report focuses on the 70% or 44,192 ha of the ALR that is within legally surveyed parcels. This land is considered the “effective ALR” as local and provincial governments may have an opportunities to influence land use decisions on these parcels.

The ALUI was conducted using visual interpretation of aerial imagery combined with a drive-by “windshield” survey to capture a snapshot in time of land use and land cover. Land cover is defined as the biophysical material at the surface of the earth while land use is defined as how people utilize the land.

Land Cover and Farming Activities

In the ALR by land cover, 30% of the effective ALR was farmed (12,379 ha), 6% of the effective ALR (2,694 ha) was otherwise anthropogenically modified in vegetation, buildings, and roads, and 64% of the effective ALR (28,109 ha) was in a natural or semi-natural state. An additional 1,100 ha of land outside the ALR was farmed.

In 2016, there were 13,988 ha of cultivated field crops in RDCK (12,982 ha in the ALR and 1,006 ha outside the ALR). Forage & pasture was the most common crop accounting for 76% of all cultivated land. Cereals & oilseeds were the next most common with 17% of the cultivated land, followed by tree fruits with 2%.

A total of 10,649 ha were used for forage & pasture in RDCK: 6,436 ha were used for forage (48% of all cultivated crops), 1,988 ha were used for pasture (14% of all cultivated crops), 1,926 ha were used for both forage & pasture, and 300 ha were unused or unmaintained.

A total of 2,370 ha cereals & oilseeds were recorded in RDCK. The top crops included barley (762 ha), wheat (689 ha), oats (552 ha), and canola (286 ha). There were 338 ha of tree fruits with cherries being the most common (241 ha), followed by apples (52 ha), and mixed orchards (22 ha). Also recorded were vegetables (132 ha), nursery (115 ha), vines & berries (50 ha), Christmas trees (50 ha), turf (24 ha), nut trees (10 ha), and specialty and floriculture crops (5 ha).

Irrigation use was captured by type of crop and type of irrigation system type to aid in developing a water demand model for agriculture. Irrigation is not overly common in RDCK with only 23% of the cultivate land utilizing irrigation. Less than one quarter (24%) of forage & pasture fields are irrigated and only 2% of cereal & oilseed fields are irrigated. Other crop types in RDCK (e.g. tree fruits, vegetables, nursery, etc.) typically have a much higher proportion of their total area using irrigation. Sprinkler and giant gun systems were the most common types of irrigation. Sprinkler systems include hand-line, wheel-line, solid set and micro-sprinkler irrigation.

Livestock

Livestock activities were recorded, but were difficult to measure using a windshield survey. Livestock may not be visible if they are housed in barns, or are on another land parcel. The inventory data does not identify animal movement between parcels that make up a farm unit, but reports livestock at the parcel where the animals or related structures were observed. No livestock numbers were obtained through the survey, so the results are reported as a range of animal unit equivalents for each parcel.

In RDCK, equine, beef, and dairy are the most abundant types of livestock. Equine accounts for 35% of the estimated animal unit equivalents (AUEs) while beef accounts for 31% of the AUEs and dairy accounts for 13%. Equines had the greatest number of individual occurrences, however, most equine operations had only a few animals.

Intensive livestock activities utilize specialized structures for confined feeding at higher stocking densities. The majority of all dairy AUEs (85%) utilize intensive facilities.

ALR Utilization

Land use was applied on a parcel basis. To determine land use, the entire parcel was examined and a “Used for farming” or “Not used for farming” category was assigned based on the proportion of the parcel in cultivated crops, farm infrastructure, and/or the scale of livestock production. Refer to the glossary for the full “**Used for farming**” definition.

In the ALR by land use, 23% of the parcels were “Used for farming” (1,202 parcels) and 77% of the parcels were “Not used for farming” (4,019 parcels). The average “Used for farming” parcel size was 13 ha while the average “Not used for farming” parcel size was 11 ha.

ALR Availability

Parcel availability for farming was assessed based on the compatibility and extent of existing land use and land cover for agriculture. Parcels considered “Not used for farming” were further categorized as available or unavailable for farming. Unavailable for farming parcels either had a land use that makes agricultural development improbable (e.g. golf course, school, etc.) or had little land with potential for farming. Of the ALR parcels:

- 1,202 parcels (23%) were used for farming
- 2,265 parcels (43%) were available for farming
- 1,754 parcels (34%) were unavailable for farming

A parcel is considered to be available for farming if it is not already “Used for farming” and it has at least 50% of its area and at least 0.4 ha in land that has potential for farming. Ownership and land prices are not considered when assessing parcel availability. Of the available parcels:

- 707 parcels (31%) are less than 2 ha in size
- 1,458 parcels (64%) are less than 4 ha in size
- 807 parcels (36%) are greater than 4 ha in size
- 153 parcels (7%) are greater than 16 ha in size

There is evidence that small parcels are less likely than larger parcels to be utilized for farming. In RDCK there are 1,178 ALR parcels less than 1 ha. Of these parcels, 5% (60 parcels) are “Used for farming”, 21% (245 parcels) are “Available for farming”, and 74% (873 parcels) are “Unavailable for farming”. Residential use accounts for the majority of the small and “Unavailable for farming” parcels.

Agrologist Comments

Agriculture in the Regional District of Central Kootenay is as diverse as is the geography of the region itself. From the Creston area, Kootenay Lake, Naksup to Fauquier, Slocan Valley and all places in between, a range of agriculture enterprises and products are taking place.

The first European settlers in the region were less interested in agriculture and were more focused on the minerals in the region which attracted a high degree attention. Mining was attracting the settlers, but when the lucrative earnings of the industry waned, the settlers turned to the productive valley bottoms and agriculture production in the area began in earnest.

One of the most productive agricultural areas in the region is the Creston Valley, but contenting with the annual flooding of the Kootenay River made farming very difficult. The first dyking of the Creston flats started in 1893 but there were many setbacks as the River continued to flood and destroy the dykes. By 1935 all the dykes were built but there were breaches over the years. The construction of the Libby Dam in Montana in 1972 ensured there was no more flooding of the Creston flats.

Another productive part of the region was the Arrow Lakes area. In the late 1960's with the construction of a dam near Castlegar, two thirds of the arable land in the valley was flooded. Other smaller dams in the region have also impacted agriculture by flooding valuable arable land.

Small scale operations are more common throughout the region, with larger commercial operations more prevalent in the Creston area. Creston has a diversity of agriculture businesses ranging from hay, grain, dairy, tree fruit, seed, poultry and beef operations.

In the past, many agriculture producers were able to produce and sell their products to the local market. However, over time, the economy of scale made it more difficult for agriculture producers to compete and many farms stopped producing and became fallow. In the last few years, there is greater interest by the local population to purchase local food and to support local farm businesses.

Agriculture in General

In the RDCK, the Agriculture Land Reserve covers 63,086 hectares, which equates to 3% of the land area in the region. Agriculture is one of the many economic drivers in the region. Gross farm receipts have continually increased from \$25,694,725 in 1996, to \$34,353,451 in 2011, which is an increase of 34%.

In that same time period, the number of farms dropped from 594 to 552 (- 7%) and farm size increased from 38.7 ha to 49.0 ha (+27%).

Farm size in the RDCK is fairly large (49 ha) considering that there are many small lots in the region. Parcels less than 4 ha make up 62% of all parcels in the ALR. Only 592 parcels are greater than 16 ha. However, those larger parcels (592) in the ALR equate to a very large area of 27,878 ha, which by area is 66% of the inventoried ALR.

Across the RDCK, forage and pasture crops were the most dominant with 10,649 ha. Cereal crops were the next most abundant with 2,370 ha. Tree fruits were next with 338 ha. In total, twelve different crop groups were recorded for the region.

Issues Facing Agriculture

This report identifies 2,265 ALR parcels with 14,948 ha of ALR land that may be available for farming. This is 34% of the total ALR area in legally surveyed parcels in the RDCK. Even with this available land base, potential agricultural growth could be hampered by other issues and constraints.

- **Water**

Without water for irrigation, the possibility of expanding agriculture will be limited. Even existing water rights and licenses for agriculture does not guarantee a stable water supply. With the continued expansion of the urban centers and rural subdivision in the Central Kootenay, water availability for agriculture is a concern.

- **Recreational Development**

The increase in recreational and second home development in the region has impacted the agriculture industry. The increased value of land has severely limited the ability of agriculture businesses to expand as the value of land is priced beyond what the commodity produced on it can pay. The increase in development has removed agriculture land from production and is slowly urbanizing rural farming areas.

The Future

The Creston valley will continue to be the hub of agriculture in the region. Elsewhere in the region, small lots can constrain agriculture opportunities and limit the type and amount of production. However, one is never sure what the future will bring. Climate change, plant genetics, transportation costs and other factors could result in agriculture on land one never thought would flourish. Ensuring the ALR is left intact for future farming is essential to ensure land is available for agriculture in a changing future world.

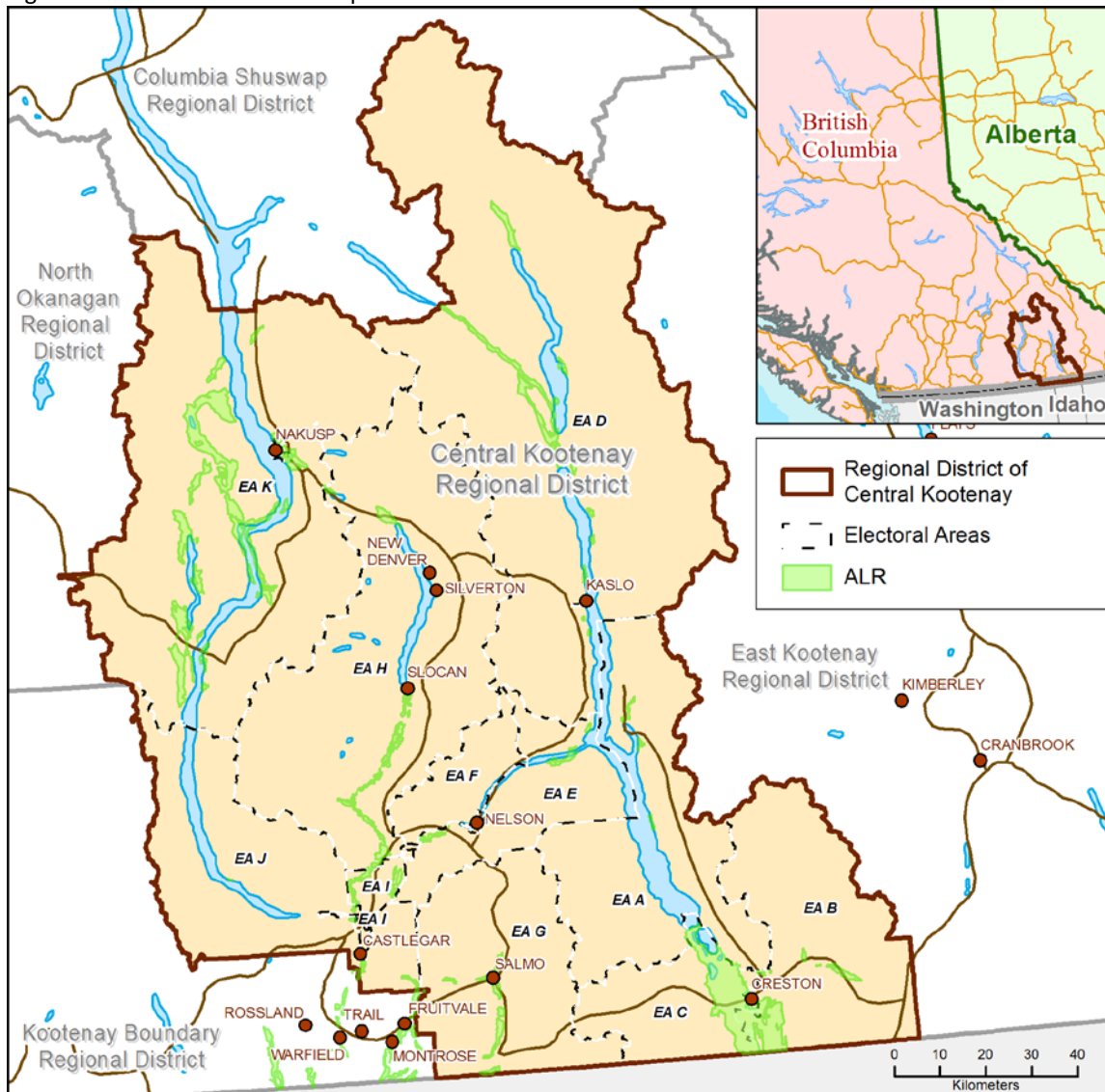
1. General Information

1.1 OVERVIEW

The Regional District of Central Kootenay is located in south eastern BC and is comprised of 11 electoral areas (A – K) and 9 member municipalities (Castlegar, Creston, Kaslo, Nakusp, Nelson, New Denver, Salmo, Silverton, and Slocan). In 2016, the Regional District of Central Kootenay (RDCK) had a population of 59,520³ with approximately half the population residing within municipalities and half of the population residing within the electoral areas.

The Regional District provides many services to the area including planning and land use, community sustainability initiatives, and environmental services. RDCK completed an Agricultural Area Plan in 2011 with the goal of increasing agricultural production in the region. The Agricultural Land Use Inventory supports this goal by providing baseline data to understand the current extent of agricultural activities. It also serves as input into an Agricultural Water Demand Model which estimates future water demand based on different climate scenarios.

Figure 1. General location map – RDCK



³ Statistics Canada, 2016 Census of Population; <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/index-eng.cfm>

1.2 AGRICULTURAL LAND RESERVE

The Agricultural Land Reserve (ALR) is a provincial land use zone that was designated in 1973 in which agriculture is recognized as the priority use. Within the ALR, farming is encouraged and non-agricultural uses are controlled.

There were 63,086 ha⁴ of ALR in RDCK in 2015 (see Figure 1). This is approximately 3% of the regional districts total land area (2,316,142 ha⁵) and 7.5% of the area in legally surveyed parcels (845,013 ha⁵).

The ALR area includes:

- 44,192 ha on inventoried parcels
- 16,536 ha outside legally surveyed parcels (unsurveyed Crown land)
- 2,350 ha on Indian reserves
- 8 ha on parcels less than 500 m², or with less than 500 m² of ALR

The 44,192 ha of ALR on inventoried parcels is considered the **'effective ALR'** as local and provincial governments may have the opportunity to influence land use decision on these areas.

Figure 2. Proportion of Agricultural Land Reserve by category

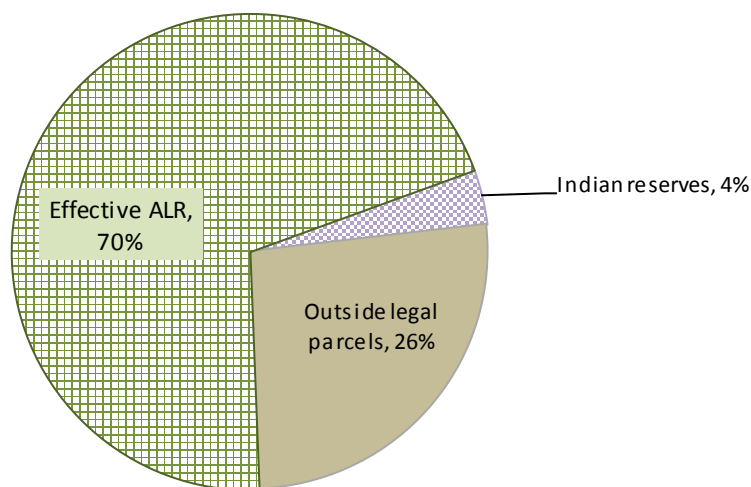


Figure 2 shows the proportion of different categories of ALR land.

Of RDCK's total ALR area, 26% is outside of legally surveyed parcels in unsurveyed Crown land, and 4% in on Indian reserves.

The remaining 70% of the ALR is considered the "effective ALR" and forms the basis of this report.

⁴ Provincial Agricultural Land Commission (ALC), Library, ALC Reports, Annual Report 2013/14 Pg 31 and Annual Report 2014/15 Pg 30.
<http://www.alc.gov.bc.ca/alc/content/library/commission-reports>

⁵ Calculated in GIS.

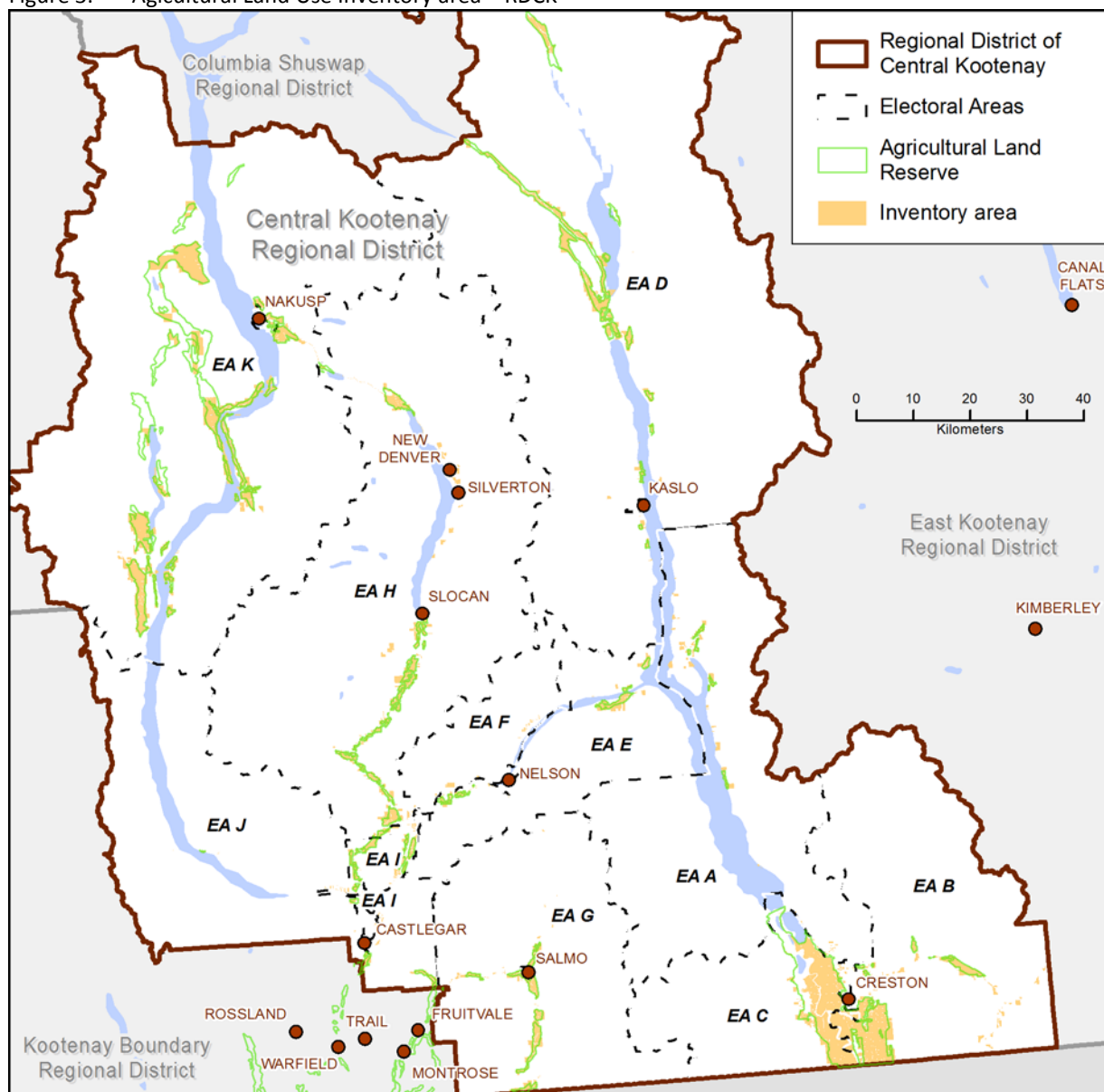
1.3 INVENTORY AREA

The total inventory area encompasses 7,350 parcels with a combined area of 64,733 ha. Included were all parcels:

- completely or partially within the Agricultural Land Reserve, or
- classified by BC Assessment as having “Farm” status for property tax assessment, or
- zoned to permit agriculture by local government bylaws and/or exhibiting signs of agriculture on aerial photography, or
- containing an active water licence for farming or irrigation purposes, or

The amount of ALR land included in the inventory area is 44,192 ha. The other 20,541 ha of inventoried land was on parcels completely outside the ALR, but that met one of the other inventory criteria.

Figure 3. Agricultural Land Use Inventory area – RDCK



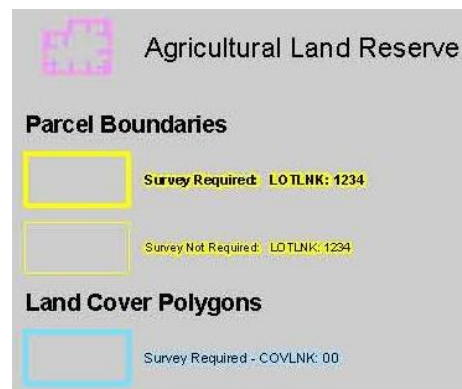
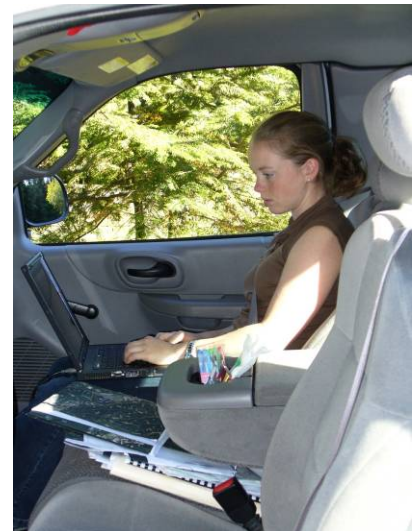
2. Methodology

2.1 INVENTORY METHODOLOGY

AgFocus is an Agricultural Land Use Inventory System developed by BC Ministry of Agriculture's Strengthening Farming Program. AgFocus employs a "windshield" survey method designed to capture a snapshot in time of land use and land cover on legal parcels. For more information on AgFocus, please refer to these documents available from the Strengthening Farming Program:

- AgFocus – A Surveyor's Guide to Conducting an Agricultural Land Use Inventory
- AgFocus – Field Guide to Conducting an Agricultural Land Use Inventory
- AgFocus – A GIS Analyst's Guide to Agricultural Land Use Inventory Data

The Regional District of Central Kootenay Agricultural Land Use Inventory was conducted in the summer of 2016 by two teams, each consisting of a Professional Agrologist, a data technician, and a driver⁶. A survey crew visited each property and observed land use, land cover, and agriculture activity from the road. Where visibility was limited, data was interpreted from aerial photography in combination with local knowledge. The technician entered the survey data into a database on a laptop computer.



Field survey maps provided the basis for the survey and included:

- The legal parcel boundaries (cadastre)⁷
- Unique identifier for each legal parcel
- The preliminary land cover polygon boundaries (digitized prior to field survey using aerial photography)
- Unique identifier for each preliminary land cover polygon
- The boundary of the Agricultural Land Reserve (ALR)
- Base features such as streets, street names, watercourses and contours
- Aerial photography



⁶ Drivers provided by RDCK.

⁷ Cadastre mapping was provided through the Integrated Cadastral Information Society.

2.2 DESCRIPTION OF THE DATA

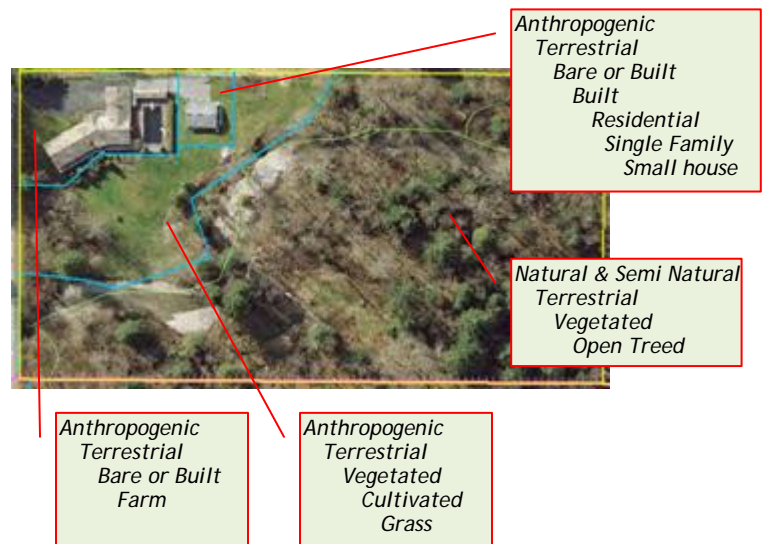
For each property in the study area, data was collected on general land use and land cover. For properties with agricultural activities, data was collected on agricultural practices, irrigation, crop production methods, livestock, agricultural support (storage, compost, waste), and activities which add value to raw agricultural products.

Once acquired through the survey, the data was brought into a Geographic Information System (GIS) to facilitate analysis and mapping. Digital data, in the form of a tabular database and GIS spatial layers (for maps), may be available with certain restrictions through a terms of use agreement.

Land cover:

Land cover refers to the biophysical features of the land (e.g. crops, buildings, forested areas, woodlots, streams). Land cover was surveyed by separating the parcel into homogeneous components and assigning each a description. Prior to field survey, polygons were delineated in the office using orthophotography. Further delineation occurred during the field survey until one of the following was achieved:

- Minimum polygon size (500 sq m ~5400 sq ft) or minimum polygon width (10 m ~33 ft)
- Polygon is homogeneous in physical cover and homogeneous in irrigation method
- Maximum level of detail required was reached

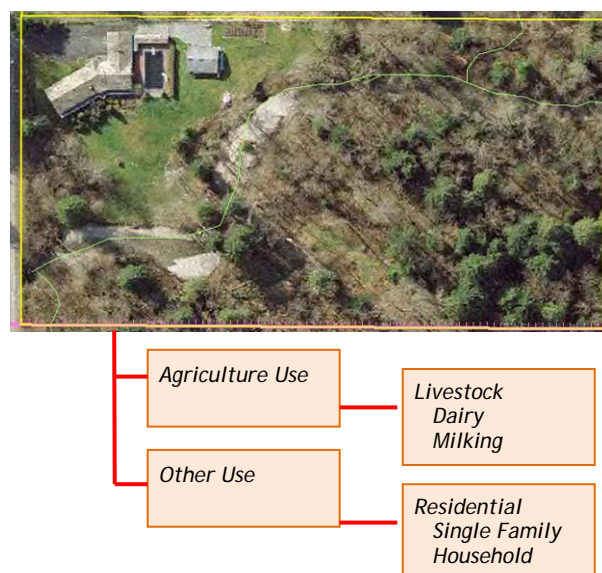


In most cases, more than one land cover was recorded for each parcel surveyed.

General land use:

Up to two general land uses (e.g. residential, commercial) were recorded for each property based on an assessment of overall economic importance, the property's tax status, and/or the extent of the land use. The survey for general land use focuses solely on human use and considers:

- The actual human use of land and related structures and modifications to the landscape
- Use-related land cover (where land cover implies a use or is important to interpreting patterns of use)
- Declared interests in the land (which may limit use) such as parks



In addition, the availability of properties for future farming was assessed based on the amount of potential land for farming on the property and the compatibility of existing uses with future farming activities.

Livestock: Livestock operations and confinement methods along with the scale of the activity were estimated and recorded. Livestock not visible at the time of survey may have been inferred based on grazed pastures, manure storage, size of barn and other evidence.

Agricultural practices: Surveyors recorded agricultural practices associated with crops or livestock activities. For example, if a forage crop was being harvested for hay, it was recorded. Irrigation was also recorded, including the type of system used.

Agricultural crop production: Crop production and crop protection methods observed on the parcel were recorded such as wildlife scare devices, temperature or light control, or organic production. Organic production is not always visible and may have been recorded based on local knowledge or farmer interviews.

Agricultural support: Ancillary agricultural activities, such as storage, compost or waste, supporting the production of a raw commodity on a farm unit were recorded.

Agricultural value added: Activities that add value to a raw commodity where at least 50% of the raw commodity is produced on the farm unit were recorded. This value-added activity included processing, direct sales and agri-tourism activities.

2.3 PRESENTATION OF THE DATA

The data in this report is presented in the form of summarized tables and charts. In the final formatting of the tables and charts, data values are rounded to the nearest whole number. As a result, the data may not appear to add up correctly.

3. Land Cover and Farmed Area

3.1 LAND COVER AND FARMED AREA

Land cover describes the biophysical material at the surface of the earth and is distinct from land use which describes how people utilize the land. Refer to Section 5 for information on land use.

Land cover is surveyed by separating the parcel into polygons of homogeneous components and assigning each a description such as landscape lawn, natural open treed, natural waterbody, blueberries, road, or small single family house. Most surveyed parcels have multiple land cover types with each describing a different area of the parcel. Land cover more closely approximates the actual area of land in agricultural production than land use, which is assigned on a parcel basis.

Four land cover types are considered “**Farmed**”:

- **Cultivated field crops:** vegetation under cultivation for harvest or pasture including land temporarily set aside from farming and perennial crops that were not harvested or grazed in the current growing season
- **Farm infrastructure:** built structures associated with farming such as barns, stables, corrals, riding rings, and their associated yards
- **Greenhouses:** permanent enclosed glass or poly structures with or without climate control facilities for growing plants and vegetation under controlled environments
- **Crop barns:** permanent enclosed structures with non-translucent walls for growing crops such as mushrooms or bean sprouts

Forage and pasture field crops which have not been cut or grazed during the current growing season (unused), unmaintained field crops, and unmaintained greenhouses are considered “Farmed” land covers but are considered inactive.

Natural pasture and rangeland are areas with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock. These areas are considered “Grazed” and not “Farmed” although these areas are often extensions of more intensive farming areas.

Land cover types which may support farming, such as farm residences, vegetative buffers and farm road access, are not considered “Farmed” land cover.

Table 1. Land cover and farmed area

Land cover*		In ALR (ha)	% of effective ALR*	Outside ALR (ha)	Total area (ha)
Actively farmed	Cultivated field crops	12,699	29%	961	13,660
	Farm infrastructure	386	1%	93	479
	Greenhouses & crop barns	11	< 1%	1	12
Inactively farmed	Unmaintained field crops	283	< 1%	45	328
FARMED SUBTOTAL		13,379	30%	1,100	14,479
Anthropogenic (not farmed)	Managed vegetation	985	2%		
	Residential footprint	952	2%		
	Transportation	250	< 1%		
	Utilities	143	< 1%		
	Waterbodies	140	< 1%		
	Non Built or Bare	98	< 1%		
	Settlement	77	< 1%		
	Built up - Other	47	< 1%		
ANTHROPOGENIC SUBTOTAL		2,694	6%		
Natural & Semi-natural	Vegetation	25,869	59%		
	Natural pasture or rangeland	1,282	3%		
	Wetlands & waterbodies	917	2%		
	Natural bare areas	41	< 1%		
NATURAL & SEMI-NATURAL SUBTOTAL		28,109	64%		
Not surveyed	Unknown	10	< 1%		
TOTAL ALR INVENTORIED		44,192	100%		

* Refer to the glossary for terms used in this table.

Table 1 shows the extent of different land cover types across the effective ALR in RDCK.

In the ALR, there are 13,379 ha of “Farmed” land cover, which includes 283 ha of unmaintained field crops. An additional 1,100 ha of “Farmed” land cover was identified outside the ALR.

Figure 4. Land cover in the effective ALR

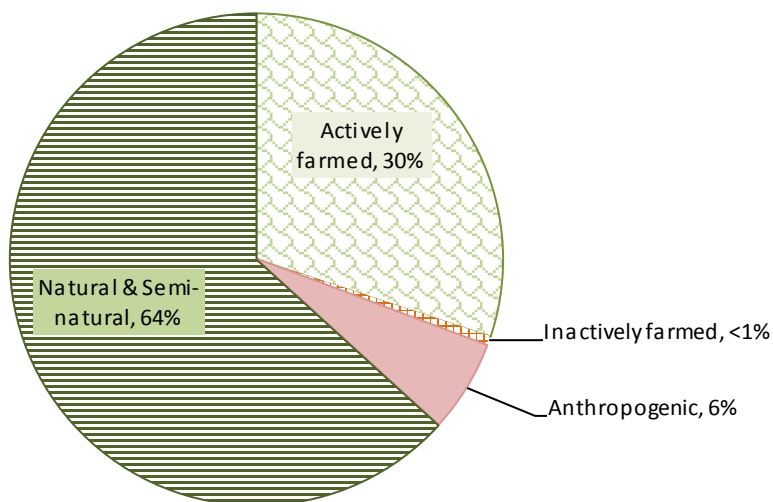


Figure 4 shows the proportion of different land cover categories across the effective ALR in RDCK.

Sixty-four percent (64%) is in “natural & semi-natural” while 30% is in actively farmed land cover.

Land used in support of farming such as farm residences, vegetative buffers or roadways is not included as farmed land cover.

3.2 STATUS OF THE EFFECTIVE ALR

Land cover, land use and physical site limitations (e.g. topography, flooding) were used to assess how much land is available and may have potential for farming in the future.

Farmed or supporting farming: includes “**actively farmed**” land cover as well as farm houses, farm roads, and other built structures on farmed parcels. Actively farmed land cover includes cultivated crops, farm infrastructure, greenhouses and crops barns, but excludes unused / unmaintained crops and greenhouses.

Not farmed – **unavailable for farming**: areas where future agricultural development is improbable due to a conflicting land use or land cover. A conflicting land use usually applies to the entire parcel. Examples of unavailable for farming land uses include golf courses, parks, and small lot residential. Examples of unavailable for farming land covers include wetlands, waterbodies, and industrial or commercial buildings.

Not farmed – **limited potential for farming**: land with significant physical or operational constraints to farming. Includes areas with steep terrain, rocky soils, riparian areas, awkward shapes, or a very small areas (less than 0.4 ha).

Not farmed – **available for farming**: areas that can be used for agriculture without displacing a current use. Includes natural and semi natural land cover, managed vegetation (managed for landscaping, dust or soil control), and non-built or bare areas. These areas are free from physical and operational constraints.

Figure 5. Status of the effective ALR with respect to farming

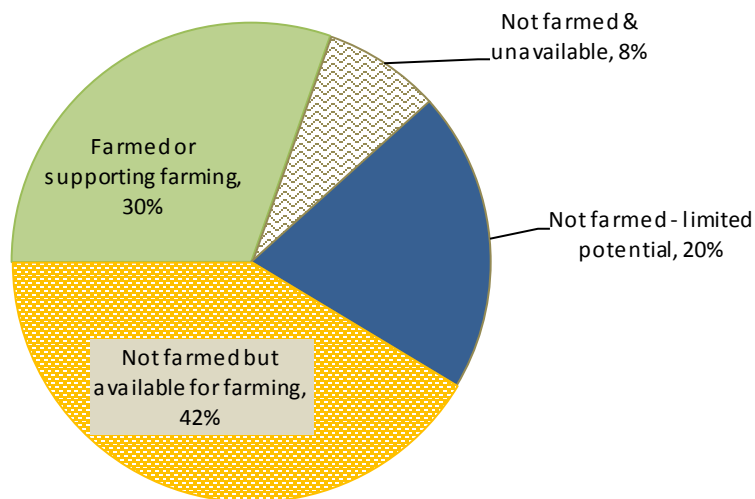


Figure 5 shows the status of the effective ALR in relation to farming in RDCK. This analysis relies primarily on land cover data.

Forty-two percent (42%) of the effective ALR is not farmed, but is available for farming as it is not limited by significant physical constraints, built areas, or conflicting land uses.

Thirty percent (30%) is farmed or supporting farming and another 20% has limited potential for farming due to physical site limitations such as topography &/or soils.

Parcels that are available for farming are described in Section 6: ALR Availability for Farming.

One fifth (20%) of the ALR land cover in RDCK has limited potential for farming due to physical constraints. While it is true that most commercial farmers do not leave farmable land idle, it is also true that farmers value privacy and views. Many farmers voluntarily conserve natural areas to protect water quality and wildlife habitat. Expanding a farming operation to land with physical constraints, such as steep slopes or poor soils, requires capital investment and may not be viable.

Figure 6. Site limitations on ALR land with limited potential for farming

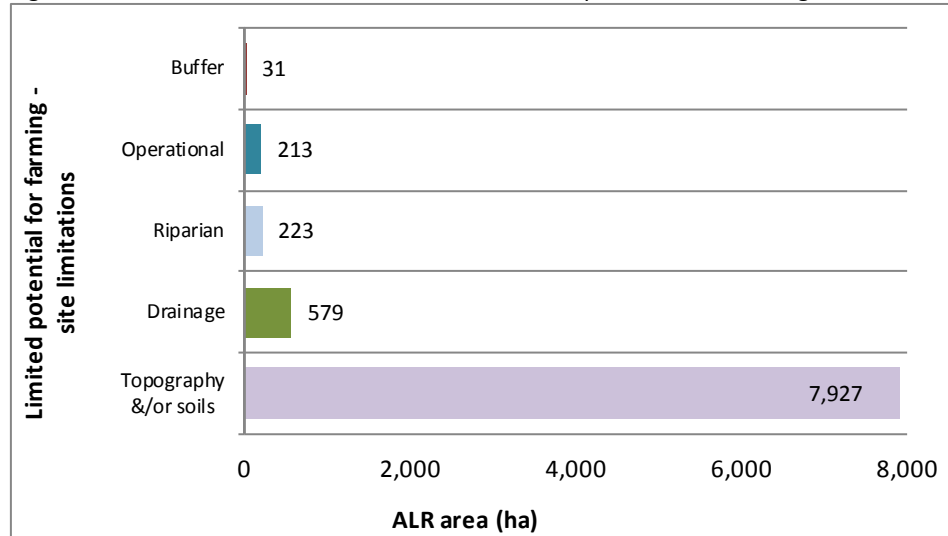


Figure 6 details the site limitations on areas considered to have limited potential for farming (20% of the effective ALR).

The majority of these areas have a topography and/or soil limitation.

Figure 7. Available land and site limitations on ALR land by farming status

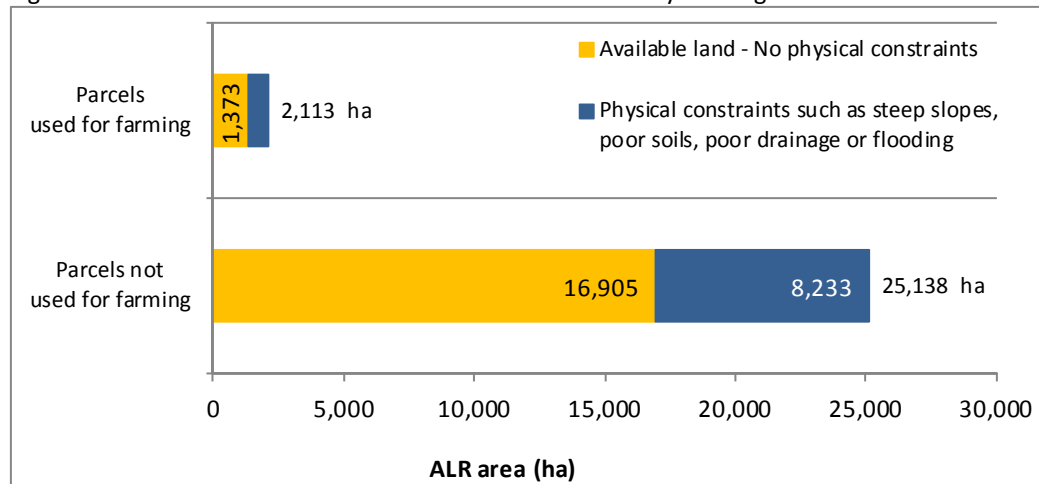


Figure 7 details the amount of land available and with limited potential for farming by farming use.

Over 1,300 ha of available for farming land is on parcels that are already used for farming. This land may represent areas that could be amalgamated into existing fields, however, this land may also be serving a purposes that was not apparent during the field survey (e.g. conservation, privacy, etc.) or may have an unobserved physical limitation (e.g. soils, drainage).

Available for farming land is further assessed in Section 6: ALR Availability for Farming.

4. Farming Activities

4.1 CULTIVATED FIELD CROPS

Cultivated field crops were captured in a geographic information system (GIS) at the field or land cover level by crop type (e.g. vegetables, forage or pasture, berries). The total land area was then evaluated for each crop.

Included with cultivated field crops is fallow farmland and land temporarily set aside for wildlife or other purposes. Also included is bare cultivated land or land under preparation for planting as it is assumed these lands will be planted during the survey season. Excluded are crops grown in crop cover structures such as greenhouses or mushroom barns.

Cultivated crops in RDCK are described by 12 crop groupings and are listed by descending order of significance:

- **Forage & pasture:** grass, mixed grass/ legume, alfalfa, forage corn, forage cereals / peas
- **Cereals & oilseeds:** barley, wheat, oats, canola, rye
- **Tree fruits:** cherry, apple, peach, pear
- **Other:** bare cultivated land (land that is tilled or plowed, but with no visible crop) , fallow land (cultivated land that has not been seeded or planted for one or more growing season), land in crop transition and land planted in cover grass or under mulch to manage soil moisture/erosion associated with a cultivated crop.
- **Vegetables:** mixed vegetables, root vegetables, sweet corn, cucurbits
- **Nursery:** ornamentals & shrubs, fruit/berry stock, forestry stock
- **Vines & berries:** grapes, blueberries, raspberries
- **Christmas trees**
- **Turf**
- **Nut trees:** walnut, hazelnut, mixed
- **Specialty:** herbs
- **Floriculture**

Table 2. All crop types by total area

Crop type	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of effective ALR			
Forage & pasture	9,751	22%	898	10,649	76%
Cereals & oilseeds	2,325	5%	45	2,370	17%
Tree fruits	312	< 1%	25	338	2%
Other*	236	< 1%	11	246	2%
Vegetables	120	< 1%	12	132	< 1%
Nursery	114	< 1%	< 1	115	< 1%
Vines & berries	41	< 1%	9	50	< 1%
Christmas trees	46	< 1%	4	50	< 1%
Turf	24	< 1%	< 1	24	< 1%
Nut trees	9	< 1%	1	10	< 1%
Specialty	4	< 1%	< 1	4	< 1%
Floriculture	< 1	< 1%	< 1	1	< 1%
TOTAL	12,982	29%	1,006	13,988	100%

Table 2 shows that forage & pasture is the predominant crop in RDCK, and accounts for 76% of all cultivated land.

Cereals & oilseeds are the next most abundant with 2,370 ha, or 17% of all cultivated land.

* Other. Includes bare cultivated land, fallow land (cultivated land that has not been seeded or planted for one or more growing season), land in crop transition, and land planted in cover grass to manage soil moisture/erosion associated with a cultivated crop.

Figure 8. Main field crop types by percentage

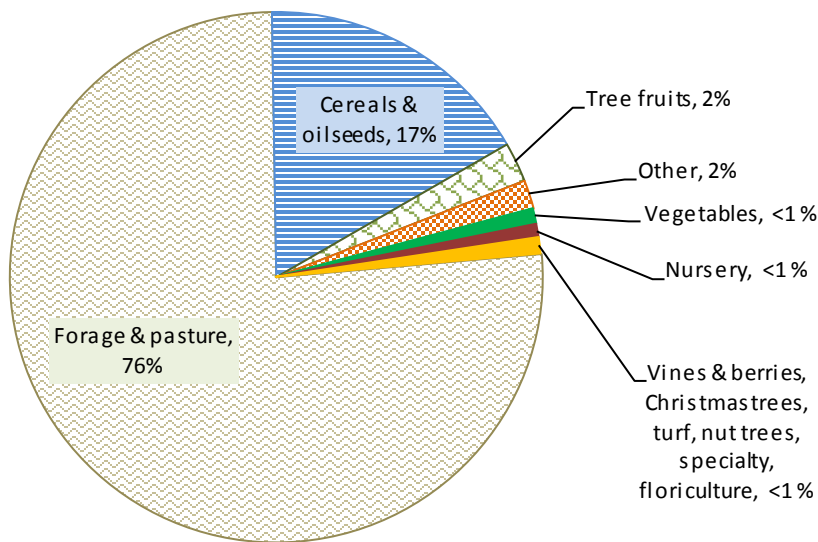


Figure 8 shows the proportion of the crop types in RDCK.

Forage & pasture combined with cereals & oilseeds account for 93% of all cultivated crops.

Forage & pasture

Forage & pasture is the main crop type in the Regional District of Central Kootenay

- Forage is a cultivated crop that is cut and made into silage or hay for livestock feed.
- Pasture is a cultivated crop that is used for grazing only and is not cut.
- Forage & pasture is grazed for 1 - 3 months per year and is also cut for silage or hay.

Table 3. Forage and pasture crops

Forage & pasture crops		ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
		In ALR (ha)	% of effective ALR			
Forage	Grass	3,074	7%	149	3,223	23%
	Mixed grass / legume	2,305	5%	63	2,368	17%
	Alfalfa	402	3%	5	407	5%
	Forage corn	343	< 1%	4	347	2%
	Forage cereal / peas	59	< 1%	< 1	59	< 1%
	Unknown	20	< 1%	13	32	< 1%
Subtotal		6,202	16%	234	6,436	48%
Forage & pasture	Grass	1,547	4%	157	1,704	12%
	Mixed grass / legume	267	< 1%	15	281	2%
	Alfalfa	3	< 1%	-	3	< 1%
Subtotal		1,816	4%	171	1,988	14%
Pasture	Grass	1,378	3%	448	1,826	13%
	Mixed grass / legume	95	< 1%	4	100	< 1%
Subtotal		1,473	3%	452	1,926	14%
Unused	Grass	259	< 1%	41	300	2%
	Subtotal		259	< 1%	41	300
TOTAL		9,751	24%	898	10,649	79%

Table 3 details the crop type on forage and pasture fields. Pure grass fields are the most common, followed by mixed grass and legume fields.

There are 6,436 ha of forage, 1,926 ha of pasture, and 1,988 ha used for both forage and pasture.

Figure 9. Forage and pasture fields by size and type

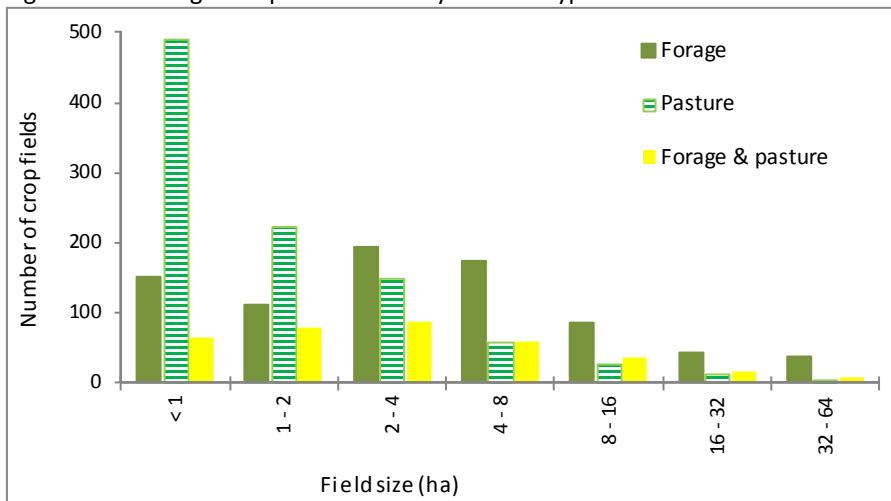


Figure 9 illustrates the size distribution of forage and pasture fields in RDCK.

There are more pasture than forage fields, however, many pastures are small. Fifty-one percent (51%) of all cultivated pastures are less than 1 ha.

Pastures in RDCK have an average field size of 2 ha and a median field size of 1 ha.

Forage fields have an average crop area of 8 ha and a median crop area of 3 ha.

Cereals & Oilseeds

Grains are organized into categories based on the type of grain:

- **Cereals** are members of the grass family that are often used for livestock food (barley, oats, rye, wheat and triticale).
- **Oilseeds** are used to extract oil from their seeds (canola).
- **Pulses** are the seeds of legumes which are used for livestock food (field peas).

Table 4. Cereal and oilseed crops

Cereals & oilseeds	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of effective ALR			
Barley	723	2%	39	762	5%
Wheat	688	2%	1	689	5%
Oats	552	1%	< 1	552	4%
Canola	283	< 1%	3	286	2%
Grain - Unknown	68	< 1%	2	70	< 1%
Rye	11	< 1%	-	11	< 1%
Buckwheat	< 1	< 1%	-	< 1	< 1%
TOTAL	2,325	5%	45	2,370	17%

Table 4 details the types of cereals & oilseeds in RDCK.

Barley, wheat, oats, and canola are the primary crop types.

Figure 10. Proportion of cereal and oilseed crops by type

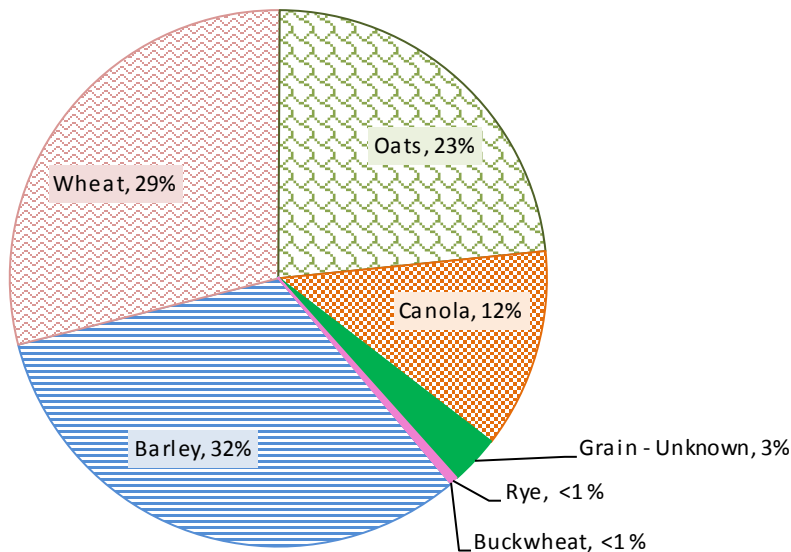


Figure 10 illustrates the proportion of cereal and oilseed crops in RDCK.

Barley, wheat, oats and canola comprise 96% of all cereal and oilseed crops.

Top 20 Crops

Table 5. Top 20 crops by area

Cultivated field crop	In ALR (ha)	% of effective ALR	Outside ALR (ha)	Total area (ha)	% of cultivated land
Forage	6,202	14%	234	6,436	46%
Forage & pasture	1,816	4%	171	1,988	14%
Pasture	1,473	3%	452	1,926	14%
Barley	723	2%	39	762	5%
Wheat	688	2%	1	689	5%
Oats	552	1%	< 1	552	4%
Unused forage/pasture	259	< 1%	41	300	2%
Canola	283	< 1%	3	286	2%
Cherries	231	< 1%	7	238	2%
Bare cultivated land	145	< 1%	1	146	1%
Ornamentals and shrubs	102	< 1%	< 1	103	1%
Fallow land	74	< 1%	8	82	< 1%
Cereals & oilseeds	68	< 1%	2	70	< 1%
Mixed vegetables	55	< 1%	10	65	< 1%
Apples	37	< 1%	8	45	< 1%
Christmas trees	42	< 1%	3	45	< 1%
Misc. vegetables	43	< 1%	< 1	43	< 1%
Grapes	22	< 1%	7	29	< 1%
Turf	24	< 1%	< 1	24	< 1%
Crop transition	15	< 1%	1	16	< 1%
TOTAL	12,855	29%	990	13,845	99%

Table 5 details the top 20 crops that account for 99% of the cultivated land in RDCK.

4.2 IRRIGATION

Irrigation is the artificial application of water to the land or soil and may be used to assist in the growing of agricultural crops, the maintenance of managed vegetation, and the control of soil erosion or dust. The availability of water delivery infrastructure and good quality water for irrigation are often requirements for growing high-value crops. Insufficient water sources or water delivery infrastructure can limit the potential to increase agricultural production through irrigation.

Irrigation information was recorded at the field or land cover level by system type (e.g. sprinkler, giant gun, trickle) and then summarized by crop type to the total land area under irrigation. Irrigated land includes all irrigated field crops and may also include irrigated fallow farmland, land temporarily set aside for wildlife or other purposes, and land under preparation for planting. Also included are crops grown in greenhouses and crop barns.

An Agricultural Water Demand Model (AWDM) is being created for the Regional District of Central Kootenay. The AWDM is a water management planning tool that estimates current and future agricultural water needs. The model utilizes Agricultural Land Use Inventory crop and irrigation data, as well as soil and climate data from external sources. The RDCK AWDM Report⁸ will highlight the results from several climate change scenarios and water management practices.

Table 6. Crop type and irrigation

Cultivated field crop	Irrigation system in use (ha)					Total area irrigated (ha)	% of crop area irrigated
	Sprinkler	Giant gun	Trickle	Centre pivot	Surface		
Forage & pasture	1,193	1,135	-	201	18	2,547	24%
Tree fruits	62	-	235	-	-	297	88%
Vegetables	92	18	17	-	-	127	96%
Nursery	48	-	66	-	-	114	99%
Cereals	8	-	-	48	-	56	2%
Vines & berries	9	-	39	-	-	47	95%
Christmas trees	27	10	3	-	-	40	81%
Turf	24	-	-	-	-	24	100%
Other*	9	-	-	-	-	9	4%
Specialty	3	-	-	-	-	3	75%
Nut trees	3	-	-	-	-	3	26%
Floriculture	< 1	-	< 1	-	-	1	83%
TOTAL CROP AREA IRRIGATED	1,478	1,163	360	249	18	3,268	23%
Greenhouses	Flood and trickle irrigation					-	100%

* Other. Includes bare cultivated land, fallow land (cultivated land that has not been seeded or planted for one or more growing season), land in crop transition, land planted in cover grass or under mulch to manage soil moisture/erosion associated with a cultivated crop.

Table 6 shows total area of crops under irrigation by crop type. Forage & pasture is the predominant crop type in RDCK (refer to Table 2), however, only 24% of the crop total area is irrigated.

In total, 3,268 ha or 23% of the cultivated crop area utilizes irrigation.

⁸ <http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/water-management/agriculture-water-demand-model>

4.3 LIVESTOCK

Livestock activities are challenging to measure using a windshield survey. Livestock are often confined to structures making it difficult to see the animals. Local knowledge and other indicators such as animal confinement type (barn type), feeder system type, manure handling system type, and other visible elements may be used to infer the type of livestock and scale of activity that exist on a parcel. In addition, livestock are mobile and may utilize more than one land parcel. This inventory reports on livestock homesites where the animals or related structures were observed.

Intensity

"**Intensive**" livestock activities utilize specialized structures such as barns, feedlots and stockyards designed for confined feeding at higher stocking densities.

"**Non-intensive**" livestock activities allow animals to graze on a pasture and often utilize non-intensive barns and corrals/paddocks.

"**Unknown livestock**" refers to activities where non-specialized livestock related structures were present but the livestock were not visible and the specific type of livestock could not be determined.

Homesite

Homesite refers to the location of the main ranch or main barn of a livestock operation or farm unit⁹. Often, other types of farm infrastructure, such as corrals, paddocks, barns, and feeding/watering facilities, as well as the farm residence, are also at this location. This is the primary location of the farm unit where most livestock management occurs.

Non Homesite refers to a location where livestock are present but related infrastructure is minimal. Often pasture fencing and watering are the only apparent infrastructure improvements. This location is secondary to an operation's primary (or homesite) location.

Scale

The scale system used to describe livestock operations relies on animal unit equivalents (AUE) which is a standard measure used to compare different livestock types. One animal unit equivalent is approximately equal to one adult cow or horse. The scale system includes 4 levels:

- "**Very Small**" Approximately 1 cow or horse or bison, 3 hogs, 5 goats, sheep or deer, 50 turkeys, 100 chickens (1 animal unit equivalent). Estimated AUE: 1
- "**Small**" LESS THAN 25 cows or horses or bison, 75 hogs, 125 goats, sheep or deer, 1250 turkeys, 2500 chickens (2 - 25 animal unit equivalents). Estimated AUE: 13
- "**Medium**" LESS THAN 100 cows or horses or bison, 300 hogs, 500 goats, sheep or deer, 5000 turkeys, 10,000 chickens (25 - 100 animal unit equivalents). Estimated AUE: 63
- "**Large**" MORE THAN 100 cows or horses or bison, 300 hogs, 500 goats, sheep or deer, 5000 turkeys, 10,000 chickens (over 100 animal unit equivalents). Estimated AUE: 150

Estimated animal unit equivalents are calculated using the midpoint of each scale range described above. This number enables the relative importance of each livestock type to be compared. The actual number of animals may be under estimated, especially for large operations.

Number of activities. Each occurrence of livestock on a parcel is counted as one activity. A small mixed farm with 1-2 cows and a large commercial milking operations are each counted as one activity. Additionally, if equine and beef are recorded on the same parcel, each is identified as a unique activity.

⁹ The farm unit includes all the property owned, rented, or leased by a farm and may incorporate more than one parcel.

Table 7. Livestock activities

Livestock group	Estimated animal unit equivalents	Count of activities
Equine	6,340	601
Beef	5,640	207
Dairy	2,330	39
Unknown livestock	1,340	142
Sheep / goat	1,340	135
Poultry	510	232
Llama / alpaca	260	29
Swine	220	31
Specialty livestock*	200	11
TOTAL	18,180	1,427

* In RDCK, specialty livestock includes guineafowl, ratites (ostrich & peacock), deer, bison, game birds and rabbits

Table 7 details the number of estimated animal unit equivalents by livestock type.

Equine activities have the highest estimated animal unit equivalents followed by beef.

Although equine and beef have similar AUEs, equine activities occur on far more individual parcels.

Estimated Animal Unit Equivalents (AUEs)

Figure 11. Proportion of livestock activities by estimated animal unit equivalents

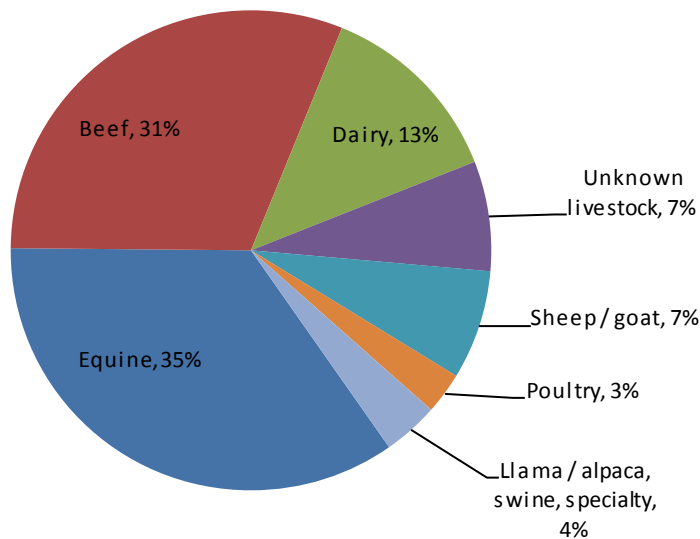


Figure 11 illustrates the proportion of livestock in RDCK by estimated animal unit equivalents.

Of all estimated AUEs, 35% are equine, 31% are beef, and 13% are dairy.

Figure 12. Estimated animal unit equivalents by livestock type and intensity

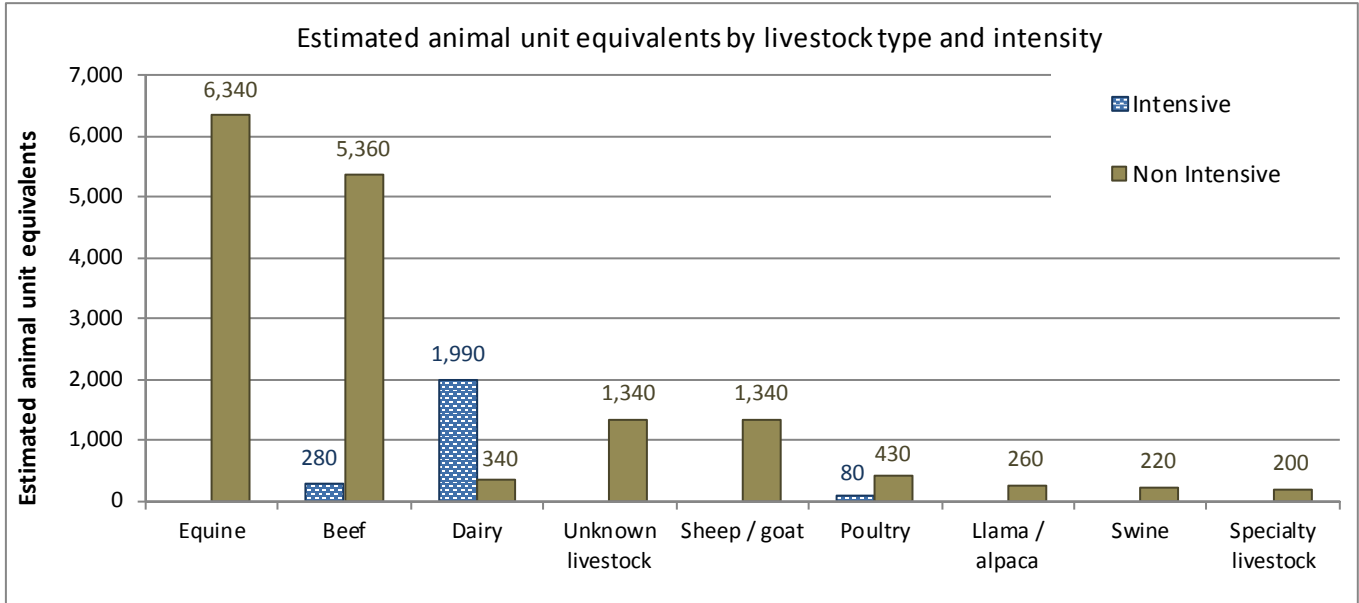


Figure 12 illustrates the number of estimated animal unit equivalents by livestock type and intensity in RDCK. Most livestock are found in “non-intensive” facilities. Dairy is an exception, where 86% of all dairy animal unit equivalents utilize intensive facilities with specialized infrastructure designed for confined feeding at higher stocking densities.

Figure 13. Estimated animal unit equivalents by livestock type and scale

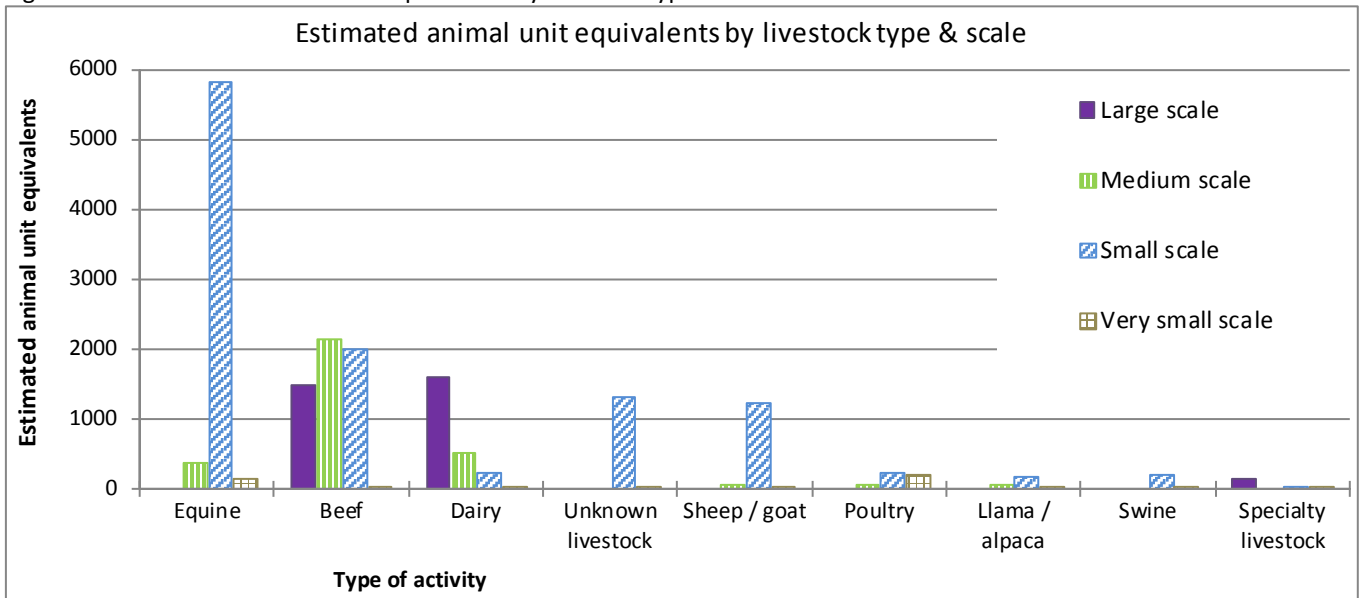


Figure 13 illustrates the number of estimated animal unit equivalents by livestock type and scale in RDCK. While there are similar animal unit equivalents for equine and beef, (refer to Table 7), most equine occur on a “small scale” with less than 25 animals and two-thirds of the beef AUEs are in “large” or “medium” scale operations.

Figure 14. Estimated animal unit equivalents by livestock type and scale (equine excluded)

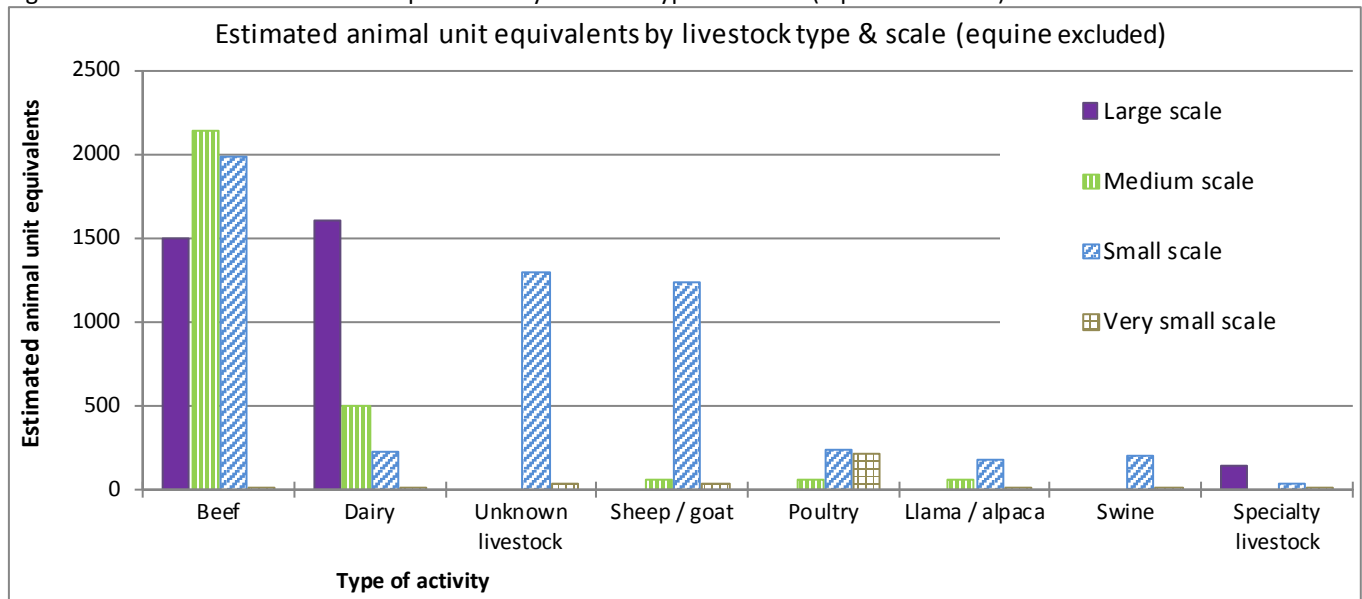


Figure 14 illustrates the number of estimated animal unit equivalents by livestock type and scale with equine excluded.

Beef, dairy, and specialty livestock have large scale operations (> 100 animal unit equivalents). The large scale specialty livestock is associated with an ostrich operation.

Number of livestock activities (occurrences)

Figure 15. Number of livestock activities by livestock type and scale

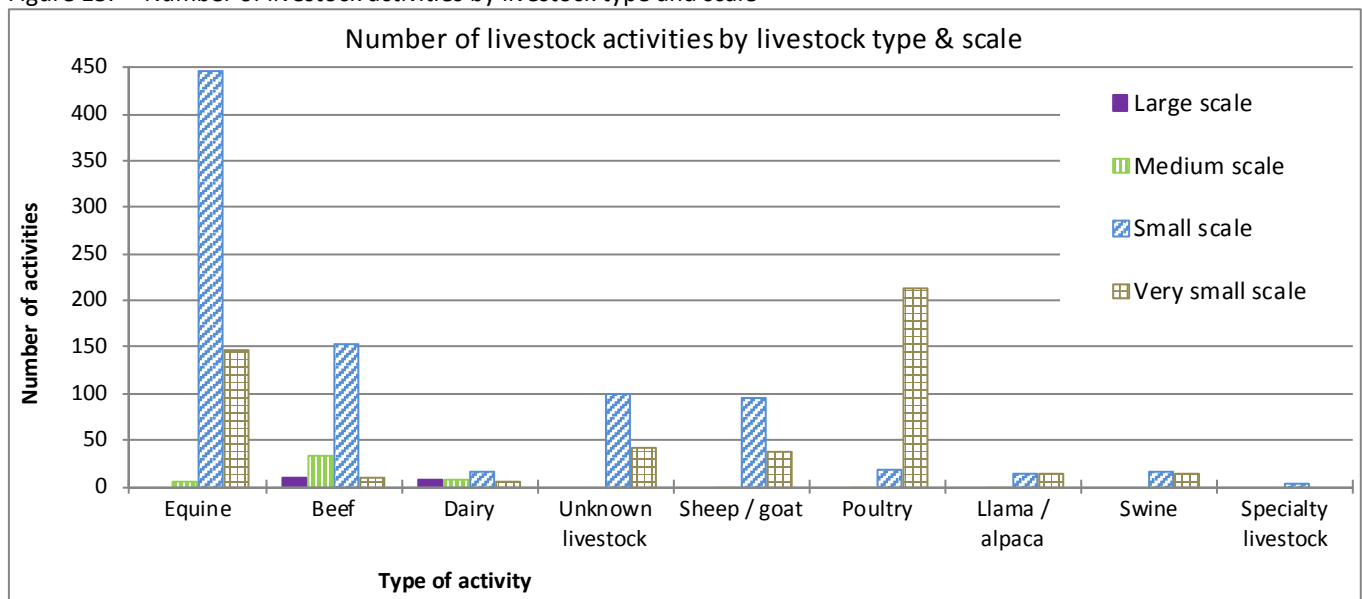


Figure 15 illustrates the number of livestock activities by livestock type and scale in RDCK. Equine activities are the most frequently occurring, however, nearly all occurrences are “small” or “very small” scale with less than 25 animals.

5. ALR Utilization

5.1 PARCEL INCLUSION IN THE ALR

Since much of the following analysis is parcel based, it is important to note that the ALR boundaries do not always align with parcel boundaries. As a result, many parcels have only a portion of their area in the ALR.

Figure 16 illustrates the frequent misalignment between parcel boundaries and the ALR boundary. Given that the dark green line represents the ALR boundary, Lot A is completely in the ALR and Lots B and C have a portion of their area in the ALR. Lot D is completely outside the ALR.

To achieve an accurate picture of the ALR in RDCK, only parcels that meet the following criteria are included in this section of the report:

- parcels > 0.05 ha in size with at least half their area ($\geq 50\%$) in the ALR, or
- parcels with at least 10 ha (≥ 10 ha) of ALR land.

In total, 5,221 parcels, with 42,496 ha or 96% of the effective ALR met the above criteria and were included in the further analysis of the ALR. 'Effective ALR' is the total ALR area excluding land outside of legally surveyed parcels and excluding land on Indian reserves.

Figure 16. Example of parcel inclusion in the ALR



Figure 16 illustrates the distinction between parcels considered to be within or outside the ALR:

Considered to be within the ALR:

- lot A is completely in the ALR
- lot B has 50% or more of its area in the ALR.

Considered to be outside the ALR:

- lot C has less than 50% of its area and less than 10 ha in the ALR
- lot D is completely outside the ALR.

5.2 LAND USE AND FARM USE

Land use focuses solely on human use and describes the economic function or type of establishment using the parcel. A parcel can have a variety of activities on the land, yet serve a single use. For example, two parcels are said to be “Used for farming”, even if one is a dairy farm and the other is in blueberries. Another example is commercial land use; if one parcel is a hotel, another is a retail store, and a third is a gas station, all are considered to have commercial land use.

Up to two general land uses (e.g. residential, commercial, protected area) are recorded for each parcel. Evaluation of land uses are based on the overall economic importance and/or the extent of the land use.

Used for farming – Parcels where the majority of the parcel area is utilized for farming or parcels which exhibit significant evidence of intensive farming. Refer to the glossary for a complete definition. Many “Used for farming” parcels are also used for other purposes such as residential. This report does not attempt to determine which use is primary.

Not used for farming – Parcels that do not meet the “Used for farming” definition.

Table 8. Land use and farming use in the ALR

Parcel land use*		Number of ALR parcels	% of ALR parcels	Average parcel size	Median parcel size (ha)
Used only for farming - no other use		383	7 %	17	7.9
Farming - Mixed use	Residential	797	15 %	11	4.1
	Water management	8	<1 %	30	31.3
	Recreation & leisure	3	<1 %	61	64.3
	Institutional & community	3	<1 %	17	24.0
	Industrial	3	<1 %	26	7.7
	Transportation & utilities	2	<1 %	16	16.2
	Commercial & service	2	<1 %	9	9.2
	Gravel extraction	1	<1 %	20	20.4
USED FOR FARMING SUBTOTAL		1,202	23 %	13	4.6
Not used for farming	Residential	2,475	47 %	4	1.9
	No apparent use	995	19 %	10	3.6
	Forestry	156	3 %	99	24.2
	Transportation & utilities	147	3 %	14	4.4
	Protected area / park / reserve	88	2 %	39	4.1
	Recreation & leisure	35	<1 %	15	3.9
	Institutional & community	35	<1 %	2	0.7
	Industrial	23	<1 %	16	4.8
	Commercial & service	23	<1 %	1	0.3
	Recreation & leisure - golf	14	<1 %	20	9.5
	Water management	13	<1 %	27	16.9
	Gravel extraction	10	<1 %	10	3.6
	Dumps & deposits	5	<1 %	35	11.1
NOT USED FOR FARMING SUBTOTAL		4,019	77 %	11	2.4
TOTAL		5,221	100 %	11	3.2

* See "Land Use" in the glossary for terms used in this table.

Table 8 shows the number of ALR parcels that are “Used for farming” and “Not used for farming” by land use in RDCK.

In total, 23% of the ALR parcels (1,202 parcels) are “Used for farming” and 77% (4,019 parcels) are “Not used for farming”.

The “Used for farming” parcels have an average parcel size of 13 ha while the “Not used for farming” parcels have an average parcel size of 11 ha.

Figure 17 provides more information on “Used for farming” ALR parcels and Figure 18 provides more information on “Not used for farming” ALR parcels.

Figure 17. Land use on “Used for farming” ALR parcels

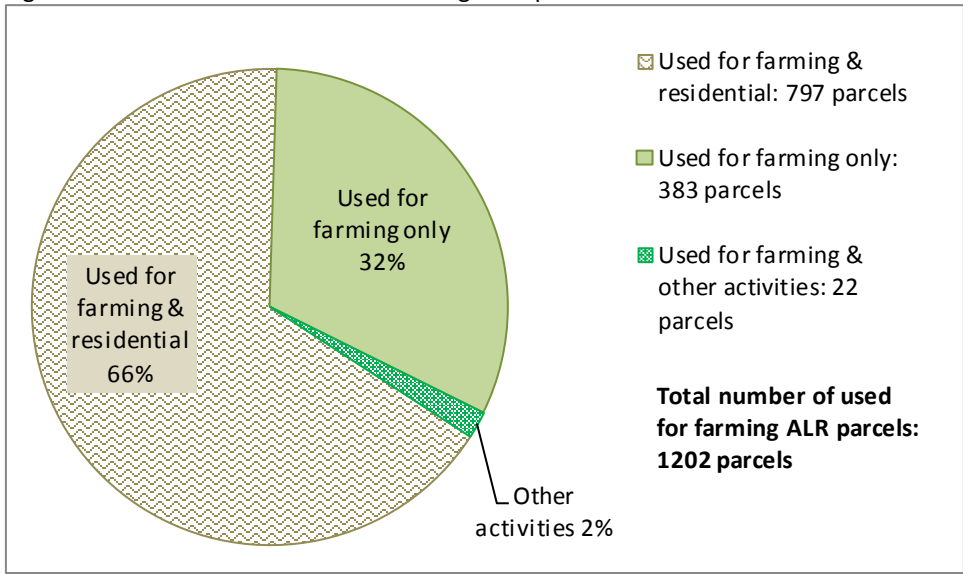


Figure 17 illustrates the proportion of “Used for farming” ALR parcels by their land use.

Two-thirds (66%) of the ALR parcels that are “Used for farming” are also used for residential purposes.

Figure 18. Land use on “Not used for farming” ALR parcels

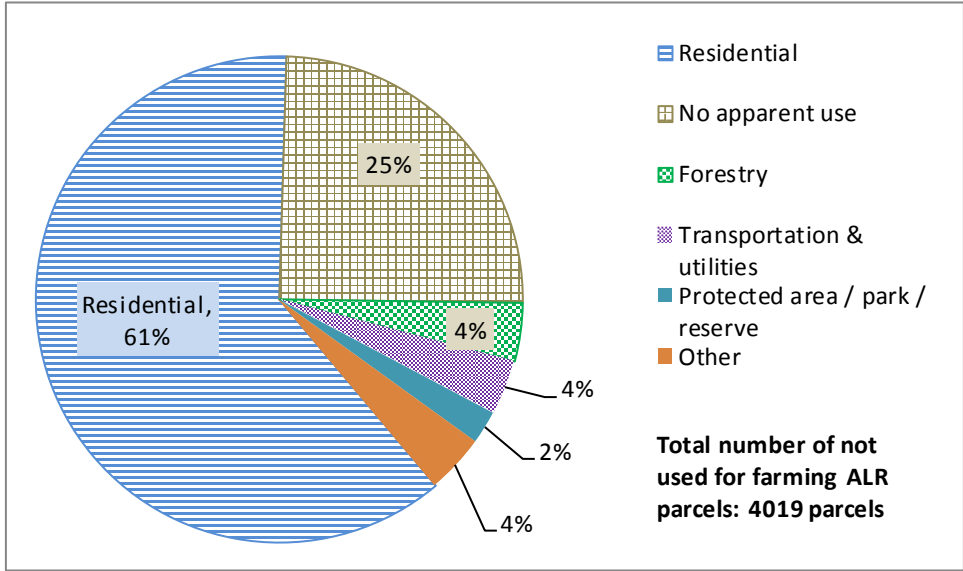


Figure 18 illustrates the proportion of “Not used for farming” ALR parcels by their land use.

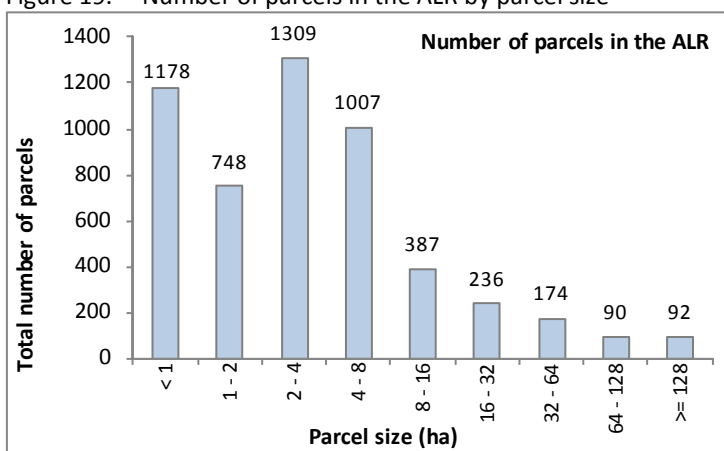
Sixty-one percent (61%) of the “Not used for farming” ALR parcels have a residential use, and 25% have no apparent use.

5.3 FARM USE & PARCEL SIZE

Parcel size must be considered when determining the agricultural potential of a parcel. Larger parcels usually allow farmers greater flexibility to expand or change their type of operation as the economy and markets change. Some types of agriculture can be successful on small parcels, (e.g. intensive market gardens, nurseries, poultry), however, the number of viable farming options generally decreases with a reduced parcel size. Small parcels may also be suitable for start-up farmers and established farmers wanting to expand through leases.

A farming operation may utilize more than one parcel as a farm unit¹⁰, however, it is generally more efficient to run a farm on fewer large parcels than on many small parcels. Smaller parcels are generally more costly per hectare than larger parcels and can easily be disassembled from larger farm units and sold. Larger parcels accommodate equipment more efficiently and reduce the need to move farm equipment on public roads. Furthermore, smaller parcels are more impacted by bylaws designed to reduce potential land use conflicts, such as setbacks from lot lines and road allowances.

Figure 19. Number of parcels in the ALR by parcel size

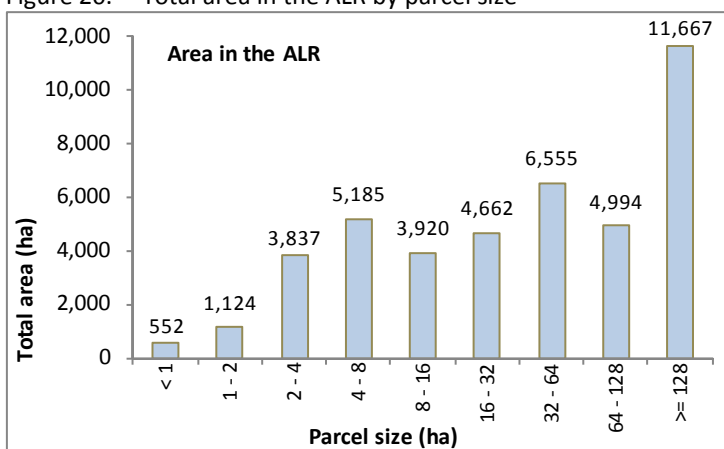


The average ALR parcel size in RDCK is 11.2 ha and the median parcel size is 3.2 ha.

Figure 19 illustrates that of the 5,221 parcels in the ALR:

- 23% (1,778 parcels) are less than 1 ha
- 62% (3,235 parcels) are less than 4 ha.
- 19% (1,007 parcels) are between 4 and 8 ha.
- 7% (387 parcels) are between 8 and 16 ha.
- 11% (592 parcels) are greater than 16 ha.

Figure 20. Total area in the ALR by parcel size



Although there are a large number of small parcels in RDCK, the majority of the ALR areas are on larger parcels.

Figure 20 illustrates that of the 42,496 ha in the ALR:

- 1% (552 ha) is on parcels less than 1 ha.
- 13% (5,512 ha) is on parcels less than 4 ha.
- 12% (5,185 ha) is on parcels between 4 and 8 ha.
- 9% (3,920 ha) is on parcels between 8 and 16 ha.
- 66% (27,878 ha) is on parcels greater than 16 ha.

¹⁰ The farm unit includes all the property owned, rented, or leased by a farm and may incorporate more than one parcel.

Table 9. Number of farmed and not farmed parcels in the ALR

Parcel status with respect to farming	Number of parcels	% of parcels in the ALR
Used for farming	1,202	23 %
Not used for farming	4,019	77 %
TOTAL	5,221	100 %

Table 9 demonstrates that of the 5,221 parcels in the ALR, 23% are considered "Used for farming".

Figure 21. Number of parcels in the ALR by parcel size and farm status

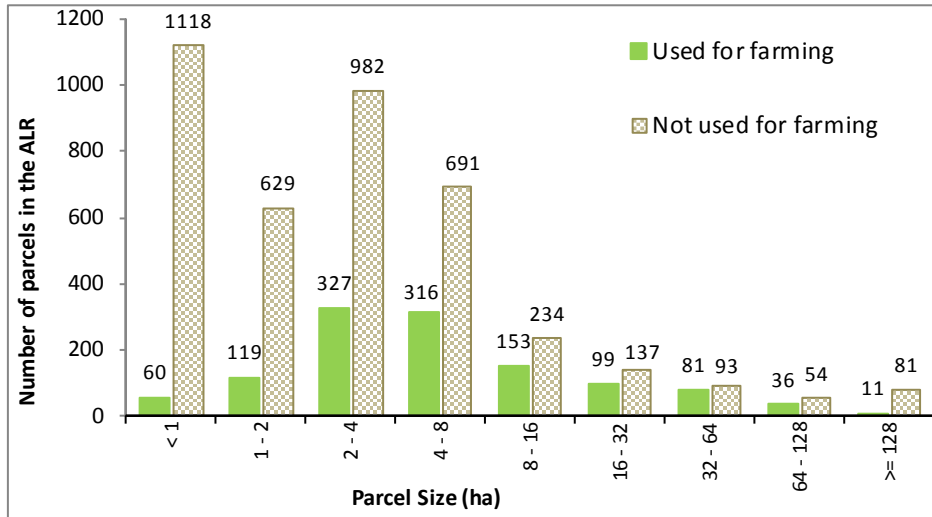


Figure 21 compares the size distribution of ALR parcels by their farming status.

Most parcels less than 1 ha (95%) are "Not used for farming".

In general, small parcels are less likely to be utilized for farming.

Figure 22. Proportion of parcels farmed and not farmed by parcel size in the ALR

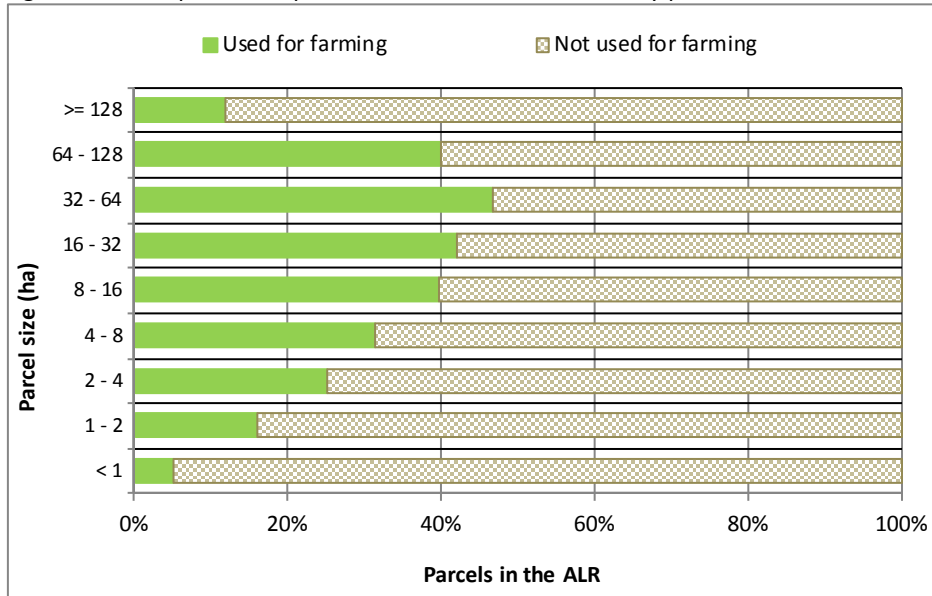


Figure 22 show that the proportion of parcels "Used for farming" generally increases as the parcel size increases.

Only 5% of parcels less than 1 ha are "Used for farming".

6. ALR Availability for Farming

6.1 ALR PARCEL AVAILABILITY OVERVIEW

There is a strong demand for agricultural products produced in British Columbia. This demand is expected to increase with population growth¹¹. An available agricultural land base will be important to help meet this demand. The analysis in this section examines the characteristics of parcels that are used for farming, available for farming, and unavailable for farming.

Used for farming – Parcels where the majority of the parcel area is utilized for farming or parcels which exhibit significant evidence of intensive farming. Refer to the glossary for a complete definition.

Not used for farming – Parcels that do not meet the “Used for farming” definition. Includes parcels that are *available* and *unavailable* for farming.

Unavailable for farming – Parcels “not used for farming” where future agricultural development is improbable because of a conflicting land use or land cover that utilizes the majority of the parcel. E.g. land uses such as golf courses, schools, and small residential lots are considered incompatible with agriculture. These properties may be altered in a way that is incompatible with agriculture, may have little land available, and/or tend to have very high land values. It is usually uneconomical for a farmer to acquire and convert these properties to farmland given the limited potential for farming. Also, if there is insufficient land available on a parcel with an existing non-farm use, it will not likely be considered for lease by farmers.

Available for farming – Parcels “not used for farming” that either have some small scale agricultural activity, no apparent land use, or an existing land use that is compatible with agriculture, such as residential. Available for farming parcels must have 0.4 ha and at least 50% of the parcel area in land cover that is available and has potential for farming. Areas considered to have potential for farming include:

- natural and semi-natural vegetation without physical or operational constraints
- areas in managed vegetation (managed for landscaping, dust or soil control), and
- non-built or bare areas

Areas considered to have no potential for farming include:

- built structures (excluding farm buildings)
- fill piles
- wetlands and waterbodies

It is assumed these areas would not likely be removed or filled in to create land with cultivation potential. In addition, areas with steep slopes, rocky soils or operational constraints such as a very small size are considered to have limited potential for farming and are excluded from the available land cover.

It is assumed that any existing non-farm land uses will not be displaced by agriculture expansion.

¹¹ In BC, the regulated marketing system requires that over 95% of our milk, eggs, chicken and turkey be produced in BC. The need to produce these products increases in direct proportion to the population growth.

Table 10. Farm and availability status of parcels in the ALR

Parcel status with respect to farming	Number of parcels	% of parcels in the ALR	Total ALR ara (ha)*
Used for farming	1,202	23 %	14,822
Available for farming	2,265	43 %	14,948
Unavailable for farming	1,754	34 %	12,727
TOTAL	5,221	100 %	42,496

* This is the total area in the ALR. The entire parcel area may not be farmed or available for farming.

Table 10 demonstrates that of the 5,221 parcels in the ALR, 34% are “unavailable for farming”.

Forty-three percent (43%) of the ALR parcels are potentially available for agricultural production.

6.2 ON PARCELS USED FOR FARMING

Parcels that are “Used for farming” do not always utilize 100% of their land area for agricultural purposes. Areas in natural and semi-natural vegetation or in anthropogenic managed vegetation may be available to bring into agricultural production. Some of these areas could be amalgamated into existing fields or may already be used for natural grazing. Other unutilized areas may have limited potential for farming due to steep slopes, rocky soils or other operational constraints. If the assumption is made that farmers generally do not leave productive land idle, it may indicate that these areas are serving a purpose that was not apparent during the field survey (e.g. wildlife habitat, stream buffers), or may have an unobserved physical limitation (e.g. soils, drainage).

Although there is some available land cover on “Used for farming” parcels, these areas are generally small and offer little opportunity to increase the overall amount of farmed area. In addition, these areas do not represent parcels available to new farming entrants.

The size distribution of “Used for farming” parcels is detailed in Figure 21.

Figure 23. Number of available areas on “Used for farming” parcels in the ALR

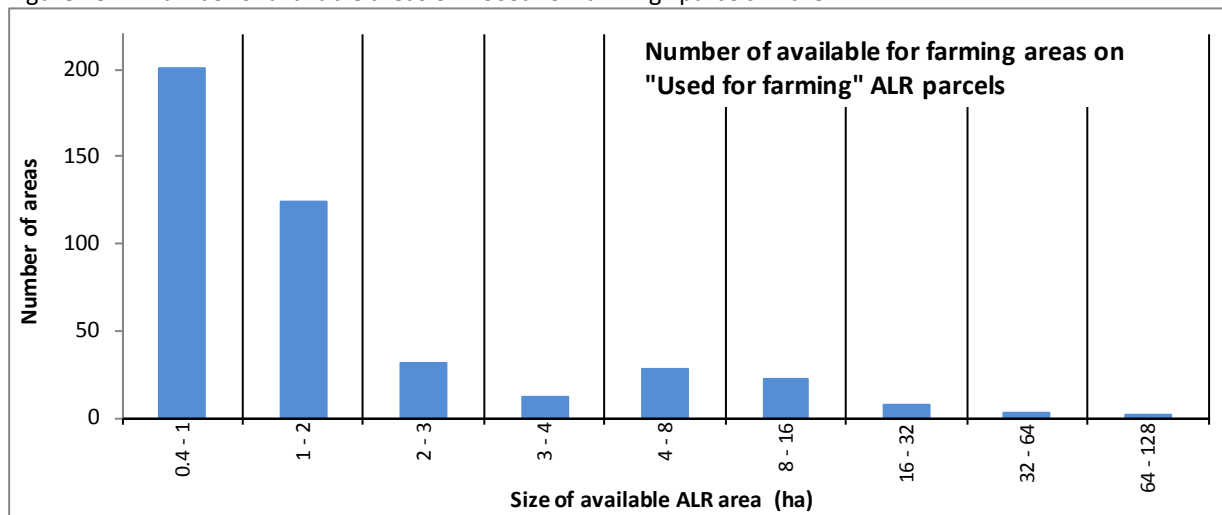


Figure 23 illustrates the size of the areas available for farming on parcels that are already “Used for farming” in the ALR. Most areas are small with 47% of the available land cover areas being less than 1 ha and 75% of the available areas being less than 2 ha.

Figure 24. ALR area available for farming by land cover type on “Used for farming” parcels in the ALR

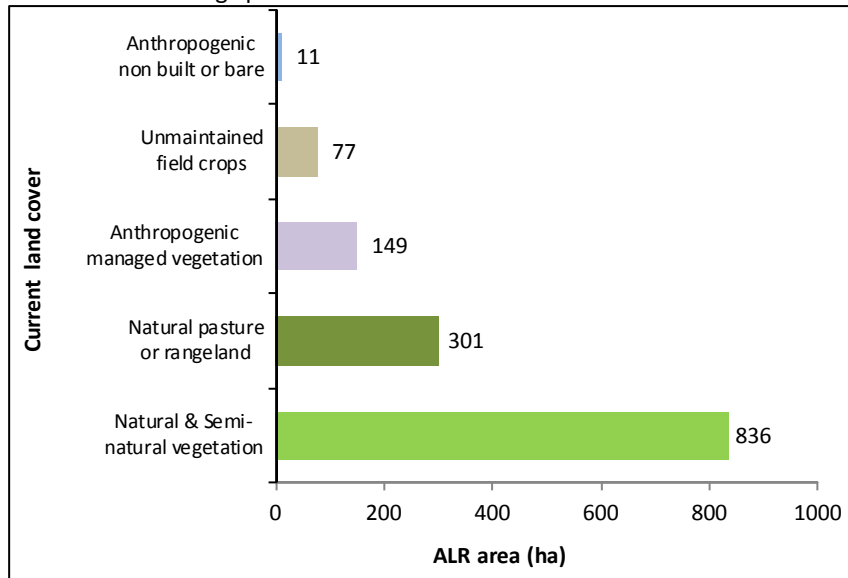


Figure 24 shows the type of available for farming land cover on parcels already “Used for farming”.

Land currently in “Natural & semi-natural vegetation” could provide the greatest gains in cultivation on parcels that are already “Used for farming”.

Much of the potentially available land would need to be cleared and improved before cultivation could begin.

6.3 ON PARCELS AVAILABLE FOR FARMING

ALR parcels that are “available for farming” offer the greatest potential for agricultural expansion. These parcels are a subset of the “Not used for farming” parcels described in Section 5. For a parcel to be considered available for farming it:

- Must not already be “Used for farming”
- Must not have an existing use that excludes agricultural development (e.g. parks, golf courses)
- Must have at least 50% of the parcel area and at least 0.4 ha in land that has potential for farming

Figure 25. ALR area available for farming by land cover type on “Available for farming” parcels in the ALR

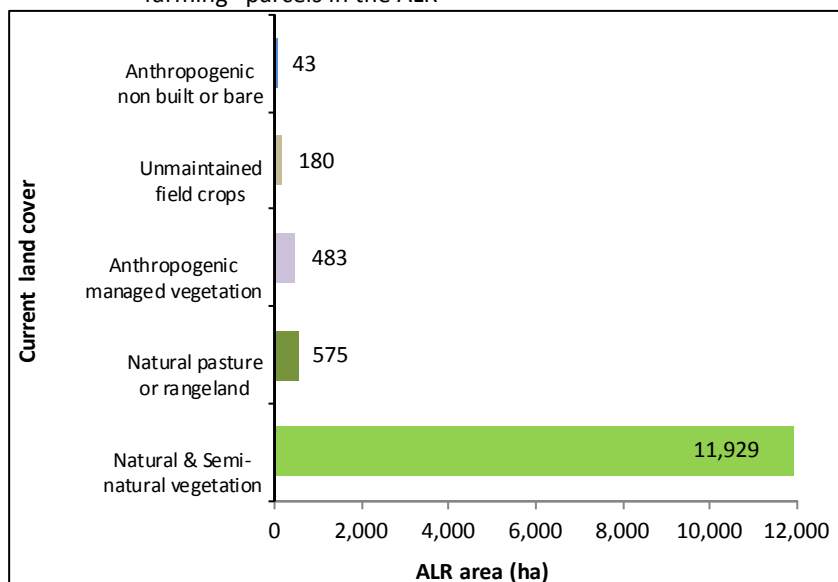


Figure 25 shows that ALR land in natural & semi-natural vegetation offers the greatest opportunities to increase cultivation on parcels that are available for farming.

These gains in cultivated land would have to be measured against the potential loss of ecological values such as wildlife habitat and societal values such as natural views and privacy

The majority of this available land (79% or 10,393 ha) is currently treed and would need to be cleared before cultivation could begin.

Figure 26. Land uses and parcel size distribution of available for farming parcels in the ALR

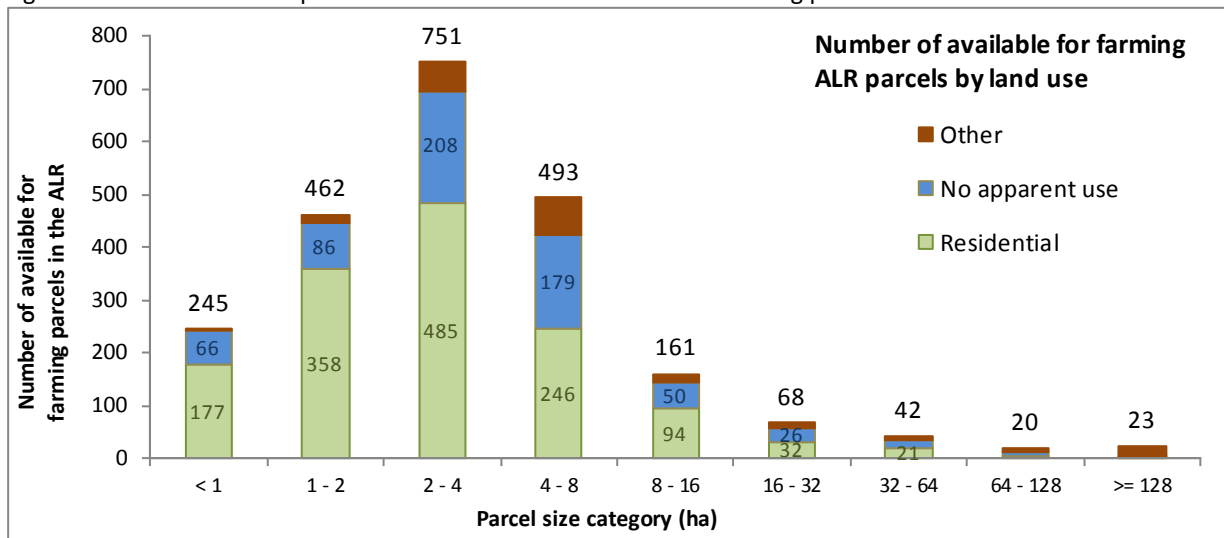


Figure 26 illustrates the existing land uses on parcels in the ALR that are available for farming. In total, 63% of the available parcels have a residential land use (1,418 parcels), 28% have no apparent use (636 parcels), and the remaining 9% have other uses including forestry, transportation, and recreation. Of the available parcels:

- 31% (707 parcels) are less than 2 ha
- 36% (807 parcels) are greater than 4 ha
- 64% (1,458 parcels) are less than 4 ha
- 7% (153 parcels) are greater than 16 ha

Figure 27. Parcel size distribution of available for farming parcels in the ALR with no apparent use

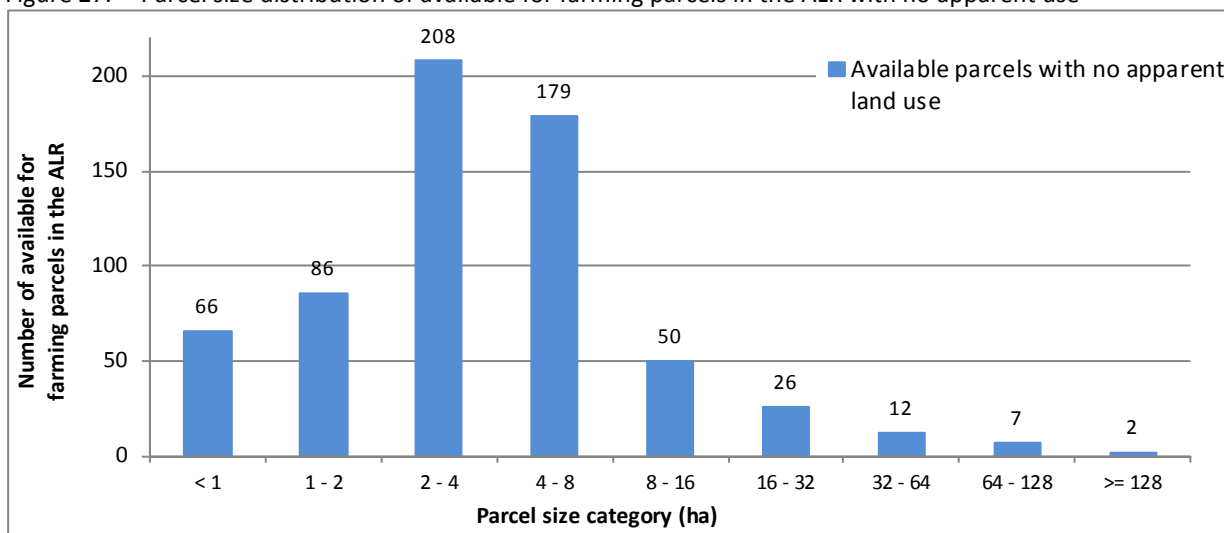


Figure 27 shows the number of ALR parcels that that are available for farming and that have no apparent land use. Of these 636 parcels:

- 152 parcels are less than 2 ha
- 276 are greater than 4 ha
- 360 parcels are less than 4 ha
- 47 are greater than 8 ha

6.4 ON PARCELS UNAVAILABLE FOR FARMING

Parcels that are unavailable for farming have an existing land use that excludes agricultural development (e.g. golf courses, schools, small lot residential), or lack sufficient land cover that is available and has potential for farming. A parcel covered in trees with steep topography is considered unavailable for farming because it does not have any available land cover. Parcels that do not meet the minimum parcel availability criteria (>50% of the parcel area and >0.4 ha in available land cover) are considered unavailable for farming. These parcels are a subset of the “Not used for farming” parcels described in Section 5.

Figure 28. Parcel size distribution of unavailable for farming parcels in the ALR

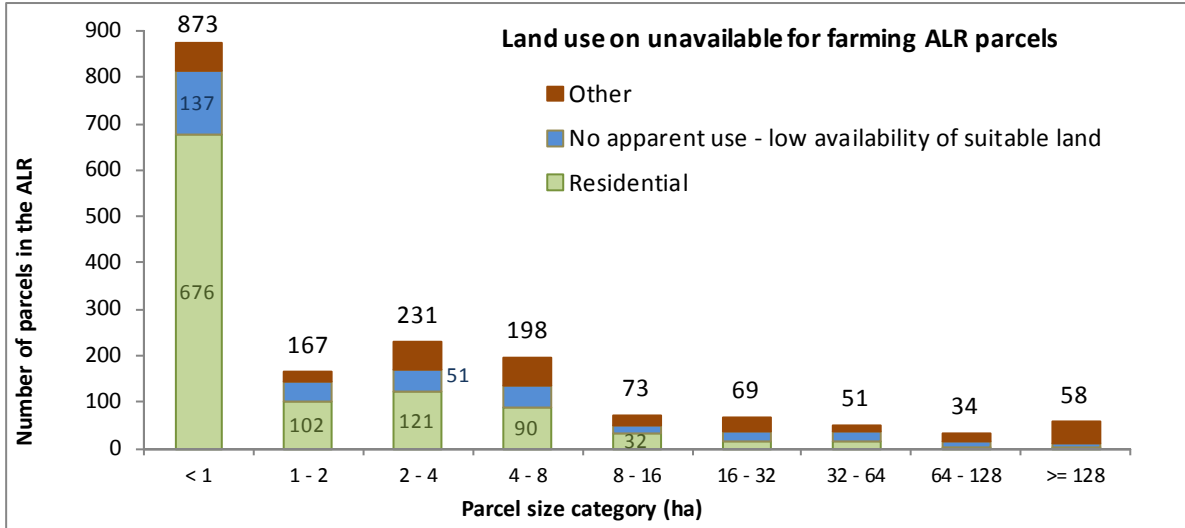


Figure 28 shows the number of ALR parcels that are unavailable for farming. These parcels have an existing land use or low availability of suitable land that makes them unavailable for farming purposes.

Half of the unavailable parcels are less than 1 ha in size (50%).

Figure 29. Land uses on unavailable parcels in the ALR

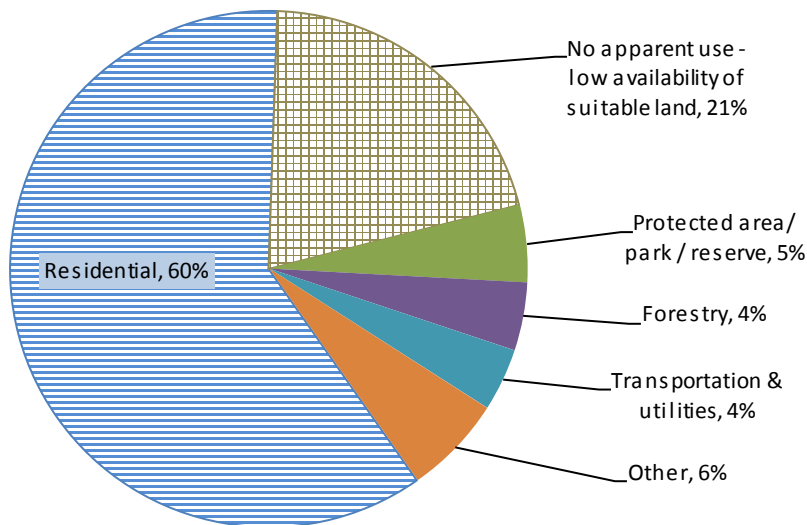


Figure 29 shows the proportion of unavailable for farming ALR parcels by their land use.

Most unavailable for farming parcels have a residential land use (60%).

Twenty-one percent (21%) of the unavailable for farming parcels have low availability of suitable land. The natural and semi-natural areas on these parcels may have physical limitations such as topography or soils.

7. Land Use Outside the ALR

7.1 LAND USE AND FARM USE OUTSIDE THE ALR

Farming outside of the ALR contributes to the economy and to the general agricultural landscape. Agriculturally zoned lands outside of the ALR do not receive the same level of protection as lands within the ALR. Agricultural activities outside of the ALR are more subject to restrictions and complaints related to noise, nuisance and disturbances.

Used for farming – Parcels where the majority of the parcel area is utilized for farming or parcels which exhibit significant evidence of intensive farming. Refer to the glossary for a complete definition. Many “Used for farming” parcels are also used for other purposes such as residential. This report does not attempt to determine which use is primary.

Table 11. Land use on parcels “Used for farming” outside of the ALR

Parcel land use*	Outside the ALR		
	Number of parcels	Average parcel size	Median parcel size (ha)
Used only for farming - no other use	50	7	2.3
Farming - Mixed use	Residential	160	4
	Transportation & utilities	6	22
	Industrial	1	3
	Forestry	1	2
USED FOR FARMING SUBTOTAL	218	16	26.2

Table 11 shows the number of inventoried parcels outside the ALR that were “Used for farming”.

In total, 218 “Used for farming” parcels were identified. These parcels have a combined area of 1,121 ha.

Appendix A – Glossary

Actively farmed – Land cover considered **Farmed** but excludes unused / unmaintained field crops, and unmaintained greenhouses. Does not include natural pasture or rangeland.

Agricultural Land Reserve (ALR) – A provincial zone in which agriculture is recognized as the priority use. Farming is encouraged and non-agricultural uses are controlled.

Animal Unit Equivalent – A standard measure used to compare different livestock types. One animal unit equivalent is approximately equal to one adult cow or horse.

Anthropogenic – The term *anthropogenic* describes an effect or object resulting from human activity. In this report, the term anthropogenic refers to land cover originating and maintained by human actions but excludes farmed land cover; cultivated field crops, farm infrastructure, and crop cover structures.

Anthropogenic – Built up - Other – Lands covered by various unused or unmaintained built objects (structures) and associated yards that are not directly used for farming.

Anthropogenic – Managed vegetation – Lands seeded or planted for landscaping, dust or soil control but not cultivated for harvest or pasture. Includes parklands, golf courses, landscaping, lawns, vegetated enclosures, remediation areas.

Anthropogenic – Non Built or Bare – Human created bare areas such as extraction or disposal sites. Includes piles, pits, fill dumps, dirt parking or storage areas.

Anthropogenic – Residential – Lands covered by built objects (structures) and their associated auxiliary buildings, yards, roads, and parking. Includes single family dwellings, multifamily dwellings, and mobile homes.

Anthropogenic – Residential footprint – Includes the main residence plus its associated yard, driveway, parking and any auxiliary buildings or structures. When two residences are on a property, areas associated to both (such as shared driveways, parking or yard), are assigned to the closest residence.

Anthropogenic – Settlement – Lands covered by built objects (structures) and their associated yards, roads, and parking. Includes institutional, commercial, industrial, sports / recreation, military, non linear utility areas and storage / parking.

Anthropogenic – Transportation – Lands covered by built objects (structures). Includes roads, railways, airports and associated buffers and yards.

Anthropogenic – Utilities – Lands covered by built objects (structures). Includes linear features such as pipelines or transmission lines.

Anthropogenic Waterbodies – Areas covered by water, snow or ice due to human construction. Includes reservoirs, canals, ditches, and artificial lakes - with or without non cultivated vegetation.

Available for farming – Parcels that can be used for agricultural purposes without displacing a current use. Includes all parcels that do not meet the “Unavailable for farming” criteria.

BC Assessment – The Crown corporation which produces annual, uniform property assessments that are used to calculate local and provincial taxation. The database purchased from BC Assessment

contains information about property ownership, land use, and farm classification, which is useful for land use surveys.

Cadastral – The GIS layer containing parcel boundaries, i.e. legal lot lines.

Crop cover structures – Land covered with built objects including permanent enclosed glass or poly structures (**greenhouses**) with or without climate control facilities for growing plants and vegetation under controlled environments, and barns used for growing crops such as mushrooms. Excludes non-permanent structures such as hoop or tunnel covers.

Crown ownership – Crown ownership includes parcels which are owned by provincial or federal governments. Parcel ownership is determined by the Integrated Cadastral Fabric maintained by the Parcel Fabric Section of the BC Government.

Cultivated field crops - Land under cultivation for harvest or pasture. Includes crop land, fallow farmland, unused forage or pasture, un-housed container crops and crops under temporary covers. Excludes natural pasture, rangeland, greenhouses, mushroom barns and other crop houses.

Effective ALR – The **Agricultural Land Reserve** area that is in legally surveyed parcels and under the jurisdiction of the area of interest. The effective ALR is the total ALR area excluding ALR on Indian reserves and ALR outside of legally surveyed parcels. Effective ALR can be used to compare land cover categories across different jurisdictions.

Farm classification for tax assessment – Applies to parcels producing the minimum dollar amount to be classified as a farm by BC Assessment. Local governments apply a tax rate to farmland which is usually lower than for other land. To receive and maintain the farm classification, the land must generate annual income from agricultural production.

Farm infrastructure – Land covered by farm related built objects (structures) and their associated yards, roads, parking. Includes barns, storage structures, paddocks, corrals, riding rings, farm equipment storage, and specialized farm buildings such as hatcheries. Excludes greenhouses, mushroom barns and other crop houses.

Farm Unit – An area of land used for a farm operation consisting of one or more contiguous or non-contiguous parcels, that may be owned, rented or leased, which form and are managed as a single farm.

Farmed – Land cover directly contributing to agricultural production (both actively farmed and inactively farmed) and intentionally planted or built. Includes land in **Cultivated field crops**, **Farm infrastructure** and **Crop cover structures** (see individual definitions). Does not include natural pasture or rangeland.

Grazed – Land in **natural pasture or rangeland** that is used for grazing domestic livestock. These areas are considered separate from **Farmed** land cover.

Greenhouses – See **Crop cover structures**.

Homesite (livestock) – The homesite is the primary location of a farm unit or livestock operation where most livestock management occurs. It is the location of the main ranch or main barn of a **farm unit**.

Inactively farmed – Land cover considered “Farmed” but is currently inactive. Includes unused / unmaintained forage and pasture, unmaintained field crops, and unmaintained greenhouses or crop barns. Does not include natural pasture or rangeland.

Intensive livestock – Intensive livestock have specialized structures such as barns, feedlots, or stockyards designed for confined feeding at high stocking densities.

Land use – Dumps & deposits – Parcels with landfills, green waste, or outdoor composting facilities. Also includes parcels with significant fill deposits.

Land use – First Nations – Parcels designated for ceremonial use, food & material harvesting, or cultural landforms. These parcels are outside of federally designated Indian reserves.

Land use – Institutional & community – Parcels with churches, cemeteries, hospitals, medical centers, education facilities, correctional facilities, or government and First Nation administration.

Land use – Land in transition – Parcels with developed land in transition. Includes construction sites, large scale tree removal, and demolished buildings.

Land use – No apparent use – Parcel with no apparent human use; natural areas, long term fallow land, cleared land not in production, abandoned or neglected land, abandoned or unused structures.

Land use – Protected area / park / reserve – Includes provincial parks, other parks, and ecological reserves. Areas may have passive recreation such as hiking, nature viewing, or camping.

Land use – Recreation & leisure – Parcels with intensive recreation (such as zoos, rinks, courts, walking/biking trails), or extensive recreation (such as horseback riding, wilderness camping sites, fishing, hunting, skiing, etc.). Golf course are reported separately.

Land use – Water management – Areas used to actively or inactively manage water. Includes reservoirs, managed wetlands, dykes and land which provides natural flood/erosion protection (land outside dyke).

Land use – Wildlife management – Areas used to actively or inactively manage wildlife. Includes wildlife reserves, breeding areas, fishing areas, and fish ladders/hatcheries.

Limited potential for farming – See **potential for farming**.

Livestock operation scale – See **Scale of livestock operations**.

Natural and Semi-natural – Land cover which has not originated from human activities or is not being maintained by human actions. See descriptions below. Includes regenerating lands, and old farm fields.

Natural and Semi-natural – Grass – Land cover dominated by naturally occurring grasses with some sedges or rushes. May include non-native naturalized species. If greater than 50% cover is grass, the land is categorized as grass.

Natural and Semi-natural – Herbaceous – Land cover dominated by low, non woody plants such as ferns, grasses, horsetails, clovers and dwarf woody plants. If greater than 10% crown cover is trees, the land is categorized as treed.

Natural and Semi-natural – Natural bare areas – Includes bare rock areas, sands and deserts.

Natural and Semi-natural – Natural pasture – Smaller fenced areas usually on private land with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock.

Natural and Semi-natural – Rangeland – Larger areas usually on Crown land with uncultivated (not sown) natural or semi-natural vegetation used for grazing domestic livestock.

Natural and Semi-natural – Shrubs – Land where less than 10% crown cover is native trees and at least 20% crown cover is multi-stemmed woody perennial plants, both evergreen and deciduous.

Natural and Semi-natural – Treed - closed – Land where between 60 and 100% of crown cover is native trees.

Natural and Semi-natural – Treed - open – Land where between 10 and 60% of crown cover is native trees.

Natural and Semi-natural – Vegetation – Land covered by **Natural and Semi-natural** vegetation including, grasses, herbs, shrubs, and trees. **Natural pasture or rangeland** is reported separately.

Natural pasture or rangeland – Land with uncultivated (not sown) natural or semi-natural vegetation used for grazing domestic livestock. This land cover is considered “Used for grazing” and “Not used for farming” although these areas are usually extensions of more intensive farming areas.

Non homesite (livestock) – A location where livestock are present, but related infrastructure is minimal. Non homesites are used for pasturing and are secondary to the farm units primary (homesite) location.

Non intensive livestock – Non intensive livestock have the ability to graze on pasture and often utilize non intensive barns and corrals/paddocks.

Not used for farming – Parcels that do not meet the “Used for farming” criteria.

Not used for farming but available – Parcels that do not meet the “Used for farming” criteria but can be used for agricultural purposes without displacing a current use.

Scale of livestock operations – The scale system used in this report to describe livestock operations includes 4 levels:

- **“Very Small** Approximately 1 cow or horse or bison, 3 hogs, 5 goats or deer, 10 sheep, 50 turkeys, 100 chickens (1 animal unit equivalent)
- **“Small”** LESS THAN 25 cows or horses or bison, 75 hogs, 125 goats or deer, 250 sheep, 1250 turkeys, 2500 chickens (2 - 25 animal unit equivalents)
- **“Medium”** LESS THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5,000 turkeys, 10,000 chickens (25 - 100 animal unit equivalents)
- **“Large”** MORE THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5,000 turkeys, 10,000 chickens (over 100 animal unit equivalents)

Potential for farming – Land without significant topographical, physical or operational constraints to farming such as steep terrain, land under water, or built structures. For example, land with little slope, sufficient soils and exhibiting a natural treed land cover would be considered as having potential for farming. Areas less than 1 acre in size are considered to have limited potential for farming.

Unavailable for farming – “Not used for farming” parcels where future agricultural development is improbable because of a conflicting land use or land cover that utilizes the majority of the parcel area. For example, most residential parcels are considered unavailable for farming if the parcel size is less than 0.4 hectares (approximately 1 acre) since most of the parcel is covered by built structures, pavement and landscaping.

Unmaintained field crops – Land under cultivation for field crops which has not been maintained for several years and probably would not warrant harvest.

Unmaintained forage or pasture – Land under cultivation for forage or pasture which has not been cut or grazed during the current growing season and has not been maintained for several years.

Unused forage or pasture – Land under cultivation for forage or pasture which has not been cut or grazed during the current growing season.

Used for farming – See final page of glossary.

Used for grazing – Parcels “Not used for farming” with a significant portion of their area in natural pasture or rangeland and evidence of active grazing domestic livestock.

Used for farming – Parcels where the majority of the parcel area is farmed OR parcels which exhibit significant intensity of farming are considered “Used for farming”. Specifically, parcels that meet at least one of the following criteria:

- medium or large scale livestock, apiculture or aquaculture operations
- at least 45% parcel area in cultivated field crops (excluding unused forage or pasture)
- at least 50% parcel area built up with farm infrastructure
- at least 25% parcel area built up with crop cover structures (excluding unmaintained structures)
- at least 40% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure and small scale livestock, apiculture or aquaculture operations
- at least 33% parcel area in cultivated field crops (excluding unused forage or pasture) and at least 55% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure
- at least 10% parcel area in crop cover structures (excluding unmaintained structures) and at least 40% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure
- at least 20% parcel area and at least 20 ha in cultivated field crops (excluding unused forage or pasture)
- at least 25% parcel area and at least 10 ha in cultivated field crops (excluding unused forage or pasture)
- at least 30% parcel area and at least 5 ha in cultivated field crops (excluding unused forage or pasture)
- at least 10% parcel area and at least 2 ha built up with crop cover structures (excluding unmaintained structures)
- at least 20% parcel area and at least 1 ha built up with crop cover structures (excluding unmaintained structures)