

Growing Knowledge



Ministry of
Agriculture

Land Use Inventory Report

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Columbia Valley East Kootenay - Summer 2011 -



**Strengthening Farming Program
Sustainable Agriculture Management Branch
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Acronyms

AAC	Agricultural Advisory Committee
AAP	Agricultural Area Plan
AGRI	BC Ministry of Agriculture
ALC	Agricultural Land Commission
ALR	Agricultural Land Reserve
ALUI	Agricultural Land Use Inventory
GIS	Geographic Information Systems

Definitions

General

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.

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.

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

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 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.

Land Cover

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, 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 and 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, 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, and 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.

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.

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.

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.

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

Natural and Semi-natural – Grassland – greater than 50% of cover is herbaceous plants with long, narrow leaves characterized by linear venation; including grasses, sedges, rushes, and other related species.

Natural and Semi-natural – Herbaceous – the dominant vegetation is native low, non woody plants such as ferns, grasses, horsetails, closers and dwarf woody plants. If greater than 50% cover is grass, the land is categorized as grassland.

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

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

Natural and Semi-natural – Shrubland – 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 – between 60 and 100% of crown cover is native trees.

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

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

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.

Livestock

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

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)

Land Cover and Farming

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

Actively farmed – Land cover considered **Farmed** but excludes unused / unmaintained field crops, and unmaintained greenhouses.

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

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.

Land Use

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

Resource protection & research – Government or private research activities (including agriculture). Flood protection areas.

Water management – Areas used to actively or inactively manage water; reservoirs, dikes, ditches, managed wetland.

Land Use and Farming

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 50% 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 20% parcel area in cultivated field crops (excluding unused or unmaintained crops) or farm infrastructure and farm classification for tax assessment.
- at least 5 ha in cultivated field crops (excluding unused or unmaintained crops) or farm infrastructure and farm classification for tax assessment.
- 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)

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

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.

Unavailable for farming – “Not used for farming” parcels where future agricultural development is improbable because of a conflicting land use that utilizes the majority of the parcel area. For example, most residential parcels are considered not available 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.

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.

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.

Executive Summary

In the summer of 2011, an Agricultural Land Use Inventory (ALUI) was conducted within the Regional District of East Kootenay (RDEK). The ALUI was funded by RDEK and was completed with in-kind support from the BC Ministry of Agriculture.

ALUI's can be used to understand which agricultural activities are occurring in the surveyed area. The data provides an estimate of the capacity for agricultural expansion, and the amount of land within the Agricultural Land Reserve (ALR) that is not available for agriculture. The data can also be used to model agricultural water demand and estimate the amount of water required for irrigation.

The ALUI for RDEK was conducted using a drive-by inventory that recorded land cover and land use on a per-parcel basis, as a "snapshot in time". Included in the inventory are i) all parcels completely or partially in the ALR greater than one acre and accessible by road, ii) all parcels with "Farm" status for property tax assessment, and iii) parcels where photo interpretation showed signs of agriculture.

The RDEK is a large area that is managed in three distinct units: Columbia Valley, Central, and Elk Valley. This report encompasses the information collected by the ALUI for the Columbia Valley.

The ALR in the Columbia Valley consists of 73,083 hectares. Only 32,217 hectares or just over 44% of the ALR was surveyed as part of this inventory. The remaining 56% is on parcels less than one acre, remotely located with limited access, in Indian reserves, or on unsurveyed Crown land (35%).

Of the 32,217 hectares surveyed in the ALR, 8,280 hectares (11% of the ALR) is Crown land, with the remaining 23,937 hectares being private land. A portion of the Crown land (2,076 hectares) is in Provincial Parks, Tree Farm License 14, or properties managed for conservation of wildlife habitat.

An additional 11,893 hectares of non-ALR land was surveyed on parcels that either were partially in the ALR, showed signs of agriculture from the photo interpretation, or were classified as "Farm" status from BC Assessment. Of the 11,893 hectares surveyed outside the ALR, 4,254 hectares is on Crown land and 7,639 on private land.

In total, 1,059 parcels with a combined area of 44,110 hectares were surveyed. This included 12,535 hectares of Crown land (8,280 hectares in the ALR and 4,254 hectares outside the ALR), and 31,575 hectares of private land (23,937 hectares in the ALR and 7,639 hectares outside the ALR).

The data on each parcel was collected in two ways: land cover (the biophysical material at the surface of the earth) and land use (how people utilize the land). A parcel could have numerous land covers, but assigned up to two land uses.

In the ALR by land cover, 2,322 hectares (3%) is actively farmed, 95 hectares (< 1%) is inactively farmed, 716 hectares (<1%) is anthropogenically modified, and 28,923 hectares (40%) is in natural pasture/rangeland or forested. The remaining 56% of the ALR was not surveyed for reasons stated above.

In the ALR by parcel land use, 5,445 hectares (7%) is used for some sort of farming (5,441 private land and 4 hectares Crown land), 14,891 hectares (20%) is used for grazing (9,210 hectares private land and 5,681 hectares Crown land), and 11,881 (16%) is not used for farming or grazing. The remaining 56% of the ALR was not surveyed but is assumed not to be used for farming but may be used for grazing.

The inventory did provide some insight into ALR land available and with potential for farming. Of the ALR, only 2,422 hectares (3%) is actively farmed right now. Another 51 hectares supports farming (e.g. housing, farm buildings, etc.). There are 6,166 hectares (8%) of the ALR unavailable for farming due to existing land use or land cover, with the largest being wildlife management (3,999 hectares).

There are 9,128 hectares (12%) of the ALR that have limited potential for farming due to topography, soils, and flooding but would have the ability to sustain some level of grazing. That leaves 14,389 hectares (20%) of the ALR available and with potential for farming, with 9,635 hectares on private land and 4,754 on Crown land. This potential for farming may increase if access was improved to remote parcels of ALR land. Of the 9,635 hectares on private land, 124 hectares is held by conservation groups who are managing for wildlife conservation. In some cases, this is historical farm land that is intentionally being left fallow and thus only appears to have potential for farming.

Further analysis shows that 57% of the privately owned areas available and with potential for farming are smaller than 4 hectares, 43% are larger than 4 hectares and only 14% are larger than 32 hectares. Larger continuous areas are preferred as they provide a wider range of options for agriculture. In the Central region, there are 68 privately owned areas greater than 32 hectares with a combined area of 6,107 hectares that are available with potential for farming.

In total, there was 2,584 hectares of land under cultivation (2,390 in the ALR and 194 outside). Forage and pasture was the most common crop accounting for 93% of all cultivated land. Barley was the next most common crop with 152 hectares or 6% of cultivated land. There were 7 hectares of canola, 3 hectares of mixed vegetables, about 1 hectare of potatoes, and 3 hectares of berries (mostly strawberries). There were 3 greenhouse operations with a total of 20 poly greenhouses producing a mixture of crops.

Irrigation use was captured by crop type and irrigation system type to aid in developing an estimate of agricultural water demand. Sprinkler systems were the most commonly used, and were used on all crop types. Centre pivot systems were the next most common and were exclusively used on forage, pasture and cereal / oilseed crops. In the Columbia Valley, 45% of all cultivated crops were irrigated.

Livestock activities were also recorded, but are very difficult to measure using a windshield survey method. Livestock may be in barns, may be mobile, may utilize more than one land parcel, and may be remotely located on rangelands. The inventory data reports livestock at the parcel where the animals or related structures are observed. Additional information such as Crown grazing licenses were used to determine livestock homesites and the number of animals. In the Columbia Valley, equines were the most common type of livestock activity (with 73 out of 103 activities) followed by beef (20 out of 103 activities). However, most equine activities were very small when compared with beef activities. In total, the report estimates there are 1,611 head of beef cattle and 238 equines in the Columbia Valley. There were also a few small scale sheep / goat and llama activities.

Parcel size must be considered when determining the agricultural potential of a land parcel. Of the 828 privately owned parcels surveyed in the ALR, 553 are not used for farming or grazing. Of these 553 parcels, 45% are less than 2 hectares in size and 62% are less than 4 hectares. The majority of all parcels less than 64 hectares are not used for farming or grazing.

Summary This report provides the necessary background to understand the current status of agriculture on the land base and help make informed decisions on how best to manage the agriculture land base in order to support and strengthen farming into the future.

Agrologist Comments

Agriculture in the Regional District of East Kootenay (RDEK) has evolved and changed with the years. Small scale operations with a diversity of products slowly gave away almost entirely to beef production. Along the way, small tree fruit farms started up and then disappeared, as did potato, poultry and dairy farms. Whether it was the distance to markets or the cost of production, the economics dictated that larger scale agriculture operations were necessary to be profitable. Based on the climate and land, cattle ranching and forage production have become the dominate agriculture operation in the regional district.

Agriculture production in the RDEK is restricted mainly to the valley bottoms of the Columbia, Kootenay, and Elk drainages. Urban centers (Radium Hot Springs, Invermere, Canal Flats, Cranbrook, Fernie, Sparwood) and residential and recreational development are located in the same valleys which continually adds pressure to the limited agriculture land base.

Agriculture is one of the many economic drivers in the region. Gross farm receipts have risen 46% since 1986 to a high of \$15,570,846 in 2006, but have dropped to \$14,504,239 in 2011.

To ensure agriculture has a future in the region, the RDEK in 2011 approved the preparation of an Agriculture Area Plan for the entire regional district. The purpose of the plan is to support and strengthen agriculture in the region. To support the development of the plan, the first step was an agriculture land use inventory that provides a snap shot in time of the current level of agriculture activity occurring in the area. By the fall of 2011, the agriculture land use inventory field work was completed.

Agriculture in General

In the RDEK, the Agricultural Land Reserve covers 266,058 hectares, which equates to 9.7% of the land base. Both Crown and private land are located in the ALR. Crown land in the ALR are low elevation land, most often associated with Crown Range Units, but the management of those Crown ALR lands is for multiple use (i.e. grazing, wildlife, forestry, mining) and not for the benefit of agriculture exclusively.

The number of farms in the RDEK has increased by 2% between 1986 to 2011, however farm size in the has been fairly constant, with;

- 15% of the farms under 4 ha,
- 24% between 52 and 161 ha, and
- 36% between 4 and 52 ha,
- 25% greater than 161 ha.

In the Columbia Valley, beef and forage production are the dominant agriculture commodities being produced. There are no added value processors in the area except for a small abattoir in Cranbrook; consequently most of the cattle are shipped to Alberta for processing.

Animal production is almost entirely beef. However, there are a considerable number of horses found in the region, mainly on small acreage and suspect more for recreational purposes.

Forage and pasture production (93% of cultivated land) is mainly occurring on irrigated land. Fields are relatively small in size (average size 9 hectares) and a two cut system is required to produce adequate forage to feed overwintering livestock.

In recent years, seed production has increased. Due to the regions remoteness, new varieties of seed can be developed and grown in the Columbia Valley before they are ready for the commercial market. This opportunity has created some necessary income for many agriculture producers in the region.

There are 20 greenhouses in the valley producing a mixture of crops. All this production is sold locally via farm gate sales or Farmer's Markets.

Some specialized crops have been planted in the region (i.e. wheat, saskatoons), but have not provided enough of a return to be a profitable venture.

Issues Facing Agriculture

This report identifies 16,811 hectares of ALR land that is available and with potential for farming. This is 23% of the total ALR area in the Columbia Valley of RDEK. In addition, some of the 10,471 hectares of ALR on parcels not surveyed as part of this inventory may be available and have potential for farming. However, 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 in the East Kootenay and rural subdivision, water availability for agriculture is a concern.

- **Wildlife**

The East Kootenay is known for its vast array of large game animals and the hunting and viewing opportunities that go with that. The financial impacts on agriculture business from elk, deer and predator damage to crops and livestock are substantial. The increased use of preventative measures to minimize agriculture losses to wildlife is now a requirement for the agriculture sector. Also, private land in the ALR is being sold to conservation groups and in some cases, the intensively farmed portion of those farms are being left fallow. Once irrigated alfalfa crops are now dryland fields of Canada bluegrass. The limited amount of land capable of soil based agriculture is now out of production on those farms.

- **Access**

There are still private land parcels in the RDEK that do not have road access or hydro. These parcels may have the potential for agriculture, but the cost of development is not feasible with the current agriculture commodity prices.

- **Recreational Development**

The dramatic increase in recreational and second homes in the RDEK has impacted the agriculture industry. The increased value of land has severely limited the ability of agriculture businesses to expand. The increase in development has removed agriculture land from production and is slowly urbanizing rural farming areas.

- **Crown ALR**

A substantial amount of ALR land in the RDEK is on Crown land. Much of this land is under range licenses which allow summer grazing for the cattle industry. However, even with an ALR designation, there is no consultation with the Agriculture Land Commission on balancing the multiple needs (e.g. forestry, wildlife, agriculture) on that land base. Agricultural interests are not recognized on par with forestry and wildlife interests on land designated ALR.

- **Secondary Industries**

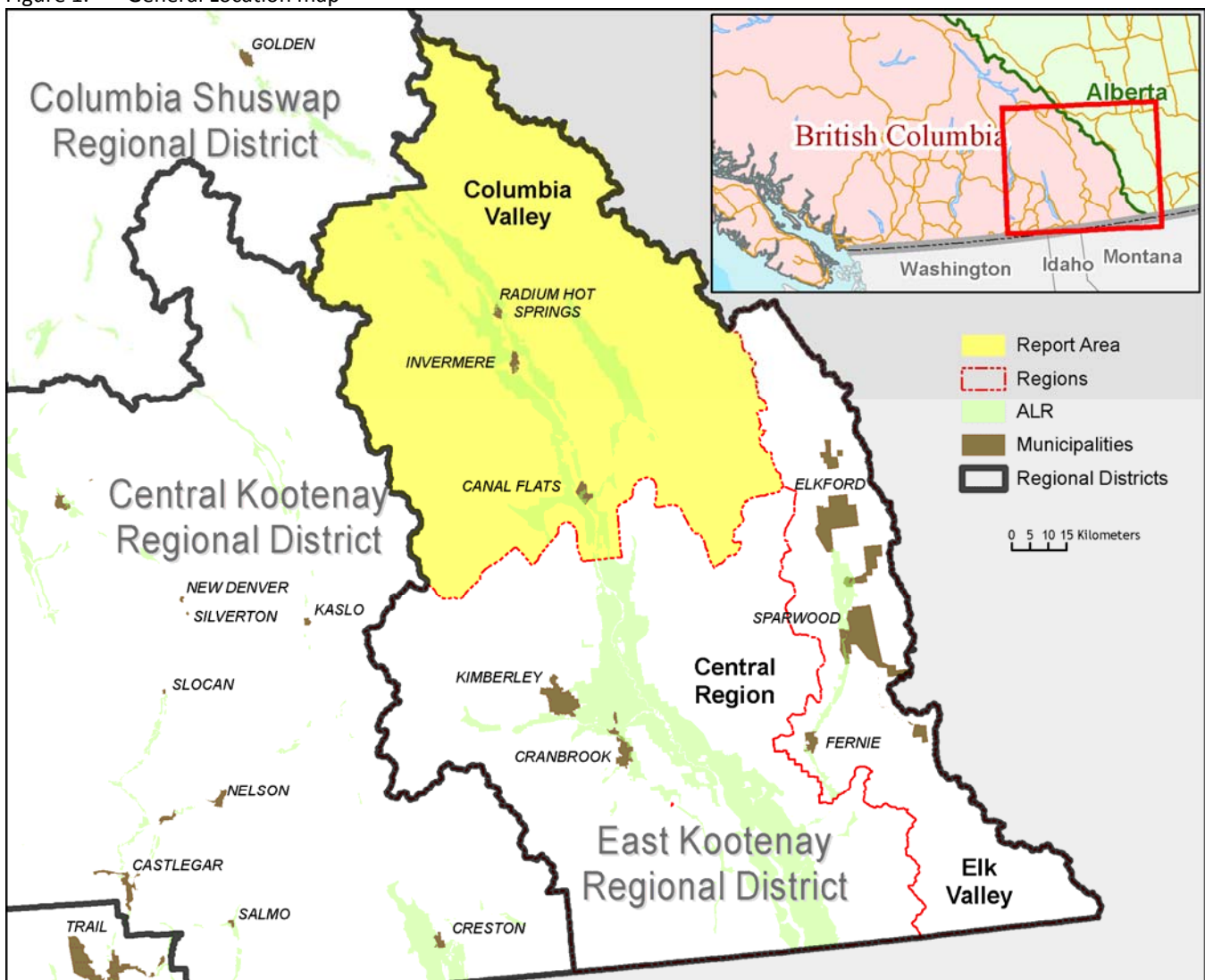
As the agriculture sector gets smaller in the RDEK, the businesses that support agriculture are affected as well. The value of each dollar spent in the local economy continues to provide added value as it circulates. With the shrinking agriculture sector, these dollars are leaving the local economy. Many of the agricultural services once available locally are now only available in Alberta. A growing agricultural sector will also allow other supporting business to grow locally.

General Community Information

Nestled between the Rocky Mountains to the east and the Purcell range to the west, the Columbia Valley lies in the south east corner of British Columbia. The Columbia and Kootenay Rivers flow through the valley in opposite directions creating a diverse habitat for wildlife and unlimited recreational activities.

The Columbia Valley is located in the Regional District of East Kootenay and contains electoral areas F and G as well as the municipalities of Invermere, Radium Hot Springs, and Canal Flats. The valley has a total area including land and water of 1,091,639 hectares¹ and a population of 9,261¹.

Figure 1. General Location map



¹ Government of British Columbia; Ministry of Community, Sport & Cultural Development, Local Government Statistics
http://www.cscd.gov.bc.ca/lgd/infra/library/regional_stats11_summary.pdf

AGRICULTURAL LAND RESERVE

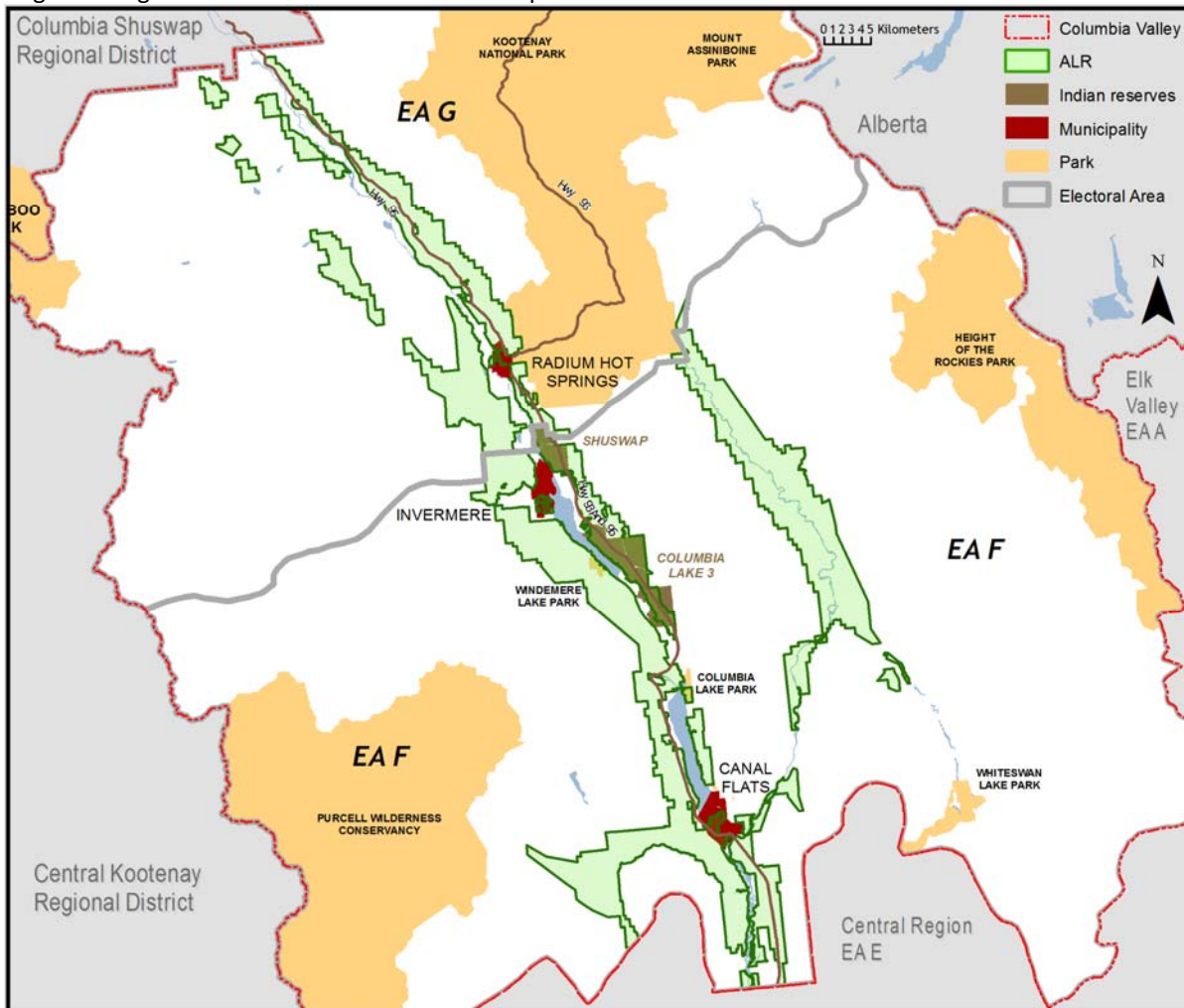
The Agricultural Land Reserve (ALR) is a provincial land use zone that was designated in 1973 in which agriculture is recognized as the priority use. Within the ALR, farming is encouraged and non-agricultural uses are controlled.

There are 266,058 hectares² of ALR land within the Regional District of East Kootenay (refer to Figure 1 above); 73,083 hectares³ or 27.5% is within the Columbia Valley.

The total area of Columbia Valley is 1,091,639 hectares⁴. With 73,083 hectares³ in the ALR, almost 7% of the valley is in the ALR. This ALR area includes:

- 42,688 hectares in legal parcels (including 10,471 hectares not included in this inventory)
- 3,753 hectares in Indian reserves
- 26,642 outside legal parcels
 - 683 hectares of designated rights-of-way
 - 643 hectares of foreshore
 - 25,316 hectares of unsurveyed Crown land

Figure 2. Agricultural Land Reserve location map



² BC Agricultural Land Commission Report 2009/10 & 2010/11 Pg 39. http://www.alc.gov.bc.ca/publications/Annual_Report_2009-10_and_2010-11.pdf.

³ Agricultural Land Commission, ALR mapping, Land and Resource Data Warehouse, 2011-01-31 (area calculated in GIS).

⁴ BC Ministry of Community, Sport & Cultural Dev., Government Statistics http://www.cscd.gov.bc.ca/lgd/infra/library/regional_stats11_summary.pdf

INVENTORY AREA

The total inventory area encompasses 1,059 parcels with a combined area of 44,110 hectares or just over 4% of the Columbia Valley. Included are:

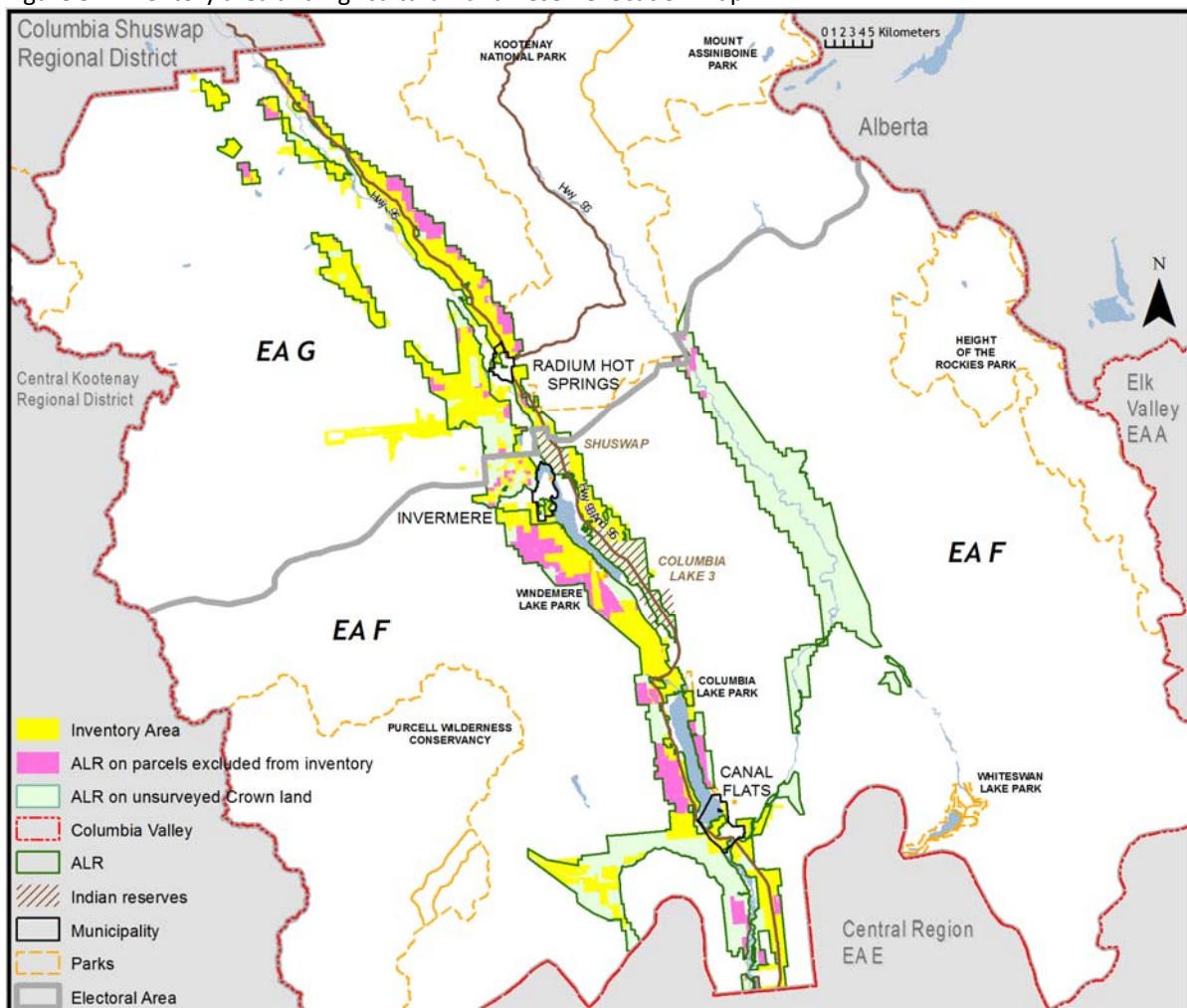
- 1,041 parcels completely or partially within the Agricultural Land Reserve with reasonable road access and
 - greater than 1 acre in size or
 - classified by BC Assessment as having “Farm” status for property tax assessment or
 - photo interpretation shows signs of agriculture
- 18 parcels outside the ALR but classified by BC Assessment as having “Farm” status for property tax assessment.

The amount of ALR land included in the inventory area is 32,217 hectares located on 1,041 parcels. This is just over 44% of the ALR within the Columbia Valley. There is an additional 10,471 hectares or 14% of the ALR located on 382 parcels which are excluded from the inventory as:

- photo interpretation shows no signs of agriculture and
- less than 1 acre in size or remotely located with limited access.

The remaining 42% of the ALR is excluded from the inventory as it is in Indian reserves, water or foreshore, rights-of-ways, or on unsurveyed Crown land.

Figure 3. Inventory area and Agricultural Land Reserve location map



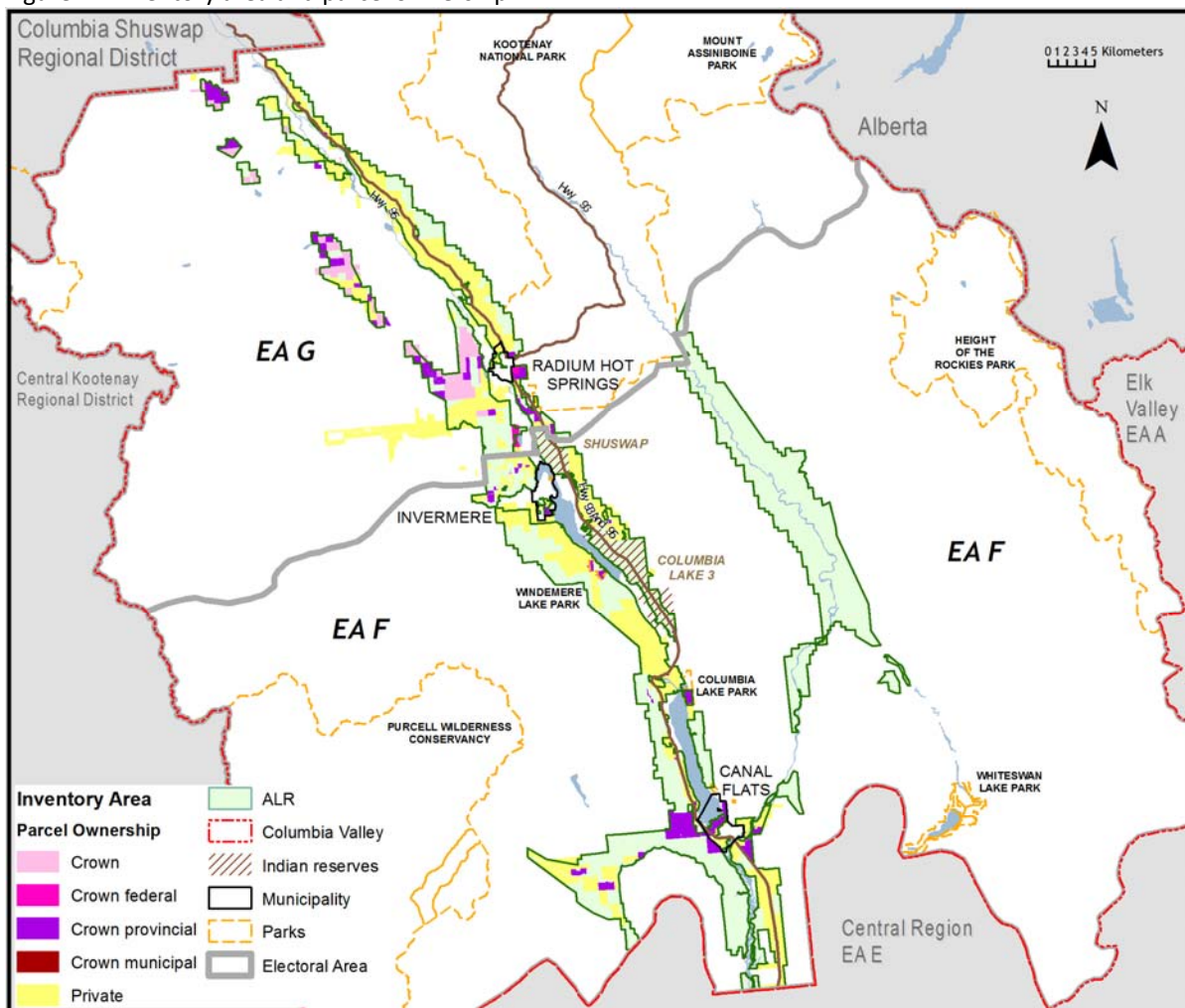
PARCEL OWNERSHIP

Crown ownership includes parcels which are owned by municipal, provincial or federal governments. This report separates Crown owned land from non-Crown owned land because the agricultural activities likely to occur on Crown owned land are limited and may also be subject to specific restrictions, depending on the government entity owning it.

Of the 1,059 parcels surveyed as part of this inventory, 153 are Crown owned with a total area of 12,535 hectares or 28% of the inventory area. The amount of surveyed ALR land in Crown ownership is 8,280 hectares or 26% of the inventoried ALR.

- 57 parcels are Crown owned (federal, provincial or municipal)
 - 5,076 hectares or 12 % of the inventory area
 - 3,536 hectares or almost 11 % of the inventoried ALR
- 7 parcels are federally owned (Indian reserve)
 - 260 hectares or <1 % of the inventory area
 - 171 hectares or <1 % of the inventoried ALR
- 84 parcels are provincially owned (includes TFL14 and Columbia Lake Provincial Park)
 - 7,170 hectares or 16 % of the inventory area
 - 4,550 hectares or 14 % of the inventoried ALR
- 5 parcels are municipally owned (includes Mount View Cemetery)
 - 29 hectares or < 0.1 % of the inventory area
 - 23 hectares or < 0.1 % of the inventoried ALR

Figure 4. Inventory area and parcel ownership



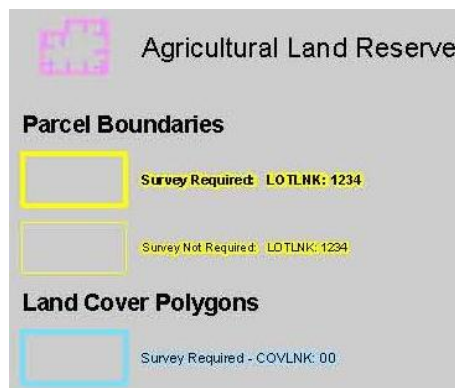
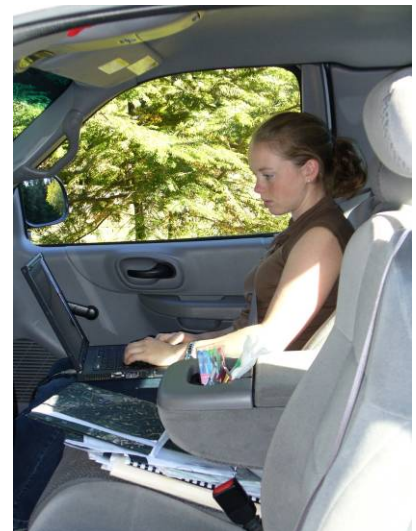
Agricultural Land Use Inventory

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 Columbia Valley land use inventory was conducted in the summer of 2011 by professional agrologists assisted by a field technician provided by Regional District of East Kootenay. The 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)⁵
- 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.



⁵ Cadastre mapping (2011) was provided by the Integrated Cadastral Information Society.

DESCRIPTION OF THE DATA

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.

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.

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:

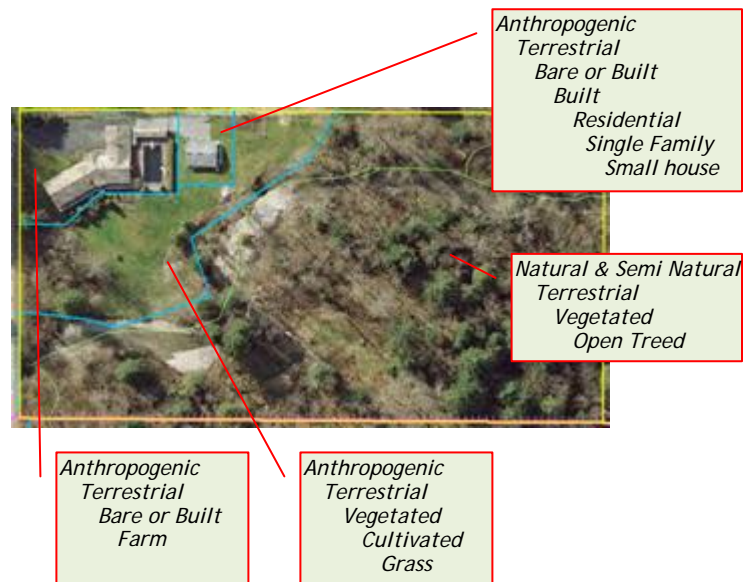
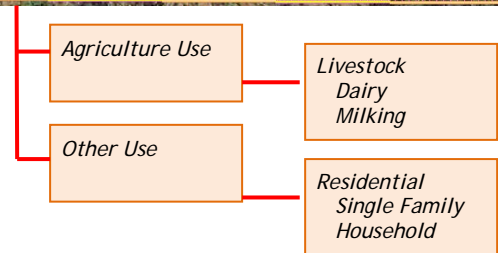
- The actual human use of land and related structures and modifications to the landscape
- Use-related land cover (where land cover implies a use or is important to interpreting patterns of use)
- Declared interests in the land (which may limit use) such as parks.

In addition, the availability of 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.

Land cover:

Land cover refers to the biophysical features of the land (eg. 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 ortho photography. 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.

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.

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 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.

PRESENTATION OF THE DATA

The data is presented in the form of summarized tables and charts. Absolute data values are preserved throughout the summarization process to maintain precision. Data values are rounded to the nearest whole number during the final formatting of the summarized tables and charts. As a result, the summarized tables and charts may not appear to add up correctly.

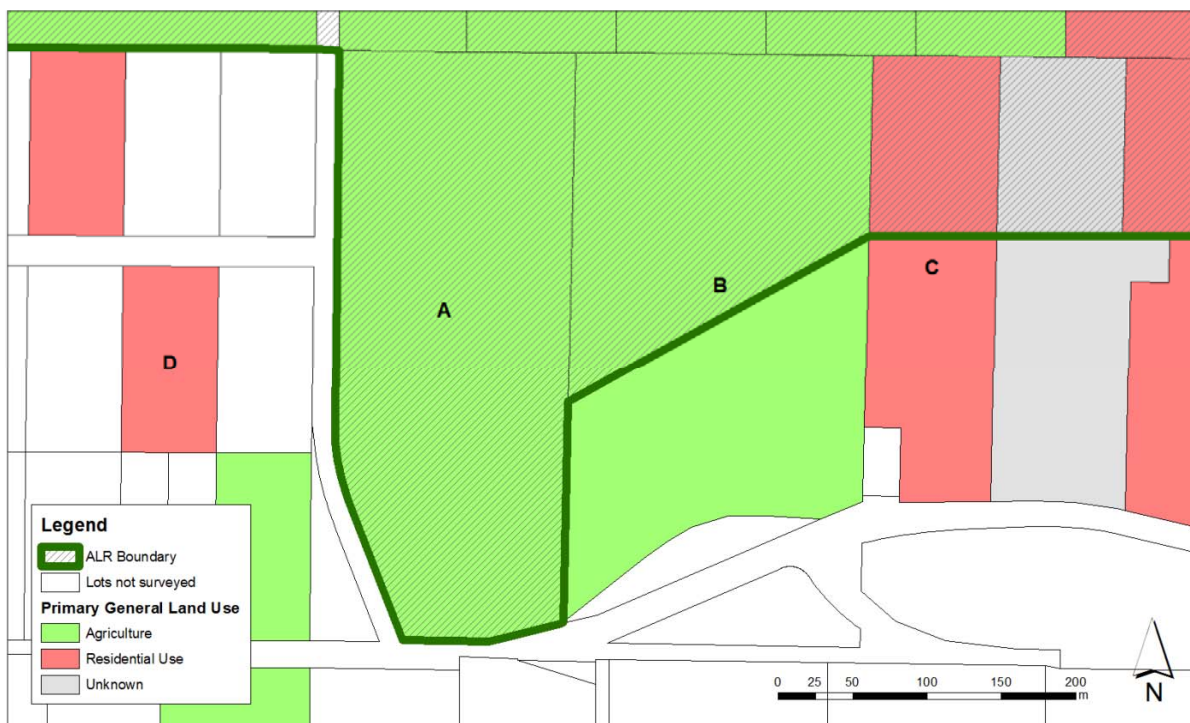
DETERMINATION OF PARCELS WITHIN THE ALR

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

Figure 5 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.

Many of the results presented in this report include 3 separate totals: the total parcel area, the portion of the parcel inside the ALR, and the portion of the parcel outside the ALR.

Figure 5. Parcel inclusion in the ALR



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.

Land use is surveyed by assigning the parcel up to two land uses. Some examples of land use are Residential, Commercial and Industrial. Refer to Section 2 of this report for more information on land use.

Land cover is surveyed by separating the parcel into homogeneous components and assigning each a description such as landscape lawn, natural open treed, anthropogenic wetland, blueberries, road, and small single family house. Most surveyed parcels have numerous different 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 or “Farmed” than land use.

Three 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.

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 fenced areas with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock. These areas are considered “Natural and Semi-natural” and not considered “Farmed” although these usually are 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”.

Table 1. Land cover and farmed area

Land cover		ALR			Outside ALR (ha)	Total area (ha)	% of inventory area	% of inventory area in Crown ownership
		In ALR (ha)	% of ALR	% of ALR in Crown ownership				
Actively farmed	Cultivated field crops	2,295	3%	< 1%	144	2,440	6%	< 1%
	Farm Infrastructure	126	< 1%	< 1%	13	139	< 1%	< 1%
	Greenhouses	1	< 1%	-	<1	1	< 1%	-
Inactively farmed	Unused forage or pasture	64	< 1%	-	45	109	< 1%	-
	Unmaintained field crops	31	< 1%	< 1%	4	35	< 1%	< 1%
FARMED SUBTOTAL		2,517	3%	< 1%	207	2,724	6%	< 1%
Anthropogenic (not farmed)	Managed vegetation	58	< 1%	< 1%	12	70	< 1%	< 1%
	Golf fairway / green23	64	< 1%	-	28	91	< 1%	-
	Non Built or Bare	106	< 1%	< 1%	17	123	< 1%	< 1%
	Residential footprint	150	< 1%	< 1%	29	179	< 1%	< 1%
	Settlement	76	< 1%	< 1%	8	84	< 1%	< 1%
	Transportation	244	< 1%	< 1%	46	290	< 1%	< 1%
	Utilities	<1	< 1%	-	-	<1	< 1%	-
	Built up - Other	7	< 1%	-	<1	8	< 1%	-
	Waterbodies	11	< 1%	< 1%	<1	12	< 1%	< 1%
SUBTOTAL		716	< 1%	< 1%	142	857	2%	< 1%
Natural and Semi natural	Natural pasture or rangeland	15,580	21%	7%	3,263	18,843	43%	13%
	Vegetated	12,237	17%	3%	1,456	13,693	31%	6%
	Wetlands	876	1%	< 1%	909	1,785	4%	< 1%
	Natural bare areas	127	< 1%	< 1%	19	146	< 1%	< 1%
	Waterbodies	103	< 1%	< 1%	56	159	< 1%	< 1%
SUBTOTAL		28,923	40%	11%	5,702	34,625	78%	20%
LAND COVER TOTAL		32,156	44%	11%	6,050	38,206	87%	20%
Unknown land cover		61	< 1%	< 1%	5,843	5,904	13%	8%
PARCEL AREA TOTAL		32,217	44%	11%	11,893	44,110	100%	28%
Not surveyed	Parcels - no access	10,471	14%					
	Indian reserves	3,753	5%					
	Water & foreshore	643	< 1%					
	Rights-of-way	683	< 1%					
	Unsurveyed land	25,316	35%					
SUBTOTAL		40,866	56%					
TOTAL		73,083	100%					

Table 1 shows the extent of different land cover types across the entire inventory area.

In Columbia Valley, 2,724 hectares of land is "Farmed" land cover although 144 of those hectares is "Inactively farmed"; in unused forage, unused pasture, or unmaintained field crops.

When considering both Crown and privately owned land, 40% of the ALR is in natural and semi-natural land cover. Most of this is being used as natural pasture or rangeland. This would probably increase to 89% if all of the ALR had been surveyed as part of this inventory.

About half of the natural and semi-natural land cover is being used as natural pasture or range land.

Refer to Maps B1 and B2 in Appendix B for more information.

Figure 6. Land cover and farmed area in the ALR

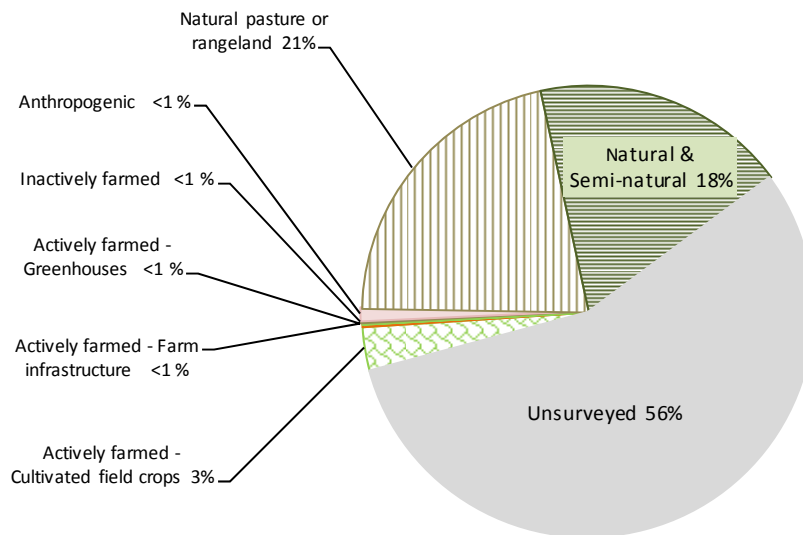


Figure 6 shows the proportions of the different land cover types across the ALR in Columbia Valley.

Of the ALR land in Columbia Valley, 3% is “Actively Farmed” in cultivated field crop.

Twenty-one percent of the ALR is in “Natural pasture or rangeland”, however this would probably increase to over 50% if the grazing licenses on unsurveyed Crown land were included.

Land used in support of farming such as farm residences, vegetative buffers or roadways is not included as “Farmed”.

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. If one parcel is a hotel and the other is a retail store, they are both considered as “Commercial” land use.

Up to two general land uses (e.g. residential, commercial) are recorded for each parcel with each considered an equally important function of the parcel. Evaluation of land uses are based on overall economic importance, the property’s tax status, and/or the extent of the land use.

Parcels where the majority of the parcel area is utilized for farming or parcels which exhibit significant evidence of intensive farming are considered “Used for farming”. For a complete definition of “Used for farming”, refer to the Definitions section of this report.

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

Many parcels “Used for farming” or “Used for grazing” are also used for other purposes such as “Residential” or “Industrial”. This report does not attempt to determine which use is primary.

Privately owned land is reported separately from Crown owned land in this section of the report because the agricultural activities likely to occur on Crown owned land are limited and may also be subject to specific restrictions, depending on the government entity owning it.

Table 2. Parcel ownership

Parcel land use		ALR		Outside ALR (ha)	Total area (ha)	% of inventory area	Number of parcels	% of parcels	Average parcel size (ha)
		In ALR (ha)	% of ALR area						
Surveyed area	PRIVATE OWNERSHIP SUBTOTAL	23,937	33 %	7,639	31,575	72 %	906	86 %	63
	CROWN OWNERSHIP SUBTOTAL	8,280	11 %	4,254	12,535	28 %	153	14 %	62
Not surveyed	Parcels - no access	10,471	14 %						
	Indian reserves	3,753	5 %						
	Water & foreshore	643	<1 %						
	Rights-of-way	683	<1 %						
	Unsurveyed land	25,316	35 %						
	NOT SURVEYED SUBTOTAL	40,866	56 %						
TOTAL		73,083	100 %	11,893	44,110	100 %	1,059	100 %	

Table 2 shows that 44% of region’s ALR area was surveyed as part of the inventory and represents the region’s accessible and operational ALR area. Thirty-three percent is on privately owned parcels while 11% is on Crown (municipal, provincial, or federal) owned parcels.

Fourteen percent of the region’s ALR area is on parcels with no signs of agriculture (based on air photo interpretation) and less than one acre in size or remotely located with limited access.

Refer to Map B3 in Appendix B for more information.

PRIVATELY OWNED PARCELS

Table 3. Land use and farming use by parcel – Private ownership

Privately owned parcels Land use		ALR		Outside ALR (ha)	Total area (ha)	% of inventory area	Number of parcels	% of parcels	Average parcel size (ha)
		In ALR (ha)	% of ALR area						
Used only for farming - no other use		1,908	3 %	622	2,531	6 %	52	5 %	49
Used for farming - Mixed use	Residential	2,963	4 %	205	3,168	7 %	89	8 %	36
	Gravel extraction	207	<1 %	4	211	<1 %	3	<1 %	70
	Wildlife management	155	<1 %	8	163	<1 %	3	<1 %	54
	Recreation & leisure - intensive	72	<1 %	29	101	<1 %	1	<1 %	101
	Recreation & leisure - golf	55	<1 %	< 1	55	<1 %	1	<1 %	55
	Transportation & communications	41	<1 %	10	50	<1 %	2	<1 %	25
	Industrial	32	<1 %	< 1	32	<1 %	1	<1 %	32
	Commercial & service	8	<1 %	-	8	<1 %	1	<1 %	8
USED FOR FARMING SUBTOTAL		5,441	7 %	878	6,319	14 %	153	14 %	
Used only for grazing - no other use		5,484	8 %	3,280	8,764	20 %	68	6 %	129
Used for grazing - Mixed use	Residential	1,880	3 %	499	2,379	5 %	75	7 %	32
	Wildlife management	1,684	2 %	6	1,690	4 %	3	<1 %	563
	Transportation & communications	112	<1 %	< 1	112	<1 %	1	<1 %	112
	Land in transition	51	<1 %	-	51	<1 %	1	<1 %	51
USED FOR GRAZING SUBTOTAL		9,210	13 %	3,785	12,996	29 %	148	14 %	
Not used for farming or grazing	No apparent use	3,709	5 %	849	4,559	10 %	188	18 %	24
	Wildlife management	2,553	3 %	1,720	4,272	10 %	14	1 %	305
	Residential	2,133	3 %	81	2,214	5 %	343	32 %	6
	Gravel extraction	234	<1 %	< 1	234	<1 %	5	<1 %	47
	Utilities	146	<1 %	70	217	<1 %	4	<1 %	54
	Recreation & leisure - golf	100	<1 %	49	149	<1 %	4	<1 %	37
	Industrial	95	<1 %	11	107	<1 %	5	<1 %	21
	Land in transition	86	<1 %	13	99	<1 %	4	<1 %	25
	Recreation & leisure - extensive	54	<1 %	< 1	54	<1 %	10	<1 %	5
	Mineral, Petroleum extraction	47	<1 %	< 1	47	<1 %	1	<1 %	47
	Transportation - airport	29	<1 %	< 1	29	<1 %	1	<1 %	29
	Protected area / park / reserve	28	<1 %	< 1	28	<1 %	1	<1 %	28
	Transportation & communications	28	<1 %	76	103	<1 %	10	<1 %	10
	Commercial & service	23	<1 %	< 1	23	<1 %	8	<1 %	3
	Recreation & leisure - intensive	17	<1 %	55	72	<1 %	4	<1 %	18
	Forestry	1	<1 %	51	53	<1 %	1	<1 %	53
	Institutional, community	< 1	<1 %	-	< 1	<1 %	2	<1 %	< 1
NOT USED FOR FARMING/GRAZING SUBTOTAL		9,286	13 %	2,975	12,261	28 %	605	57 %	
TOTAL		23,937	33 %	7,639	31,575	72 %	906	86 %	

Table 3 shows that only 153 privately owned parcels are “Used for farming” and 148 are “Used for grazing”. Many “Used for farming” parcels are also used for other purposes with only 52 parcels “Used only for farming – no other use”.

The “Used for farming – Mixed use” parcels include Coy’s Dutch Creek Ranch with “Recreation & leisure – golf”; Spillimacheen Festival Grounds with “Recreation & leisure – intensive”; Happy Dog Farm with “Commercial & service”; Columbia Wetlands Wildlife Management Area (2 parcels) and Columbia River Wetlands Conservation Area (1 parcel) with “Wildlife management”.

The “Used for grazing – Mixed use” parcels include Columbia Wetlands Wildlife Management Area (2 parcels) and Kootenay River Ranch Conservation Area (1 parcel).

Table 3 continued.

Parcels "Not used for farming or grazing" include Dry Gulch Provincial Park; Spur Valley Resort (1 parcel with 24 hectares in the ALR) with "Recreation & leisure – golf"; Lake Windermere Rod and Gun Club (1 parcel with 5 hectares in the ALR) with "Recreation & leisure – extensive"; G-P Gypsum, Canfor Mill, Brisco Wood Preservers, and Scandia Concrete (4 parcels with 87 hectares in the ALR) with "Industrial"; Elk Park Ranch parcel (1 parcel with 70 hectares in the ALR) transitioning to a residential development.

Table 3 above shows that "Wildlife management" is a significant use of Columbia Valley ALR on privately owned parcels. In total, the Columbia Wetlands Wildlife Management Area (BC), Columbia River Wetlands Conservation Area (DU), Kootenay River Ranch Conservation Area (NC), Lake Enid Conservation Site (DU), RCMP Flats (TNT), Hoodoo (NT), Dutch Creek Hoodoos (NC), and Rolling Rock Ranch occupy 4,391 hectares of privately owned ALR land with only 155 hectares or 3.5% "Used for farming".

Refer to Maps B3 and B4 in Appendix B for more information.

Table 4. Parcel use and cover of land in the ALR – Private ownership

Privately owned parcels Land use		Land Cover Category						Total		
		Farmed *		Anthropogenic (not farmed)		Natural & Semi - natural				Unknown
		In ALR (ha)	% of ALR area	In ALR (ha)	% of ALR area	In ALR (ha)	% of ALR area	In ALR (ha)	In ALR (ha)	% of ALR area
Used only for farming - no other use		747	1 %	11	<1 %	1,150	2 %	-	1,908	3 %
Used for farming - Mixed use	Residential	1,231	2 %	50	<1 %	1,682	2 %	-	2,963	4 %
	Gravel extraction	82	<1 %	8	<1 %	117	<1 %	-	207	<1 %
	Wildlife management	72	<1 %	< 1	<1 %	82	<1 %	-	155	<1 %
	Recreation & leisure - intensive	8	<1 %	3	<1 %	60	<1 %	-	72	<1 %
	Recreation & leisure - golf	19	<1 %	15	<1 %	22	<1 %	-	55	<1 %
	Transportation & communications	18	<1 %	< 1	<1 %	23	<1 %	-	41	<1 %
	Industrial	10	<1 %	< 1	<1 %	21	<1 %	-	32	<1 %
	Commercial & service	7	<1 %	< 1	<1 %	-	-	-	8	<1 %
USED FOR FARMING SUBTOTAL		2,194	3 %	88	<1 %	3,157	4 %	-	5,441	7 %
Used only for grazing - no other use		11	<1 %	27	<1 %	5,446	7 %	<1 %	5,484	8 %
Used for grazing - Mixed use	Residential	82	<1 %	39	<1 %	1,759	2 %	-	1,880	3 %
	Wildlife management	< 1	<1 %	< 1	<1 %	1,683	2 %	-	1,684	2 %
	Transportation & communications	-	-	3	<1 %	109	<1 %	-	112	<1 %
	Land in transition	-	-	< 1	<1 %	50	<1 %	-	51	<1 %
USED FOR GRAZING SUBTOTAL		93	<1 %	70	<1 %	9,047	12 %	<1 %	9,210	13 %
USED FOR FARMING OR GRAZING SUBTOTAL		2,288	3 %	158	<1 %	12,205	17 %	<1 %	14,651	20 %
Not used for farming or grazing		209	<1 %	385	2 %	8,692	12 %	<1 %	9,286	13 %
		TOTAL ALR							23,937	33 %

* Some parcels that are not farmed have "Farmed" land cover however the extent or intensity is insufficient for the parcel to be considered "Used for farming". For a complete definition of "Used for farming", refer to the Definition section of this report.

Table 4 combines land use and ALR land cover on privately owned parcels that were surveyed as part of this land use inventory. For example, privately owned parcels with the mixed use "Used for farming" and "Residential" have a total of 1,231 hectares of ALR in "Farmed" land cover, 50 hectares of ALR in Anthropogenic (not farmed) land cover, and 1,682 hectares of ALR in Natural & Semi-natural land cover. Although 5,441 hectares or 7% of ALR is on privately owned parcels "Used for farming" (Refer to Table 3 above), only 2,194 hectares or 3% is actually in "Farmed" land cover as many "Used for farming" parcels are also used for other purposes.

CROWN OWNED PARCELS

Table 5. Land use and farming use by parcel – Crown ownership

Crown owned parcels Land use		ALR		Outside ALR (ha)	Total area (ha)	% of inventory area	Number of parcels	% of parcels	Average parcel size (ha)
		In ALR (ha)	% of ALR area						
Used only for farming - no other use		-	-	-	-	-	-	-	-
Mixed use	Utilities	4	<1 %	-	4	<1 %	1	<1 %	4
USED FOR FARMING SUBTOTAL		4	<1 %	-	4	<1 %	1	<1 %	
Used only for grazing - no other use		4,460	6 %	2,178	6,638	15 %	67	6 %	99
Used for grazing - Mixed use	Wildlife management	954	1 %	6	960	2 %	4	<1 %	240
	Dumps & deposits	77	<1 %	< 1	77	<1 %	2	<1 %	39
	Recreation & leisure - extensive	65	<1 %	< 1	65	<1 %	1	<1 %	65
	Utilities	65	<1 %	-	65	<1 %	4	<1 %	16
	Transportation & communications	47	<1 %	5	52	<1 %	1	<1 %	52
	Gravel extraction	13	<1 %	< 1	13	<1 %	1	<1 %	13
USED FOR GRAZING SUBTOTAL		5,681	8 %	2,189	7,870	18 %	80	8 %	
Not used for farming or grazing	No apparent use	1,028	1 %	1,639	2,667	6 %	36	3 %	74
	Forestry	545	<1 %	300	845	2 %	6	<1 %	141
	Wildlife management	336	<1 %	120	456	1 %	9	<1 %	51
	Protected area / park / reserve	241	<1 %	1	243	<1 %	3	<1 %	81
	Resource protection & research	229	<1 %	< 1	229	<1 %	4	<1 %	57
	Gravel extraction	107	<1 %	< 1	107	<1 %	2	<1 %	53
	Residential	58	<1 %	-	58	<1 %	1	<1 %	58
	Garbage dumps	23	<1 %	-	23	<1 %	1	<1 %	23
	Utilities	20	<1 %	5	25	<1 %	6	<1 %	4
	Transportation - airport	4	<1 %	< 1	4	<1 %	1	<1 %	4
	Institutional, community	4	<1 %	< 1	4	<1 %	1	<1 %	4
	Transportation & communications	< 1	<1 %	-	< 1	<1 %	2	<1 %	< 1
NOT USED FOR FARMING/GRAZING SUBTOTAL		2,595	4 %	2,065	4,660	11 %	72	7 %	
TOTAL		8,280	11 %	4,254	12,535	28 %	153	14 %	

Table 5 details land use on Crown owned parcels that were surveyed as part of this land use inventory. In total, only 4 hectares of Columbia Valley's ALR is on Crown owned parcels "Used for farming". All 4 hectares are on one mixed use utility parcel with Crown municipal ownership.

Many parcels "Used for grazing" have other uses as well. These parcels include Thornhill Ranch Conservation Area (NCC); Village of Radium Water Storage Facility; Village of Radium Water Treatment Facility; and Ruach Homestead Heritage Shooting Range.

Parcels "Not used for farming or grazing" include Windermere Lake Provincial Park (2 parcels with 108 hectares of ALR land); Columbia Lake Provincial Park (1 parcel with 133 hectares of ALR land); TFL14 as "Forestry" (6 parcels with 545 hectares of ALR); RDEK landfill as "Garbage dumps"; RDEK Transfer Station as "Utilities" (1 parcel with 5 hectares of ALR land); Old waste water treatment facility as "Utilities" (1 parcel with 8 hectares of ALR land); Mount View Cemetery as "Institutional, community".

"Wildlife management" is a significant use of Columbia Valley ALR on Crown owned parcels. In total, the Columbia Wetlands Wildlife Management Area (BC), East Columbia Lake (BC); Columbia River Wetlands – Wilmer (CWS), and Thunderhill Ranch Conservation Area (NCC) occupy 1,290 hectares of Crown owned ALR land with none "Used for farming". A further 97 hectares of ALR land is on Columbia Wetlands Wildlife Management Area (BC) also used for "Gravel extraction".

Refer to Maps B3 and B5 in Appendix B for more information.

Table 6. Parcel use and cover of land in the ALR – Crown ownership

Crown ownership parcels Land use		Land Cover Category						Total		
		Farmed *		Anthropogenic (not farmed)		Natural & Semi - natural				Unknown
		In ALR (ha)	% of ALR area	In ALR (ha)	% of ALR area	In ALR (ha)	% of ALR area	In ALR (ha)	In ALR (ha)	% of ALR area
Used only for farming - no other use		-	-	-	-	-	-	-	-	-
Mixed use	Utilities	2	<1 %	2	<1 %	-	-	-	4	<1 %
USED FOR FARMING SUBTOTAL		2	<1 %	2	<1 %	-	-	-	4	<1 %
Used only for grazing - no other use		4	<1 %	63	<1 %	4,332	6 %	61	4,460	6 %
Used for grazing - Mixed use	Wildlife management	-	-	5	<1 %	949	1 %	-	954	1 %
	Dumps & deposits	-	-	6	<1 %	72	<1 %	-	77	<1 %
	Recreation & leisure - extensive	-	-	2	<1 %	-	-	-	65	<1 %
	Utilities	1	<1 %	3	<1 %	-	-	-	65	<1 %
	Transportation & communications	-	-	28	<1 %	19	<1 %	-	47	<1 %
	Gravel extraction	-	-	7	<1 %	6	<1 %	-	13	<1 %
USED FOR GRAZING SUBTOTAL		5	<1 %	115	<1 %	5,378	7 %	61	5,681	8 %
USED FOR FARMING OR GRAZING SUBTOTAL		7	<1 %	117	<1 %	5,378	7 %	61	5,685	8 %
Not used for farming or grazing		13	<1 %	56	<1 %	2,526	3 %	< 1	2,595	4 %
TOTAL ALR								8,280	11 %	

* Some parcels that are not farmed have "Farmed" land cover however the extent or intensity is insufficient for the parcel to be considered "Used for farming". For a complete definition of "Used for farming", refer to the Definition section of this report.

Table 6 combines land use and land cover on Crown owned ALR land surveyed as part of this inventory. For example, Crown owned parcels with mixed use; "Used for farming" and "Utilities"; have a total of 2 hectares of ALR in "Farmed" land cover, and 2 hectares of ALR in Anthropogenic (not farmed) land cover.

Table 6 shows that there is very little "Farmed" or Anthropogenic land cover on Crown owned ALR.

3. Availability of Land for Farming

The demand for locally grown agricultural products is anticipated to grow as the population grows ⁶. This demand along with a number of other factors, such as commodity types and farm management requirements (nutrient management, bio-security), will influence agricultural land needs in the future. Growth in extensive agriculture sectors such as dairy or berry will require large increases in land base which may not be available. Future agriculture growth may come from new commodity types and intensifying land use rather than finding new land for development.

The analysis of the availability of land for farming examines how much land is available for farming, has the potential to be farmed, and the characteristics of this land.

Properties currently “Used for farming” or with some agriculture present are considered available for farming regardless of any existing non-farm use. In addition, properties with an existing use compatible with agriculture, such as Residential, are considered available for farming since the existing land use can be maintained.

Properties not currently farmed with an established non-farm use that is incompatible with agriculture are considered unavailable for farming. These properties also have very high land values making it unrealistic for a farmer to acquire and convert this land to farmland.

Land is further assessed for its farming potential based on physical and environmental characteristics. Only areas in natural and semi-natural vegetation, areas in managed vegetation (managed for landscaping, dust or soil control), and non-built or bare areas are considered to have potential for farming. Areas covered with built structures, steep slopes or rocky soils and areas with operational constraints such as very small size are considered to have limited potential for farming. For this analysis, it is assumed that removing built structures and fill piles, filling in water bodies or remediating slopes to create land with potential for farming would likely not occur.

⁶ 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 7. Status of the land base with respect to farming

Land status		ALR			Outside ALR (ha)	Total area (ha)	% inventory area	% inventory area Crown owned
		In ALR (ha)	% ALR Area	% ALR Area Crown owned				
Actively farmed	Cultivated field crops	2,295	3 %	<1 %	144	2,440	6 %	<1 %
	Farm Infrastructure	126	<1 %	<1 %	13	139	<1 %	<1 %
	Greenhouses	1	<1 %	-	< 1	1	<1 %	-
ACTIVELY FARMED		2,422	3 %	<1 %	157	2,580	6 %	<1 %
Anthropogenic areas supporting farming	Residential footprint	30	<1 %	-	< 1	30	<1 %	-
	Transportation	17	<1 %	-	< 1	17	<1 %	-
	Built up - Other	3	<1 %	-	< 1	3	<1 %	-
	Artificial Waterbodies	2	<1 %	-	< 1	2	<1 %	-
SUPPORTING FARMING		51	<1 %	-	< 1	52	<1 %	-
Unavailable for farming due to existing land use	Wildlife management	3,999	5 %	<1 %	1,732	5,731	13 %	1 %
	Resource protection & research	229	<1 %	<1 %	< 1	229	<1 %	<1 %
	Protected area / park / reserve	222	<1 %	<1 %	1	223	<1 %	<1 %
	Recreation & leisure - golf	104	<1 %	-	49	153	<1 %	-
	Gravel extraction	97	<1 %	<1 %	< 1	97	<1 %	<1 %
	Land in transition	70	<1 %	-	< 1	70	<1 %	-
	Transportation & communications	27	<1 %	<1 %	75	102	<1 %	<1 %
	Garbage dumps	23	<1 %	<1 %	< 1	23	<1 %	<1 %
	Residential	14	<1 %	-	< 1	15	<1 %	-
	Utilities	5	<1 %	<1 %	< 1	5	<1 %	<1 %
	Recreation & leisure - intensive	4	<1 %	-	< 1	4	<1 %	-
	Transportation - airport	4	<1 %	<1 %	< 1	4	<1 %	<1 %
	Commercial & service	3	<1 %	-	< 1	3	<1 %	-
	Institutional, community	< 1	<1 %	-	-	< 1	<1 %	-
	Industrial	< 1	<1 %	-	< 1	< 1	<1 %	-
Unavailable for farming due to existing land cover	Waterbodies & wetlands	894	1 %	<1 %	866	1,759	4 %	<1 %
	Transportation	189	<1 %	<1 %	19	208	<1 %	<1 %
	Residential footprint	108	<1 %	<1 %	23	130	<1 %	<1 %
	Natural bare areas	98	<1 %	<1 %	18	115	<1 %	<1 %
	Built up - Other	75	<1 %	<1 %	8	83	<1 %	<1 %
UNAVAILABLE FOR FARMING		6,166	8 %	2 %	2,792	8,957	20 %	3 %
Site limitations - used for grazing	Soils &/or topography	5,275	7 %	3 %	1,257	6,532	15 %	4 %
	Operational	25	<1 %	<1 %	< 1	25	<1 %	<1 %
	Flooding &/or drainage	7	<1 %	-	40	46	<1 %	-
Site limitations (may have grazing potential)	Soils &/or topography	3,713	5 %	<1 %	555	4,268	10 %	<1 %
	Operational	105	<1 %	<1 %	43	148	<1 %	<1 %
	Flooding &/or drainage	3	<1 %	-	3	6	<1 %	-
LIMITED POTENTIAL FOR FARMING		9,128	12 %	3 %	1,898	11,025	25 %	5 %
Available & with potential for farming	Natural pasture or rangeland	8,926	12 %	5 %	1,966	10,892	25 %	8 %
	Natural & Semi-natural - Vegetation	5,330	7 %	2 %	791	6,120	14 %	3 %
	Unused forage or pasture	64	<1 %	-	45	109	<1 %	-
	Anthropogenic - Managed vegetation	37	<1 %	<1 %	6	43	<1 %	<1 %
	Unmaintained field crops	29	<1 %	<1 %	4	33	<1 %	<1 %
	Anthropogenic - Non Built or Bare	3	<1 %	<1 %	< 1	3	<1 %	<1 %
AVAILABLE & WITH POTENTIAL FOR FARMING		14,389	20 %	7 %	2,811	17,200	39 %	12 %
Availability and potential is unknown		61	<1 %	<1 %	4,235	4,296	10 %	8 %
TOTAL		32,217	44 %	11 %	11,893	44,110	100 %	28 %
Not surveyed	Parcels - no access	10,471	14 %					
	Indian reserves	3,753	5 %					
	Water & foreshore	643	<1 %					
	Rights-of-way	683	<1 %					
	Unsurveyed land	25,316	35 %					
SUBTOTAL		40,866	56 %					
TOTAL		73,083	100 %					

Table 7 shows that 3% of the ALR is actively farmed, 8% is unavailable for farming, 12% has limited potential for farming, and 20% is available and has potential for farming. The remaining 56% was not surveyed as part of this inventory as it is inaccessible or not suitable for farming. Refer to Map B6 in Appendix B for more information.

Figure 7. Availability and potential of ALR lands for farming

Columbia Valley

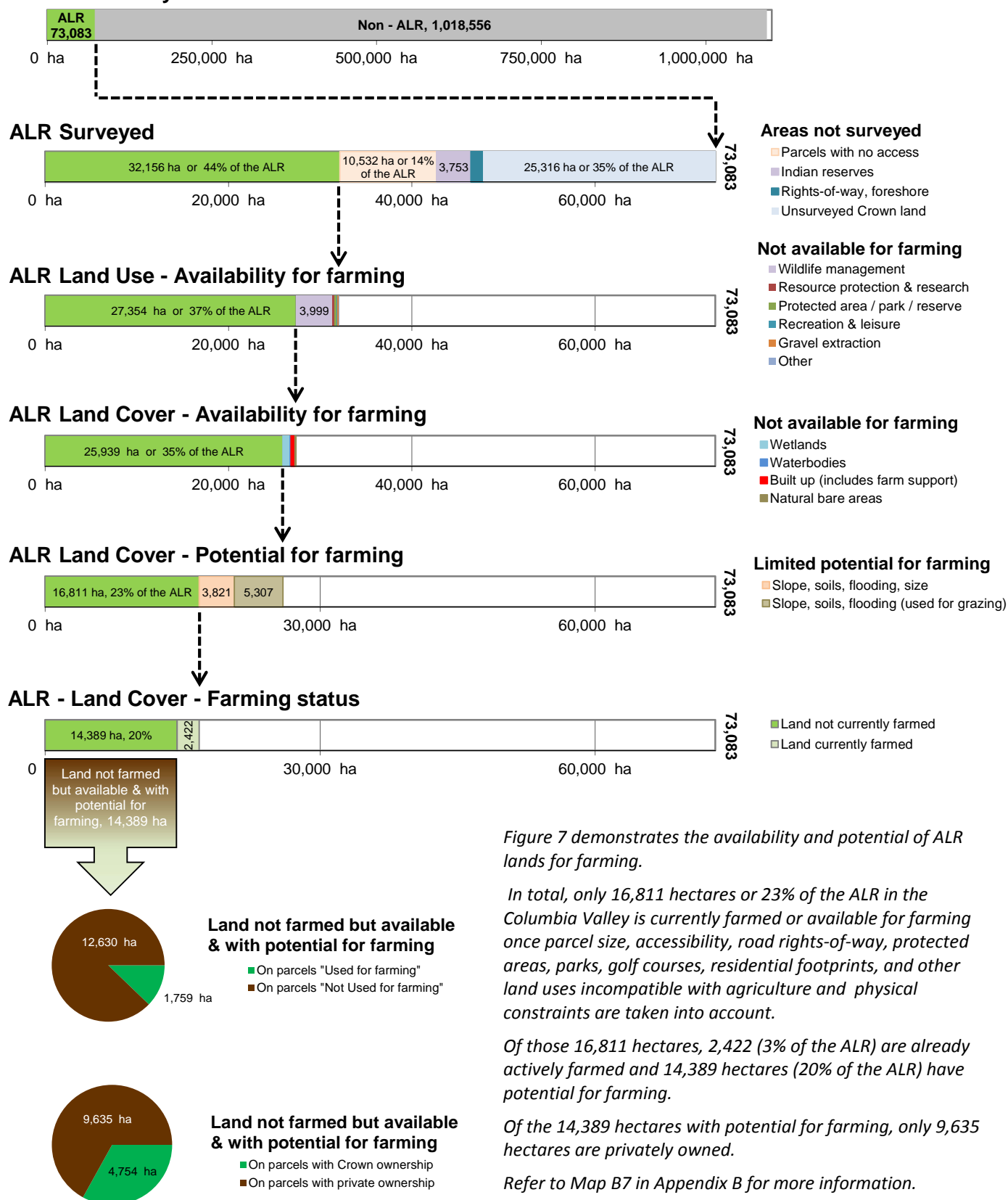


Figure 7 demonstrates the availability and potential of ALR lands for farming.

In total, only 16,811 hectares or 23% of the ALR in the Columbia Valley is currently farmed or available for farming once parcel size, accessibility, road rights-of-way, protected areas, parks, golf courses, residential footprints, and other land uses incompatible with agriculture and physical constraints are taken into account.

Of those 16,811 hectares, 2,422 (3% of the ALR) are already actively farmed and 14,389 hectares (20% of the ALR) have potential for farming.

Of the 14,389 hectares with potential for farming, only 9,635 hectares are privately owned.

Refer to Map B7 in Appendix B for more information.

CHARACTERISTICS OF NOT FARMED BUT AVAILABLE ALR LANDS

The potential for future agriculture expansion is affected by the size of the area available. Small areas can effectively be used for some intensive agricultural operations such as mushrooms, floriculture, greenhouses, poultry, and container nurseries. Small areas are also suitable for start-up farmers, horse enthusiasts, farmers testing new technologies, or established farmers wanting to expand through leases. Despite these opportunities, small areas provide fewer farming choices than large lots. They specifically exclude dairy, hogs, and vegetable greenhouses. For example, a dairy cow produces sufficient manure per year to fertilize 0.4 hectares of forage production which means a dairy operation consisting of 50 cows would require access to 20 hectares of land. Without sufficient land area to utilize the manure as a fertilizer, the dairy operation would have to find other, more expensive, methods to handle the manure produced on the farm.

On Parcels “Used for farming”

Parcels currently “Used for farming” do not always utilize 100% of their land area. Land not farmed but available and with potential for farming can offer opportunities to expand farming activities on parcels already “Used for farming”.

Table 8. Land use and cover on parcels “Used for farming” with land available for farming but not farmed

Mixed land use on “Used for farming” parcels	Parcel Ownership	Number of parcels	Land not farmed but with potential for farming			Land currently farmed			% potential increase to total ALR farmed area
			In ALR (ha)	Outside ALR (ha)	Total area (ha)	In ALR (ha)	Outside ALR (ha)	Total area (ha)	
Used only for farming - no other use	PRIVATE	42	696	155	852	716	94	810	29 %
Residential		66	943	28	971	1,065	26	1,091	39 %
Gravel extraction		3	40	-	40	82	-	82	2 %
Transportation & communications		2	23	< 1	23	18	-	18	<1 %
Industrial		1	20	< 1	20	10	< 1	10	<1 %
Wildlife management		3	20	< 1	20	72	< 1	72	<1 %
Recreation & leisure - intensive		1	16	< 1	16	8	-	8	<1 %
Commercial & service		1	< 1	< 1	< 1	2	-	2	<1 %
TOTAL		119	1,759	183	1,941	1,973	120	2,093	73 %

Table 8 demonstrates that the largest potential increase in farmed land on parcels that are already “Used for farming” could come from privately owned properties that are used only for farming or currently have “Residential” use. This includes Brisco Enterprises, Bugaboo Ranch, Firlands Ranch, Hidden Valley Ranch, J2 Ranch, River Bend Ranch, Rock-A-Boo Ranch, Swansea Ranch, SRL K-2 Ranch, Wilfley Holdings Ltd., and Win-Valley Gardens.

There is also some potential on Coy’s Dutch Creek Ranch, Columbia River Wetlands Conservation Area (Ducks Unlimited), Thunderhill Ranch Conservation Area (Nature Conservancy of Canada), and the Spillimacheen Festival Grounds.

There is no potential to increase agriculture on Crown owned parcels currently “Used for farming”.

Figure 8. Land cover available for farming but not farmed on parcels
“Used for farming”

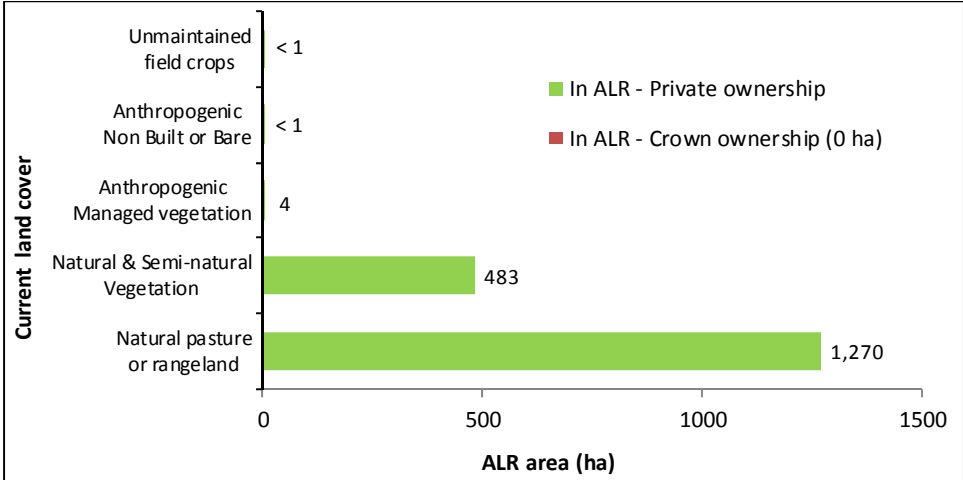


Figure 8 indicates that privately owned land currently in natural pasture or rangeland would offer the greatest gains in farming production on parcels that are already “Used for farming”. These gains in farming would have to be measured against the loss of natural pasture or rangeland. Converting non grazed “Natural & Semi-natural Vegetation” to farming may be better supported by the ranchers in the area.

On Parcels “Not Used for Farming”

Table 9. Land use and cover on parcels “Not Used for farming” with land available for farming

Parcel Ownership	Parcel Land use		Number of parcels	Land not farmed but with potential for farming			% potential increase to total ALR farmed area
				In ALR (ha)	Outside ALR (ha)	Total area (ha)	
Private	Used for grazing only - no other use		49	3,025	1,330	4,356	125 %
	Used for grazing - Mixed use	Residential	67	1,063	372	1,434	44 %
		Transportation & communications	1	104	<1	104	4 %
		Wildlife management	2	94	<1	95	4 %
		SUBTOTAL		119	4,286	1,702	5,989
		No apparent use	127	2,049	388	2,437	85 %
		Residential	215	1,150	10	1,161	47 %
		Gravel extraction	2	148	<1	148	6 %
		Utilities	4	55	57	112	2 %
		Recreation & leisure - extensive	10	47	<1	47	2 %
		Mineral, Petroleum extraction	1	45	-	45	2 %
		Industrial	3	30	4	34	1 %
		Land in transition	3	16	10	26	<1 %
		Commercial & service	2	13	<1	13	<1 %
		Transportation - airport	1	13	<1	13	<1 %
		Recreation & leisure - intensive	2	11	38	49	<1 %
		Wildlife management	3	10	<1	10	<1 %
		Recreation & leisure - golf	1	1	<1	1	<1 %
		Forestry	1	1	37	38	<1 %
	SUBTOTAL		375	3,590	544	4,135	148 %
TOTAL PRIVATELY OWNED ALR			494	7,877	2,247	10,123	325 %
Crown	Used for grazing only - no other use		57	3,204	260	3,463	132 %
	Used for grazing - Mixed use	Recreation & leisure - extensive	1	62	<1	62	3 %
		Utilities	4	61	-	61	3 %
		Wildlife management	2	9	-	9	<1 %
		Transportation & communications	1	7	5	13	<1 %
		Gravel extraction	1	6	-	6	<1 %
	SUBTOTAL		66	3,350	265	3,614	138 %
		No apparent use	28	795	57	852	33 %
		Forestry	6	534	57	591	22 %
		Residential	1	56	-	56	2 %
		Utilities	2	10	2	12	<1 %
		Gravel extraction	1	5	-	5	<1 %
		Institutional, community	1	4	<1	4	<1 %
	SUBTOTAL		39	1,404	117	1,521	58 %
TOTAL CROWN OWNED ALR			105	4,754	382	5,135	196 %
TOTAL			599	12,630	2,628	15,258	521 %

Table 9 illustrates that for parcels currently “Not used for farming”, the greatest potential for increasing actively farmed land could come from Crown owned parcels that are currently being “Used only for grazing – no other use” followed by privately owned parcels that are currently being “Used only for grazing – no other use”. Parcels used for “Wildlife management” are held by conservation groups who are intentionally leaving parcels fallow. In some cases, this is historical farm land.

It is important to note that all potential increases to the area of actively farmed land would require sufficient water to be available for irrigation. Actual water availability is beyond the scope of this report.

Figure 9. Land cover available for farming but not farmed on parcels
“Not used for farming”

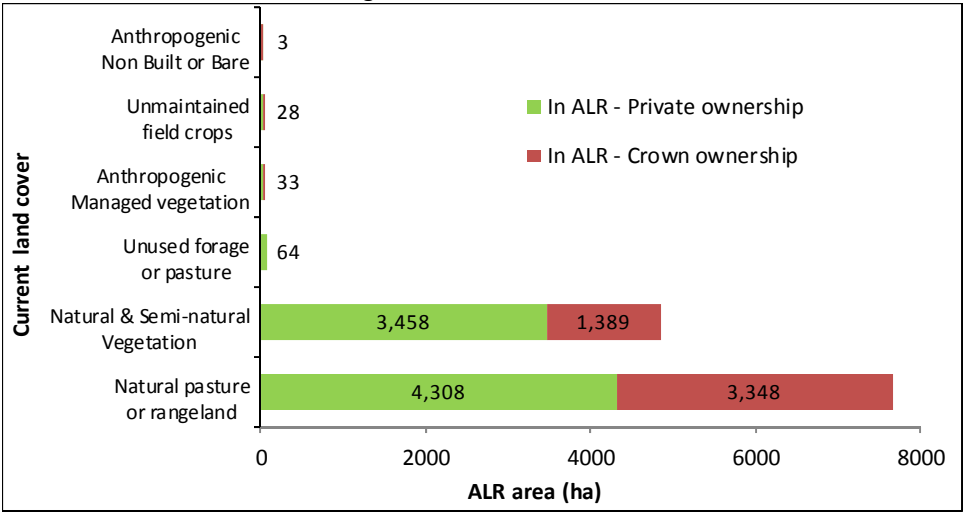


Figure 9 indicates that developing privately owned and Crown owned land currently used for natural pasture or rangeland would provide the greatest gains in farmed land on parcels currently “Not used for farming”. These gains in farming would have to be measured against the loss of natural pasture or rangeland.

Converting non grazed “Natural & Semi-natural Vegetation” to farming may be better supported by the ranchers in the area.

Figure 10. Size of areas available for farming but not farmed on privately owned parcels “Not used for farming”

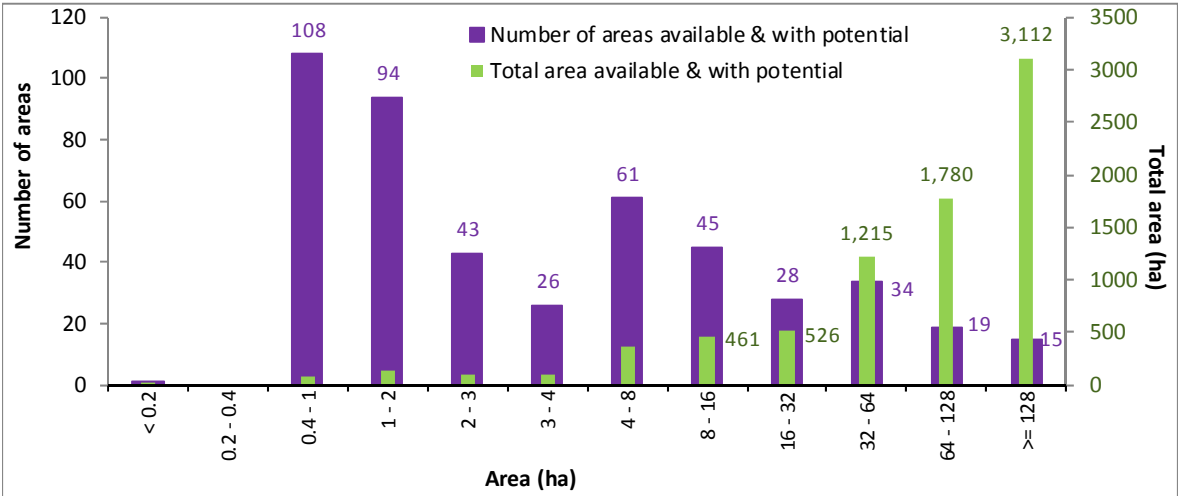


Figure 10 demonstrates that 57% of the privately owned parcels with land available for farming are smaller than 4 hectares, only 43% are larger than 4 hectares, and only 14% are larger than 32 hectares. The smaller the area, the fewer options are available to efficiently farm.

Larger areas provide the widest range of options for bringing the area into farming production. In Columbia Valley, there are only 68 parcels with a combined area of 6,107 hectares that are available and with potential for farming that are greater than 32 hectares in size. Included are parcels associated with TFL 14, Rock-A-Boo Ranches, Firlands Ranch, Dutch Creek Resort, Rolling Rock Ranch, Canfor Mill, and Invermere Water Treatment Facility.

4. Farming Activities

CULTIVATED FIELD CROPS

Cultivated field crops are captured in a geographical information system at the field or land cover polygon level by crop type (forage or pasture, vegetables, nursery, etc.). Each crop type is then summarized to total land area and evaluated for field size characteristics.

Included with cultivated field crops is fallow farm land, inactively farmed land (i.e. forage or pasture crops which have not been harvested or grazed this season) 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 in the survey season. Excluded are crops grown in crop cover structures such as greenhouses or mushroom barns.

Cultivated field crops in Columbia Valley are described by seven crop groupings:

- **Forage, pasture:** grass, legumes, forage corn
- **Grains, cereals, oilseeds:** barley, oats, canola
- **Vegetables:** mixed vegetables, potatoes
- **Berries:** strawberries and unknown type
- **Ornamentals and shrubs**
- **Trees (plantation)**
- **Fallow land:** cultivated land that has not been seeded or planted for one or more growing seasons

Table 10. Main field crop types by area

Type	ALR			Outside ALR (ha)	Total area (ha)	% of cultivated land	% of cultivated land in Crown ownership
	In ALR (ha)	% of ALR	% of ALR in Crown ownership				
Forage, pasture	2,228	3%	< 1%	187	2,415	93%	< 1%
Grains, cereals, oilseeds	154	< 1%	-	5	160	6%	-
Vegetables	3	< 1%	-	1	4	< 1%	-
Berries	3	< 1%	-	-	3	< 1%	-
Ornamentals and shrubs	< 1	< 1%	-	< 1	< 1	< 1%	-
Trees (plantation)	< 1	< 1%	-	-	< 1	< 1%	-
Fallow land	-	-	-	< 1	< 1	< 1%	-
TOTAL	2,390	3%	< 1%	194	2,584	100%	< 1%

Table 10 shows the 6 main field crop types produced on the 2,584 hectares of cultivated land in the Columbia Valley.

Forage and pasture is the most common type of cultivated field crop accounting for 93% of all cultivated land and 3% of the ALR in the Columbia Valley. Forage and pasture is the only cultivated crop found on Crown owned parcels.

Grains, cereals, oilseeds are the second most common type of cultivated crop, accounting for 6% of all cultivated land in the region.

Refer to Map B8 in Appendix B for more information.

Figure 11. All field crop fields by size

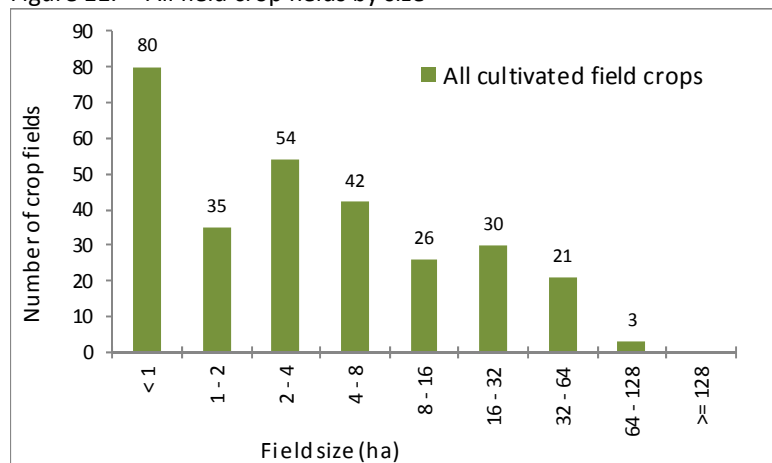


Figure 11 illustrates the number and size distribution of fields used for cultivated field crops.

In Columbia Valley, cultivated fields are most likely to be < 1 hectare in size.

There are 291 individual crop fields with an average area of 8.9 hectares and median area of 3.1 hectares.

These fields occur on 272 parcels with an average size of 36 hectares and a median size of 11.2 hectares.

Refer to Table A1 in Appendix A for more information.

Figure 12. Forage, pasture, grain, and vegetable fields by size

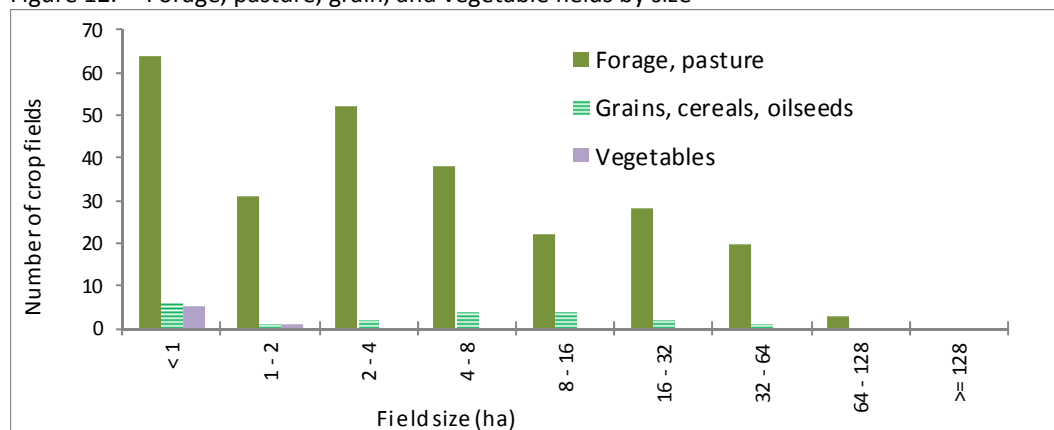


Figure 12 compares the top three main crop types by field sizes.

"Forage, pasture" fields dominate all field size categories.

Refer to Table A1 in Appendix A for more information.

Forage & pasture crops

Forage is a cultivated crop that is cut and made into silage or hay for cattle feed. Two levels of forage management are described:

- **Forage (managed):** Management includes weed control & fertilizer / manure applications and crop is cut several times per year. Often there is no fencing and crop growth is generally healthy and even.
- **Forage (unmanaged):** Weed management & fertilizer / manure applications are minimal. Crop is cut only once per year. Crop growth is uneven with weeds.

Pasture is a cultivated crop that is used for grazing only and is not cut. Two levels of management are described:

- **Pasture (managed):** Management includes weed control & fertilizer / manure applications. Usually fields are large to accommodate equipment. Fencing is in good condition and crop growth is vigorous with few weeds.
- **Pasture (unmanaged):** Weed management & fertilizer / manure applications are minimal. Fencing is in good condition. Crop is varied (some weeds) and growth is uneven with signs of animal dung.

Some areas are used for both forage & pasture:

- **Forage & pasture (managed):** Crop is cut 1 to several times per year and made into silage or haylage. Also used for grazing for 1 to several months per season. Fencing is in good condition and crop growth is reasonably even with few weeds. Usually associated with dairy operations.

Areas previously used for forage or pasture are considered inactively farmed:

- **Unused:** forage or pasture which has not been cut or grazed during the current growing season.
- **Unmaintained:** forage or pasture which has not been cut or grazed during the current growing season, has not been maintained for several years, and probably would not warrant harvest.

Table 11. Forage and pasture crops by area

Forage and pasture crops		ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
		In ALR (ha)	% of ALR			
Forage (managed)	Grass	107	< 1%	2	109	4%
Forage (managed)	Mixed grass / legume	271	< 1%	10	281	11%
Forage (unmanaged)	Grass	73	< 1%	28	101	4%
Forage (unmanaged)	Mixed grass / legume	81	< 1%	< 1	81	3%
Subtotal		532	< 1%	40	572	22%
Pasture ^	Grass	26	< 1	< 1	26	< 1
Pasture (managed)	Grass	146	< 1%	< 1	146	6%
Pasture (managed)	Mixed grass / legume	31	< 1%	3	34	1%
Pasture (unmanaged)	Grass	214	< 1%	35	249	10%
Pasture (unmanaged)	Mixed grass / legume	51	< 1%	28	79	3%
Subtotal		468	< 1%	66	534	21%
Forage & pasture (managed)	Grass	150	< 1%	< 1	150	6%
Forage & pasture (managed)	Mixed grass / legume	984	1%	31	1,014	39%
Subtotal		1,134	2%	31	1,165	45%
Unused	Grass	14	< 1%	45	59	2%
Unused	Mixed grass / legume	50	< 1%	< 1	50	2%
Unmaintained	Grass	< 1	< 1%	3	3	< 1%
Unmaintained	Mixed grass / legume	31	< 1%	1	32	1%
Subtotal		95	< 1%	49	144	6%
TOTAL		2,228	3%	187	2,415	93%

^ Forage or pasture where the level of management could not be determined.

Table 11 shows forage & pasture is the most significant crop in the Columbia Valley. Mixed grass / legume are the main forage crop types. Refer to Map B9 in Appendix B for more information.

Figure 13. Forage and pasture fields by size

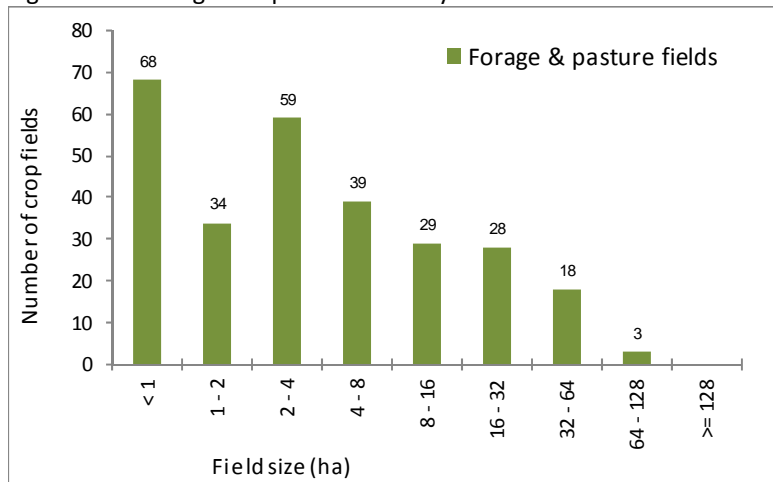


Figure 13 shows that “Forage, pasture” fields are most likely to be < 1 hectare.

In Columbia Valley, there are 278 individual “Forage, pasture” fields with an average area of 8.7 hectares and median area of 3.3 hectares.

These fields occur on 258 parcels with an average size of 36 hectares and a median size of 12 hectares.

Refer to Table A2 in Appendix A for more information.

Figure 14. Forage and pasture fields by size

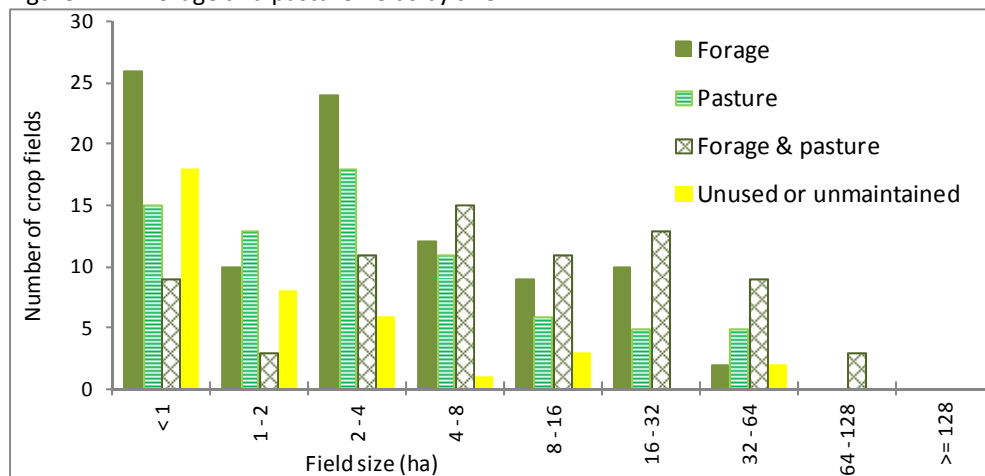


Figure 14 illustrates the variation in field sizes between pasture, forage and unused / unmaintained pasture or forage.

Fields used for forage are generally larger than pasture fields mainly due to harvesting equipment requirements and fencing costs, however in Columbia Valley there are a large number of small forage fields.

Refer to Table A2 in Appendix A for more information.

Grain crops

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

- **Cereals** are members of the grass family that are used for livestock food (Barley, Oats, Rye, Wheat and Triticale).
- **Pulses** are the seeds of legumes which are used for livestock food (Field Peas).
- **Oilseeds** are used to extract oil from their seeds (Canola).

There are no pulses in the Columbia Valley.

Table 12 shows that Columbia Valley has 160 hectares in cereal and oilseed crops.

Barley is primarily intended for greenfeed production and is often used as a first year cover crop after an old forage field is cultivated and re-seeded.

Since the area in barley is about 9% of the area in managed forage, this indicates that about 9% of managed forage is under rejuvenation.

Refer to Map B10 in Appendix B for more information.

Table 12. Cereals and oilseeds by area

Cereals and oilseeds	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Barley	147	< 1%	5	152	6%
Canola	7	< 1%	-	7	< 1%
TOTAL	154	< 1%	5	160	6%

Figure 15. Cereal and oilseed fields by size

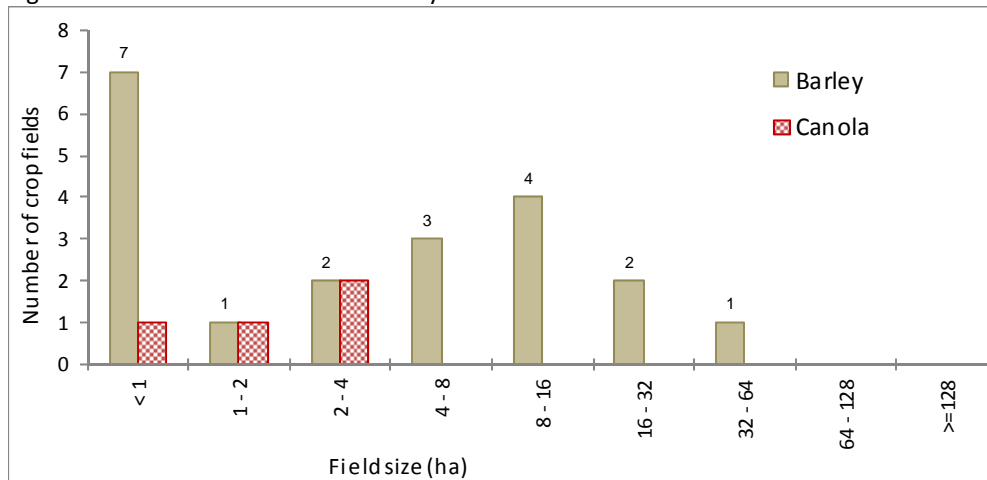


Figure 15 shows that there are 24 individual cereal or oilseed fields with an average area of 6.7 hectares and median area of 2.7 hectares.

These 24 fields occur on 20 parcels with an average size of 81 hectares and a median size of 84 hectares.

Refer to Table A3 in Appendix A for more information.

Vegetable crops

Vegetable crops are either annual, such as potatoes or lettuce, or perennial such as rhubarb and asparagus. Annual vegetable crops are usually rotated or grown on different land each year to minimize build-up of crop-specific pest and disease problems and avoid exhausting the soil of nutrients. Since this inventory is a snapshot in time, the annual vegetable crops seen during the survey year will probably not be present in the same location the following year.

Vegetables in Kamloops are described by four crop groupings:

- **Mixed vegetables:** a variety of vegetable types
- **Potatoes**

Table 13. Vegetable crops by area

Vegetable crops	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Mixed vegetables*	3.0	< 1%	< 0.1	3.0	< 1%
Potatoes	< 0.1	< 1%	1.2	1.3	< 1%
TOTAL	3.1	< 1%	1.2	4.3	< 1%

* Refers to a field of a variety of vegetable types

Table 13 presents the different vegetable crops in Columbia Valley.

There are only 4 fields of mixed vegetables and 2 fields of potatoes in the Columbia Valley. Only one mixed vegetable field is greater than 1 hectare (1.7 hectares) while the rest are between 0.2 – 0.8 hectares. The two potato fields are both 0.6 hectares.

These 6 fields occur on 6 different parcels with an average size of 1.7 hectares and a median size of 1.7 hectares.

Win-Valley Gardens on Bench Road has all 1.3 hectares of potatoes. Winderberry Greenhouses and Nursery has some mixed vegetables (0.78 ha).

There are no vegetables on Crown owned land.

Refer to Map B8 in Appendix B for more information.

Top 20 Individual Crops

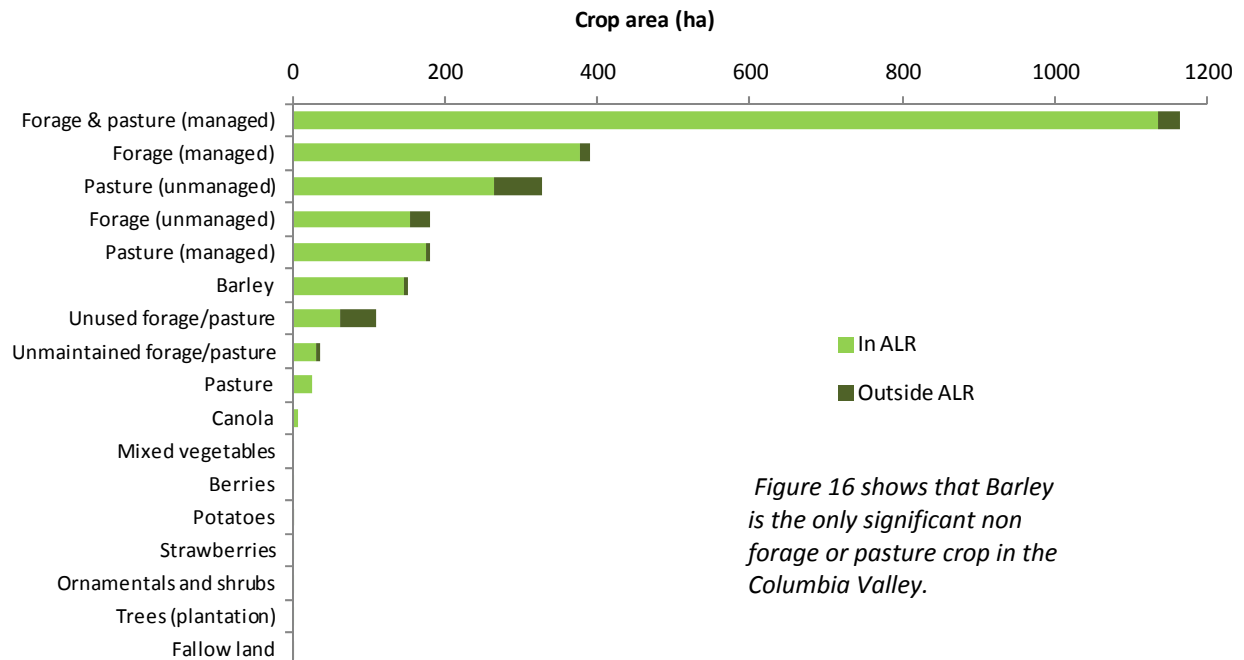
Table 14. Top 20 crop types by area

Cultivated field crop	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Forage & pasture (managed)	1,134	2%	31	1,165	45%
Forage (managed)	378	< 1%	12	391	15%
Pasture (unmanaged)	265	< 1%	63	328	13%
Forage (unmanaged)	154	< 1%	28	181	7%
Pasture (managed)	177	< 1%	3	180	7%
Barley	147	< 1%	5	152	6%
Unused forage/pasture	64	< 1%	45	109	4%
Unmaintained forage/pasture	31	< 1%	4	35	1%
Pasture ^	26	< 1%	< 1	26	< 1%
Canola	7	< 1%	-	7	< 1%
Mixed vegetables	3	< 1%	< 1	3	< 1%
Berries (unknown type)	2	< 1%	-	2	< 1%
Potatoes	< 1	< 1%	1	1	< 1%
Strawberries	1	< 1%	-	1	< 1%
Ornamentals and shrubs	< 1	< 1%	< 1	< 1	< 1%
Trees (plantation)	< 1	< 1%	-	< 1	< 1%
Fallow land	-	-	< 1	< 1	< 1%
TOTAL	2,390	3%	194	2,584	100%

Table 14 shows the 20 individual crops that account for all cultivated land in Columbia Valley.

^ Forage or pasture where the level of management could not be determined.

Figure 16. Top 20 crop types by area



NATURAL PASTURE & RANGELAND

Natural pastures and rangelands are fenced areas with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock such as cattle, sheep or equines. Natural pastures are smaller fenced areas usually occurring on private land while rangeland refers to larger blocks of land (extensive areas from hundreds to thousands of acres in size) with perimeter fencing that may encompass many parcels or district lots. Rangelands tend to be on provincial Crown land.

Natural pastures are usually on land unsuited for cultivation due to poor soils (stoniness), seasonal flooding, or slope. In many cases, these areas are remote from the infrastructure necessary to facilitate agriculture improvements such as irrigation. Although some of these natural areas could be used for hay, most are grazed since the quality of hay is usually not worth the harvesting costs.

Most natural pastures and rangelands are influenced by humans to some degree. Fire may be used to control woody plants and remove over mature herbage. Introduction of livestock or equines has an effect on natural vegetation and can lead to changes in vegetation composition. Bush-clearing, fencing, drainage, application of fertilizers and trace elements are more intensive methods which influence natural vegetation as pasture. The introduction of grasses and legumes, without cultivation, is yet a further stage in influencing a natural area.

Natural pastures and rangelands are captured in a geographical information system at the field or land cover polygon level by the natural vegetation type that dominates the upper canopy (grassland, open treed, etc.). Each vegetation type is then summarized to total land area and evaluated for field size characteristics.

Table 15. Natural pasture and rangeland vegetation types by area

Natural pasture and rangeland		ALR			Outside ALR (ha)	Total area (ha)	% of inventory area	% of inventory area in Crown ownership	% of natural pasture and rangeland
		In ALR (ha)	% of ALR	% of ALR in Crown ownership					
Rangeland (natural)	Treed - closed	11,937	16%	6%	2,807	14,744	33%	10%	78%
	Treed - open	1,301	2%	1%	131	1,432	3%	3%	8%
	Herbaceous	592	< 1%	< 1%	43	635	1%	< 1%	3%
	Shrubland	101	< 1%	< 1%	1	102	< 1%	< 1%	< 1%
Subtotal		13,931	19%	7%	2,982	16,913	38%	13%	90%
Pasture (natural)	Treed - closed	1,040	1%	< 1%	249	1,288	3%	< 1%	7%
	Herbaceous	440	< 1%	< 1%	24	464	1%	< 1%	2%
	Shrubland	90	< 1%	< 1%	6	96	< 1%	< 1%	< 1%
	Treed - open	80	< 1%	< 1%	2	81	< 1%	< 1%	< 1%
Subtotal		1,648	2%	< 1%	281	1,929	4%	< 1%	10%
TOTAL		15,580	21%	7%	3,263	18,843	43%	13%	100%

Table 15 shows that 85% of natural pasture and rangeland is on areas with a land cover of Treed – closed where 60% to 100% of crown cover is native trees.

Refer to Maps B11 in Appendix B for more information.

Figure 17. Natural pasture and rangeland areas by size

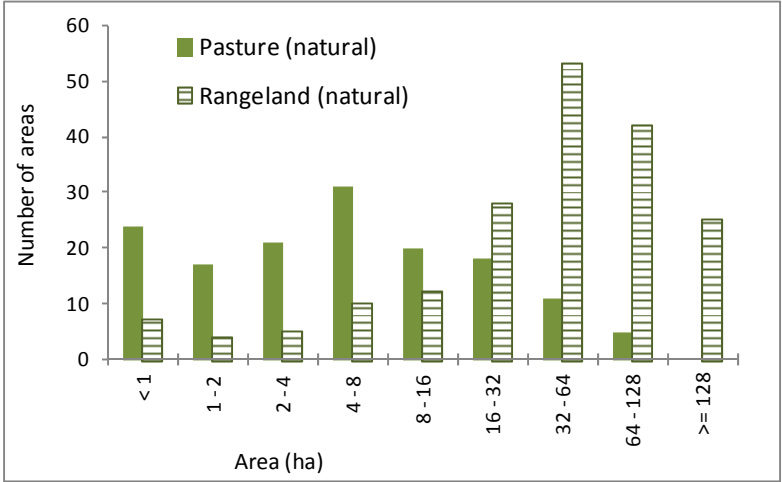


Figure 17 shows that natural pastures are most likely to be 4-8 hectares in size while rangeland areas are most likely to be 32-64 hectares in size.

In Columbia Valley, there are 147 individual natural pastures with an average area of 13.1 hectares and median area of 5.7 hectares. The average size of parcels where natural pasture occurs is 34 hectares.

Rangelands occur on 186 parcels with an average parcel size of 117 hectares. The number, average and median size of rangelands cannot be determined from this inventory since rangeland usually encompasses many parcels.

Refer to Table A4 in Appendix A for more information.

GREENHOUSES

Greenhouses are structures covered with translucent material and of sufficient size for a person to work inside⁷. They are permanent enclosed glass or polyethylene (poly) structures with or without climate control facilities for growing plants under controlled environments. Non permanent structures such as hoop covers are considered an agricultural practice and are not included here. Greenhouse sizes are estimated from aerial photography.

Table 16. Greenhouses by area⁸

Greenhouses		ALR		Outside ALR (ha)	Total area (ha)	% of greenhouse area
		In ALR (ha)	% of ALR			
Poly greenhouse	Mixed	1.4	< 1%	< 0.1	1.4	100%
TOTAL		1.4	< 1%	< 0.1	1.4	100%

In the Columbia Valley, there were only 3 poly greenhouse operations reported, each with mixed crops and each with a footprint of < 1 hectare. The three operations are Brisco General Store & Greenhouse, Patty's Greenhouse & Market Garden, and Winderberry Greenhouses and Nursery which had greenhouses on two separate but adjacent parcels.

Table 16 shows that a total of 1.4 hectares of ALR land is utilized by greenhouses in the Columbia Valley.

There are no glass greenhouses or crop barns (e.g. for mushroom production) reported in Columbia Valley.

Refer to Map B8 in Appendix B for more information. Winderberry Greenhouses and Nursery is represented by three symbols on the map due to the three separate groupings of greenhouses.

Figure 18. Greenhouses by size

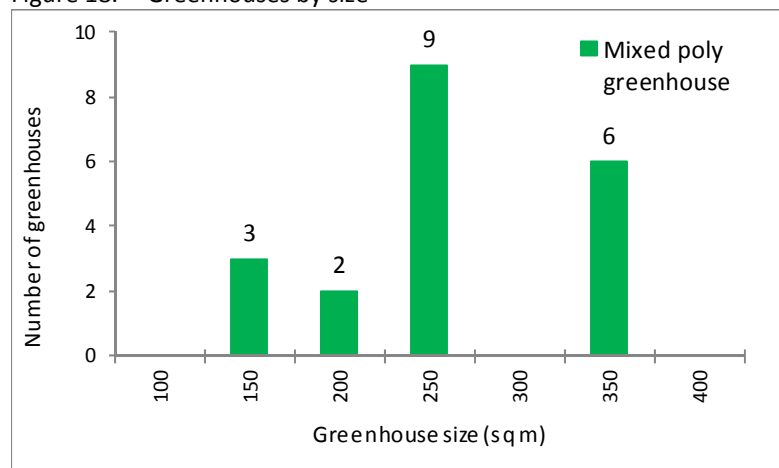


Figure 18 shows that the 3 greenhouse operations have a total of 20 poly greenhouses all with mixed crops.

Winderberry Greenhouses and Nursery is the largest operation with 14 poly greenhouses.

Brisco General Store and Greenhouse has three greenhouses; one 350 sq m and two 250 sq m.

Patty's Greenhouse & Market Garden has three greenhouses; one 200 sq m and two 350 sq m.

⁷ Source: *Guide for Bylaw Development*, 1998 Issue (Working Copy) by Ministry of Agriculture and Food.

⁸ The areas reported in this table include external greenhouse yards, parking, warehouses and other infrastructure related to the greenhouse operation. Poly refers to polyethylene.

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, maintenance of managed vegetation, and control of soil erosion or dust. The potential to irrigate is often limited by the quality and quantity of available irrigation water. High salinity or microbial contamination renders water unsuitable for irrigation. Insufficient water sources or water delivery infrastructure limits the potential to increase agricultural production through irrigation.

Irrigation is captured at the field or land cover level by system type (sub-surface, 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 farm land, land set temporarily set aside for wildlife or other purposes, and land under preparation for planting. Also included are crops grown in greenhouses. In addition, the top 20 cultivated field crops are evaluated for percent of crop area under irrigation.

Table 17. Main crop types and irrigation

Cultivated field crop	Irrigation system in use (ha)				Total area irrigated (ha)	% of crop area irrigated
	Sprinkler	Giant gun	Centre pivot	Landscape / turf		
Forage, pasture	715	72	203	< 1	991	41%
Cereals and oilseeds	47	54	54	-	155	97%
Vegetables	4	-	-	< 1	4	100%
Berries	1	-	-	-	1	36%
Trees (plantation)	< 1	-	-	-	< 1	100%
Ornamentals and shrubs	< 1	-	-	-	< 1	30%
ALL FIELD CROP AREA IRRIGATED	769	126	257	< 1	1,152	45%
Greenhouses	Mix of flood and trickle irrigation				1	100%

Table 17 illustrates that all vegetables and plantation trees are irrigated as well as the majority of cereal and oilseed crops. No trickle or drip systems were reported in the Columbia Valley.

Refer to Map B12 in Appendix B for more information.

Figure 19. Irrigation systems by percentage of cultivated land

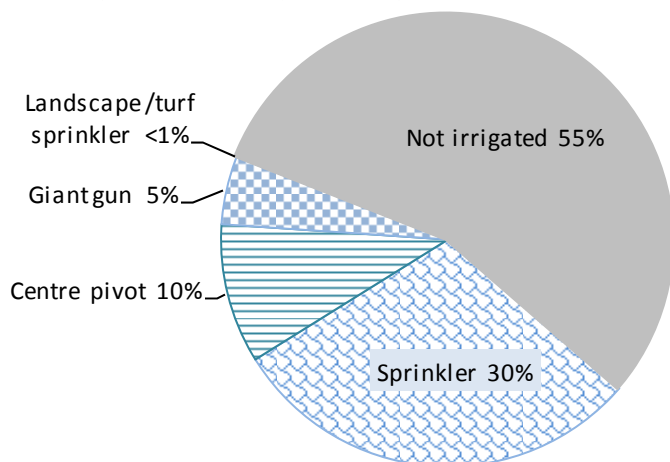


Figure 19 shows that sprinkler irrigation is the most widely used system in the Columbia Valley, occurring on 30% of cultivated land, followed by center pivot systems at 10%, and giant gun systems at 5%.

Table 18. Top 20 field crop types and irrigation

Cultivated field crop	Irrigation system in use (ha)				Total area irrigated (ha)	% crop area irrigated
	Sprinkler	Giant gun	Centre pivot	Landscape / turf		
Forage & pasture (managed)	504	-	182	-	686	59%
Forage (managed)	146	56	21	-	224	57%
Pasture (unmanaged)	38	-	-	-	38	12%
Forage (unmanaged)	10	6	-	-	16	9%
Pasture (managed)	14	10	-	< 1	25	14%
Barley	45	53	53	-	151	99%
Unused forage/pasture	-	-	-	-	-	-
Unmaintained forage/pasture	-	-	-	-	-	-
Pasture (unknown type)	3	-	-	-	3	11%
Canola	2	1	< 1	-	4	57%
Mixed vegetables	3	-	-	< 1	3	100%
Berries (unknown type)	-	-	-	-	-	-
Potatoes	1	-	-	-	1	100%
Strawberries	1	-	-	-	1	100%
Ornamentals and shrubs	< 1	-	-	-	< 1	30%
Trees (plantation)	< 1	-	-	-	< 1	100%
Fallow land	< 1	-	-	-	< 1	100%
TOTAL	769	126	257	< 1	1,152	

Table 18 outlines the irrigation system types used on the top 20 field crops in the Columbia Valley. Centre pivot systems are mostly used on Forage & pasture (managed), Forage (managed), and Barley.

LIVESTOCK

Livestock activities are very difficult to measure using a windshield survey method. Livestock are often confined to structures making it difficult for the surveyor 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. Livestock visible on a certain parcel one day may be visible on a different parcel the next day. This inventory does not attempt to 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.

"Main Type" and "Secondary Type" of livestock are determined by comparing the scale of different livestock activities on the parcel. The "Main Type" of livestock does not represent the primary agricultural activity, but only the main type of livestock activity.

"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 therefore the specific type of livestock could not be determined.

"Inactive operation" refers to parcels where livestock structures are present but appear to be unused.

The scale system used to describe livestock operations relies on animal unit equivalents 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 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).

Table 19. Livestock activities

Livestock group	Livestock detail *	By parcel		Total activities	By activity type	
		Main type	Secondary type		Intensive	Non Intensive
Beef	Beef total	19	1	20	-	20
Poultry	Poultry total	2	1	3	-	3
Sheep / lamb / goat	Sheep / lamb	1	1	2	-	2
	Goat	-	2	2	-	2
	Sheep / lamb / goat total	1	3	4	-	4
Llama / alpaca	Llama / alpaca total	1	1	2	-	2
Unknown livestock	Unknown livestock total	-	1	1	-	1
Equine	Horse	56	7	63	-	63
	Horse (Donkey, ass)	1	-	1	-	1
	Horse (Miniature horse)	1	-	1	-	1
	Horse (Mule)	1	-	1	-	1
	Unknown equine type	7	-	7	-	7
	Equine total	66	7	73	-	73
TOTAL		89	14	103	-	103

* (Livestock type) indicates the livestock activity is a mixed herd or flock.

Table 19 shows that equine is the most common type of livestock activity in Columbia Valley, accounting for 73 of 103 or 71% of all livestock activities. Beef is the second most common with only 20 activities or 19%.

Refer to Table A5 in Appendix A and Maps B13, B14, and B15 in Appendix B for more information.

Table 20. Equine activities

Type of activity	Scale of equine activity	By parcel		Total number of activities	By activity type		Total number of animals*
		Main Type	Secondary Type		Intensive	Non intensive	
Recreation	Very small scale (1 horse)	4	-	4	-	4	6
Unknown	Small scale (2-25 horses)	9	1	10	-	10	30
Ranching	Small scale (2-25 horses)	7	2	9	-	9	46
Recreation	Small scale (2-25 horses)	47	3	50	-	50	156
TOTAL	TOTAL	67	6	73	-	73	238

* Total number of animals estimated from Crown grazing licenses and field observations

Table 20 details the equine activities in the Columbia Valley. The total number of animals is estimated from field observations and Crown grazing licenses associated to livestock home sites located in the Columbia Valley.

Refer to Table A6 and Figure A1 and A2 in Appendix A for more information on equines.

Table 21. Beef activities

Type of activity	Scale	By parcel		Total number of activities	By activity type		Total number of animals*
		Main type	Secondary type		Intensive	Non Intensive	
Unknown	Small scale (1 cow)	1	-	1	-	1	18
Cow / calf	Small scale (1 cow)	7	1	8	-	8	87
Unknown	Medium scale (2-25 cattle)	3	-	3	-	3	130
Cow / calf	Medium scale (2-25 cattle)	2	-	2	-	2	70
Unknown	Large scale (25-100 cattle)	1	-	1	-	1	250
Cow / calf	Large scale (25-100 cattle)	5	-	5	-	5	1,056
TOTAL	TOTAL	19	1	20	-	20	1,611

* Total number of animals estimated from Crown grazing licenses and field observations

Table 20 details the beef activities in the Columbia Valley. The total number of animals is estimated from field observations and Crown grazing licenses associated to livestock home sites located in the Columbia Valley.

Although equine is the most common activity, there are almost seven times more beef cattle than equines in the Columbia Valley as beef activities tend to be much larger scale than equine activities.

Refer to Table A7 and Figure A3 and A4 in Appendix A for more information on beef.

Figure 20. Livestock activities (excluding equine) by scale and type

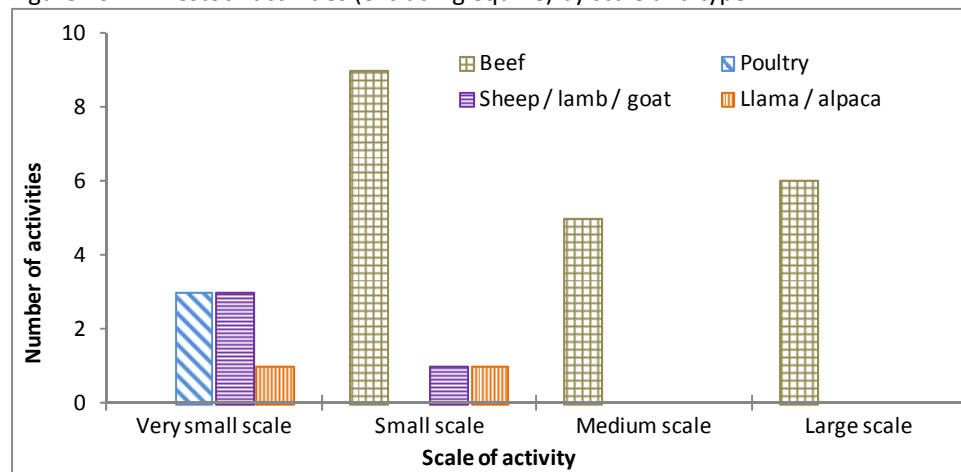


Figure 20 illustrates the scale of livestock activities (excluding equine) in the Columbia Valley.

Most of livestock activities are “small” or “very small”.

The only “medium” or “large” scale livestock activities are beef.

Figure 21. Livestock and equine activities by scale

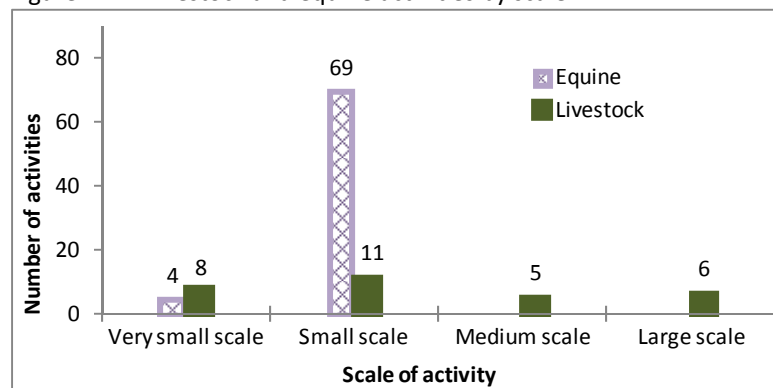


Figure 21 compares the scale of livestock activities with equine activities.

Even though 73 of the 103 livestock activities are equines, all are “very small” or “small” scale. There are no “medium” or “large” scale equine activities compared to 11 “medium” or “large” scale livestock activities.

Figure 22. Livestock activities (excluding equine) by parcel size and scale

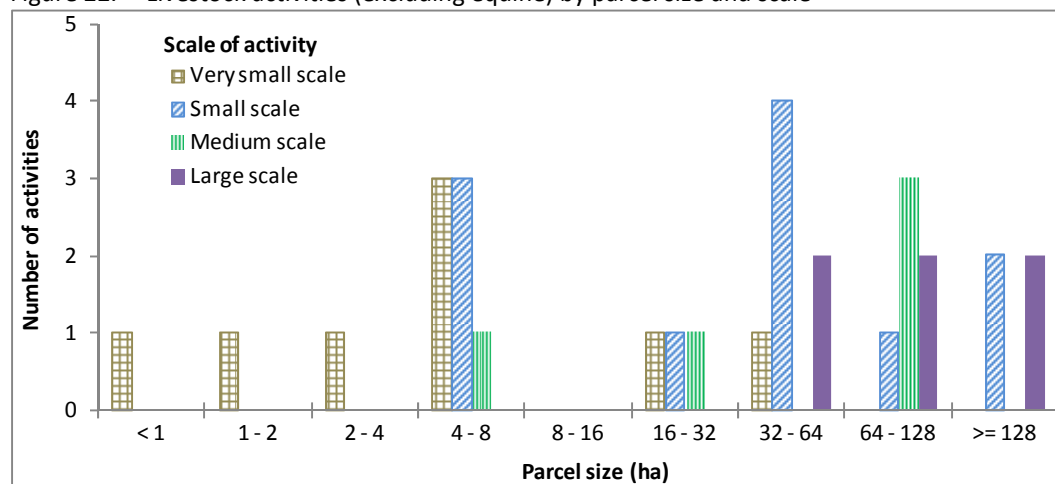


Figure 22 illustrates the distribution of livestock activities (excluding equine) by scale across parcel size categories. All “large” scale livestock activities occur on larger parcels.

Figure 23. Livestock activities (excluding equines) by parcel size and type

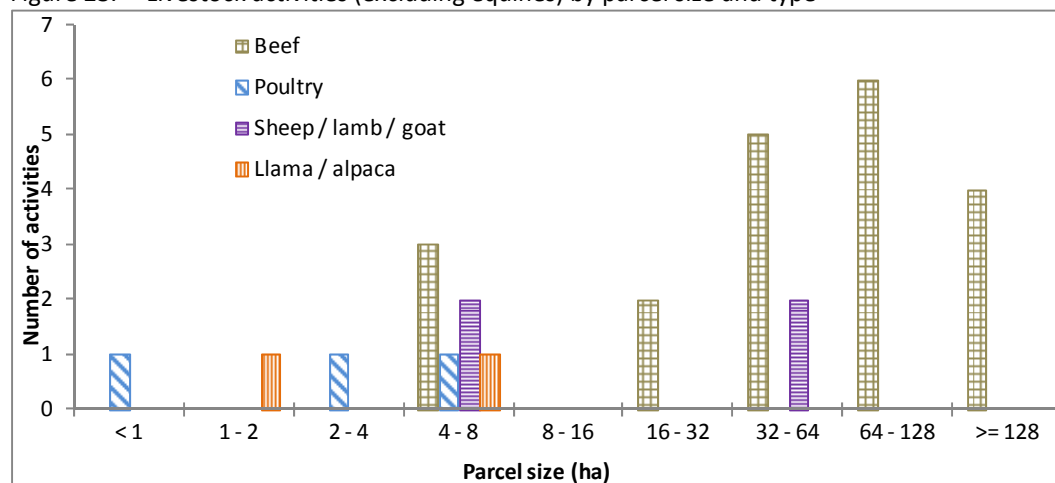


Figure 23 compares the distribution of different livestock types across parcel size categories. Most beef activities occur on parcels greater than 32 hectares and parcels greater than 64 hectares only have beef activities.

Figure 24. Livestock and equine activities by parcel size

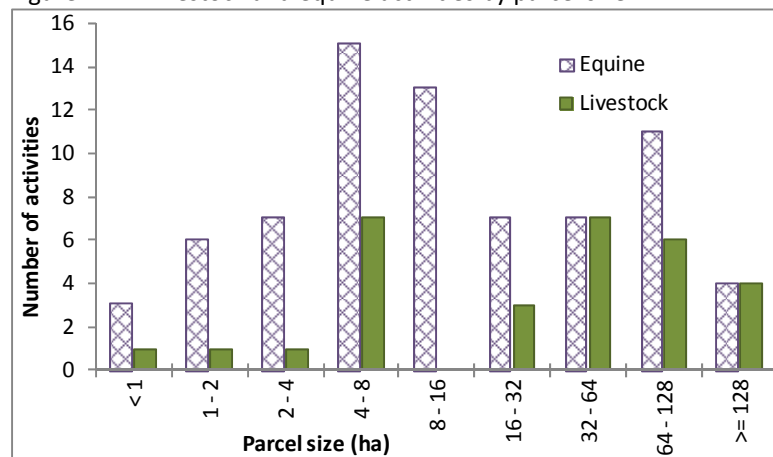


Figure 24 compares the distribution of equine and livestock across parcel size categories.

Equine activities are generally on smaller parcels than other livestock activities.

Both livestock and equine activities occur on parcels < 1 hectare.

Figure 25. Average area in forage, pasture, farm infrastructure and natural pasture or rangeland on parcels with livestock activities (excluding very small scale)

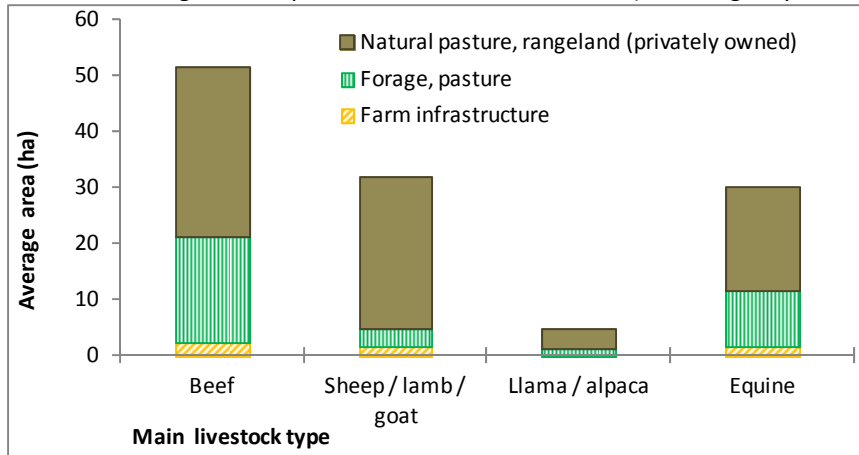
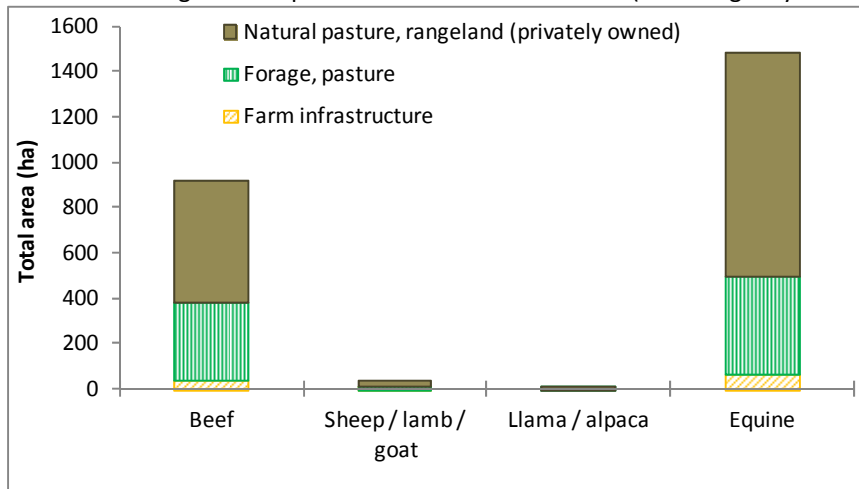


Figure 25 shows that on average, a beef activity is associated with 19 hectares of forage and pasture land and 30 hectares of natural pasture and rangeland, more than any other type of livestock activity.

This figure does not consider Crown land used for grazing.

Figure 26. Total area forage, pasture, farm infrastructure and natural pasture or rangeland on parcels with livestock activities (excluding very small scale)



Even though each beef activity on average uses more forage, pasture, natural pasture and rangeland than each equine activity (see Figure 25 above), Figure 26 shows that equine activities use more total area.

Figure 27. Percent of parcel area utilized for forage, pasture, farm infrastructure and natural pasture or rangeland on parcels with livestock activities (excluding very small scale)

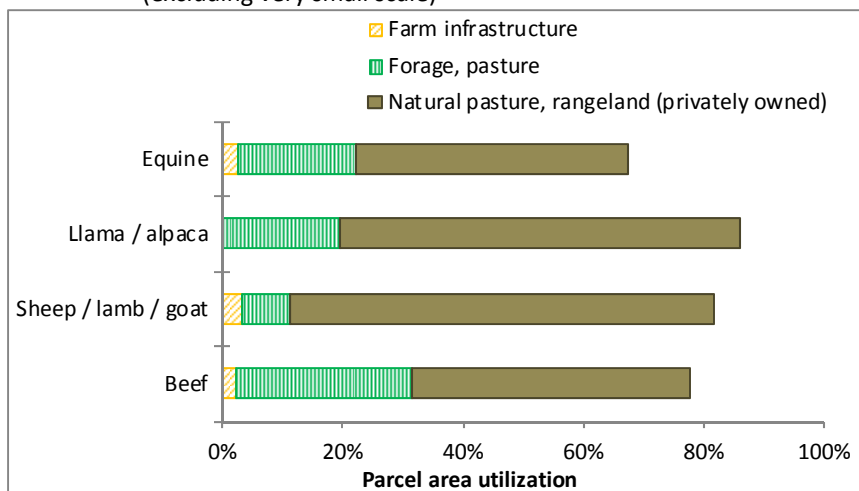


Figure 27 shows that on average, livestock and equine activities in the Columbia Valley utilize around 80% of their parcel area for forage, pasture and farm infrastructure. Llama / alpaca activities utilize the largest proportion of their parcel area at 86%.

Figure 28. Land cover on parcels with beef, dairy or poultry activities (excluding very small scale)

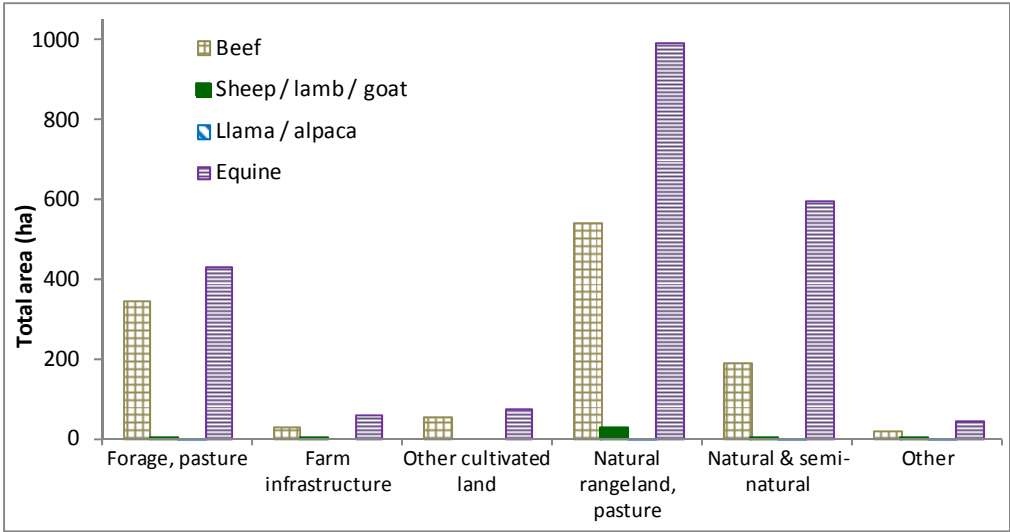


Figure 28 demonstrates the land cover on parcels with beef and equine activities. All livestock types are growing some of their own feed but are also relying heavily on natural areas.

ON-FARM VALUE-ADDED

Activities which add value to raw commodities produced on the farm are reported in this section. At least 50% of the commodity utilized must be produced on farm⁹ or the activity is considered non-agricultural. In many cases, local knowledge in combination with the field survey is used to determine if an activity meets the criteria to be considered on-farm value-added. The three main categories of value-added are: processing, direct sales, and agri-tourism.

Processing is an activity that maintains or raises the quality or alters the physical or chemical characteristics of a raw farm commodity, or adds value to it in any way. Processing includes grain mill or oilseed crushing, meat processing, wine or cider, kitchen / bakery, and canning. This category does not include crop washing and packaging.

Direct sales to the public occur through permanent stores, temporary stores such as fruit stands, U-pick, or restaurant / take out service located on the farm. Direct farm marketing sites are considered ambassadors of agriculture. Direct farm marketing engages the public's interest in food production and increases awareness of the benefits of local agriculture.

Agri-tourism promotes visits to the operation for the purpose of recreation, education or active involvement in the operation - a tourism experience. Agri-tourism must be in a farm setting and secondary to primary agricultural operation to be considered value-added. Included are corn mazes, petting zoos, bed & breakfasts, campsites, winery or orchard tours, guest ranches offering equestrian related activities, horse or donkey rental for trail riding / outfitting, and seasonal events such as farm festivals or pumpkin patches.

The scale system used to describe value-added activities reflects the human effort need to support the activity. The scale system includes 3 levels:

- **“Small”** scale represents a predominantly single household endeavour with management requiring less than one full time worker. Examples of small scale include temporary roadside fruit stand, small field u-pick, or egg sales from backyard flock.
- **“Medium”** scale is sufficient to add value to on-farm products for sale to small local markets or serve a moderate number of people. Usually includes designated parking for customers and requires at least one full-time worker to manage. An example is 3-10 tourist accommodation spots.
- **“Large”** scale is intended to add value to large amounts of on-farm generated products or serve large numbers of people. Requires multiple workers to operate value-added component of farm operation. An example is more than 10 tourist accommodation spots.

Table 22. Value-added activities

Value added	Description		Total number of activities	Average parcel size (ha)
		Medium scale		
Direct sales	Seasonal store (stand)	2	2	1.3
TOTAL NUMBER OF ACTIVITIES		2	2	

Table 22. Only 2 parcels or 1% of all parcels used for farming are reported as being used for a value-added activity in the Columbia Valley.

Winderberry Greenhouses & Nursery and Win-Valley Gardens operate “medium” scale direct sales operations which include seasonal stores or stands.

Given the other recreational activities in the area, there may be opportunities to increase activities such as agri-tourism.

⁹ On-farm refers to the farm unit which includes all the property belonging to the farm and may incorporate more than one parcel.

5. Condition of ALR Lands

This section presents a parcel based analysis of parcel size and residential uses in the ALR on private and Crown owned land.

PARCEL INCLUSION IN THE ALR

The inventory area includes 32,217 hectares of ALR on 1,059 parcels which is 44% of the ALR within the Columbia Valley. In addition, there is 10,471 hectares or 14% of the ALR on parcels that were excluded from the inventory as:

- photo interpretation showed no signs of agriculture and
- parcel area < 1 acre or parcel remotely located with limited access.

The remaining 42% of the ALR was excluded from the inventory as it is in Indian reserves, water & foreshore, Rights-of-way, or unsurveyed Crown land.

ALR boundaries are not always coincident with parcel boundaries which results in many parcels having only a portion of their area in the ALR. To achieve an accurate picture of the ALR land in the Columbia Valley, only parcels that meet the following criteria are included in this section of the report:

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

In total, 1,359 parcels with 41,480 hectares or 97% of the Columbia Valley parcel ALR land meet the above criteria. This includes 32 parcels that have less than 50% of their area in the ALR ($<50\%$) but contain ≥ 10 hectares of ALR land. Of these 1,359 parcels, 1,122 or 31,843 hectares are privately owned, and 237 or 9,637 hectares are Crown owned.

Of these 1,359 parcels, only 977 or 32,120 hectares are within the inventory area and thus included in the further analysis of ALR lands. Of these 977 parcels, 828 or 23,855 hectares are privately owned and 149 or 8,265 hectares are Crown owned.

Figure 29. Parcel inclusion in the ALR



Figure 29 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 hectares in the ALR
- lot D is completely outside the ALR.

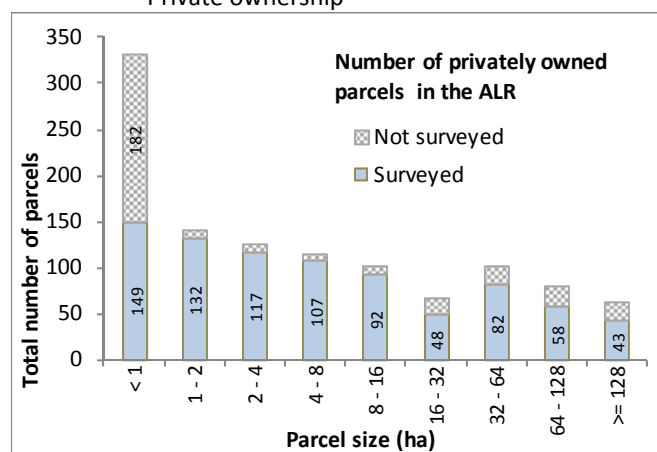
PARCEL SIZE & FARMING IN THE ALR

Parcel size must be considered when determining the agricultural potential of a land parcel. Larger parcels usually allow farmers greater flexibility to expand or change their type of operation as the economy and markets change. Although some types of agriculture can be successful on small parcels, such as intensive organic market gardens, greenhouse operations and nurseries, generally the smaller the parcel is, the fewer viable options there are for farming.

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 larger parcels than many smaller parcels. Larger parcels accommodate equipment more efficiently and reduce the need to move farm equipment on public roads. Smaller parcels are more impacted by bylaws designed to reduce potential land use conflicts, such as setbacks from lot lines and road allowances, and may encourage alternative land uses such as residential.

Privately Owned Parcels

Figure 30. Number of parcels in the ALR by parcel size – Private ownership



Approximately 30% of Columbia Valley's privately owned ALR parcels are less than one hectare, however average parcel size is 32.3 hectares and median parcel size is 3.1 hectares.

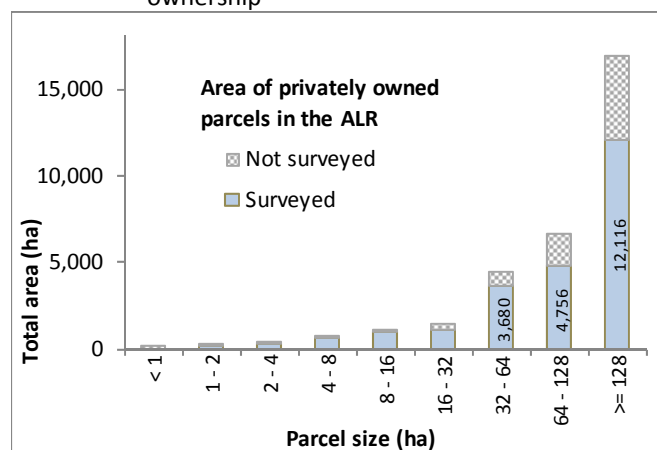
Figure 30 illustrates that of the 1,122 privately owned parcels in the ALR:

- 30% (331 parcels) are less than 1 hectare (including 208 parcels less than one acre).
- 53% (596 parcels) are less than 4 hectares.
- 10% (115 parcels) are between 4 and 8 hectares.
- 9% (102 parcels) are between 8 and 16 hectares.
- 28% (309 parcels) are greater than 16 hectares.

Of these 1,122 parcels, only 828 were surveyed for land use and land cover as part of this inventory project.

Refer to Map B18 in Appendix B for more information.

Figure 31. Total area in the ALR by parcel size – Private ownership



Even though Columbia Valley has large number of small parcels, most of its ALR area is in larger parcels.

Figure 31 illustrates that of the 31,843 hectares on privately owned parcels in the ALR:

- <1% (128 hectares) is on parcels less than one hectare including 48 hectares on parcels less than one acre.
- 2% (657 hectares) is on parcels less than 4 hectares.
- 2% (688 hectares) is on parcels between 4 and 8 hectares.
- 3% (1,085 hectares) is on parcels between 8 and 16 hectares.
- 92% (16,897 hectares) is on parcels greater than 16 hectares.

Of these 31,843 hectares, only 23,855 were surveyed for land use and land cover as part of this inventory project.

¹⁰ 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.

Table 23. Number of farmed, grazed, and not farmed or grazed parcels in the ALR – Private ownership

Parcel status with respect to farming	Number of parcels	% of parcels in the ALR
Used for farming	145	18 %
Used for grazing	130	16 %
Not used for farming or grazing	553	67 %
TOTAL	828	100 %

Table 23 demonstrates that of the 828 privately owned parcels in the ALR, only 145 or 18% are "Used for farming".

Figure 32. Number of farmed, grazed, and not farmed or grazed parcels in the ALR by parcel size – Private ownership

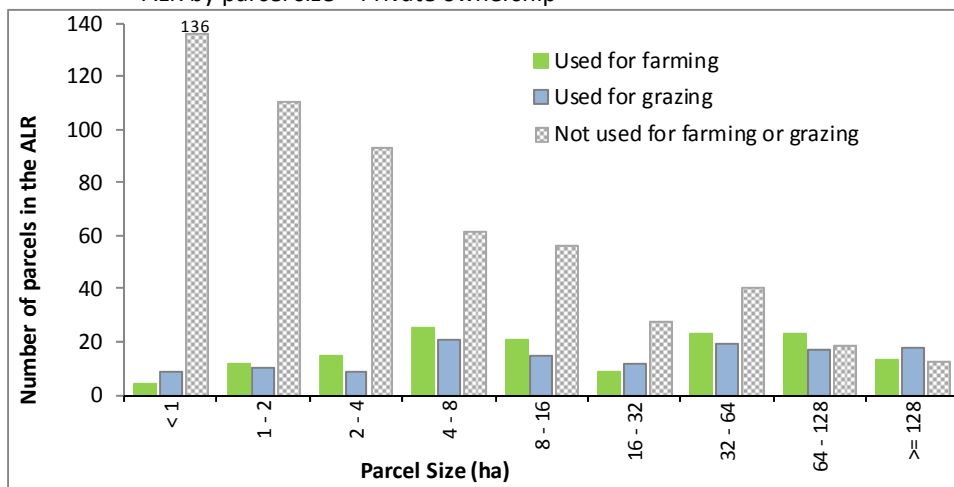


Figure 32 shows that of the 553 privately owned parcels in the ALR "Not used for farming or grazing", 136 or 25% are less than one hectare.

In all parcel size categories except for those greater than 64 hectares, the majority of parcels are "Not used for farming or grazing".

Figure 33. Number of farmed, grazed, and not farmed or grazed parcels in the ALR by parcel size (line chart) – Private ownership

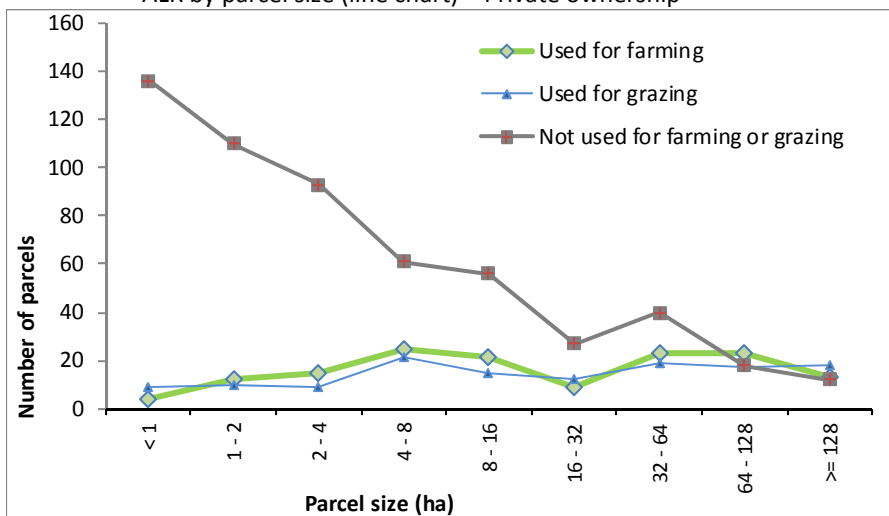


Figure 33 illustrates that the proportion of parcels "Not used for farming or grazing" declines as parcel size rises.

Figure 34. Proportion of parcels farmed, grazed, and not farmed or grazed by parcel size in the ALR – Private ownership

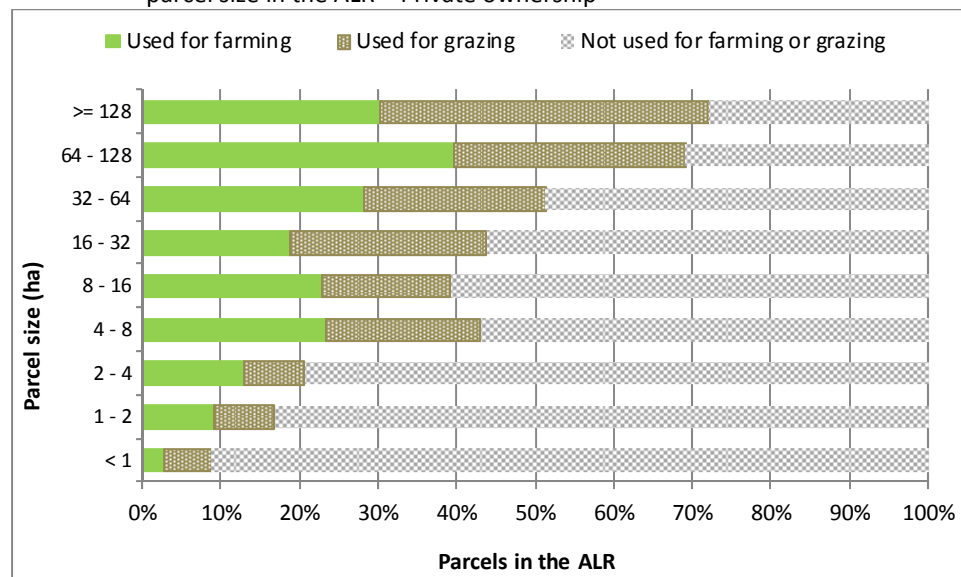


Figure 34 shows that for privately owned parcels, the proportion of “Used for farming” parcels increases as parcel size increases. This is also true for “Used for grazing” parcels.

Only 3% of privately owned parcels less than 1 hectare are “Used for farming”. This would drop to about 2% if all small parcels had been surveyed as part of this inventory.

Figure 35. Proportion of land cover by parcel size in the ALR– Private ownership

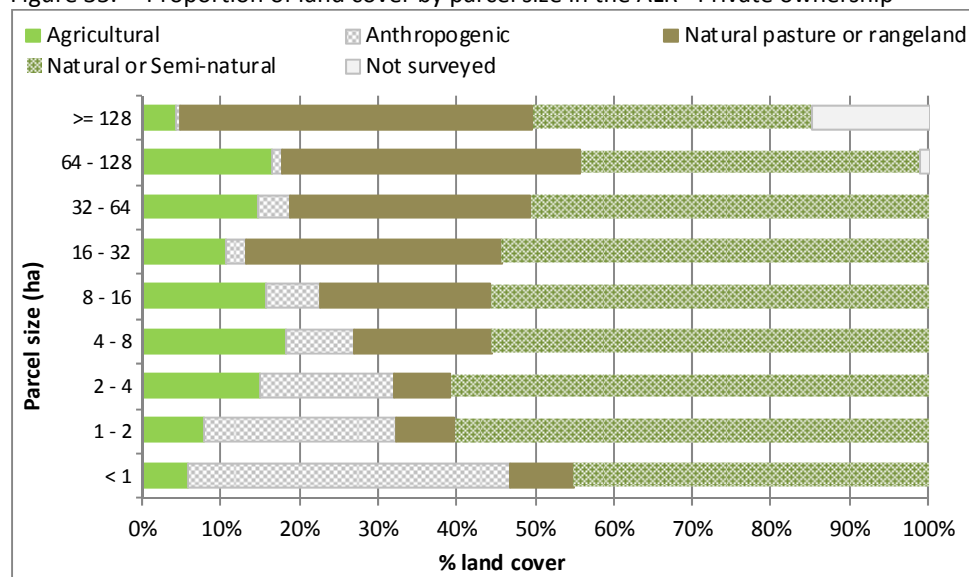


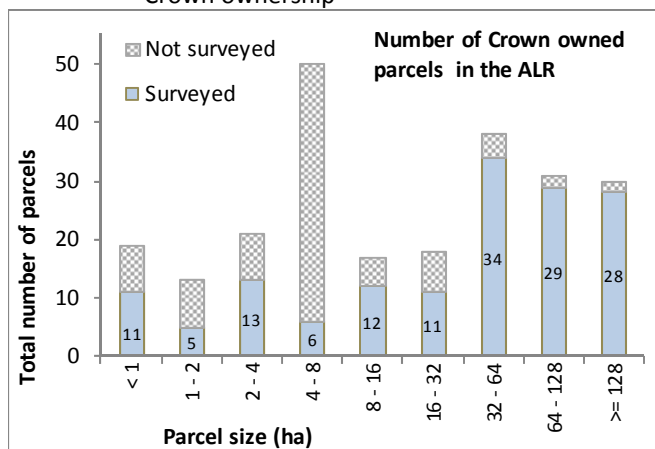
Figure 35 shows that for privately owned parcels, the proportion of natural or semi-natural land cover on ALR land remains somewhat consistent across parcel size categories.

For privately owned parcels, the proportion of farmed land cover on ALR land increases slightly as parcel size increases.

More dramatically, the proportion of natural pasture or rangeland on ALR land increases as parcel size increases.

Crown Owned Parcels

Figure 36. Number of parcels in the ALR by parcel size – Crown ownership



Crown owned ALR parcels in the Columbia Valley are distributed across all parcel sizes. Average parcel size is 58 hectares and median parcel size is 15.4 hectares.

Figure 36 illustrates that of the 237 Crown owned parcels in the ALR:

- 8% (19 parcels) are less than 1 hectare including 9 parcels less than one acre.
- 22% (53 parcels) are less than 4 hectares.
- 21% (50 parcels) are between 4 and 8 hectares.
- 7% (17 parcels) are between 8 and 16 hectares.
- 49% (117 parcels) are greater than 16 hectares.

Of these 237 parcels, only 149 were surveyed for land use and land cover as part of this inventory project.

Refer to Map B19 in Appendix B for more information.

Figure 37. Total area in the ALR by parcel size – Crown ownership

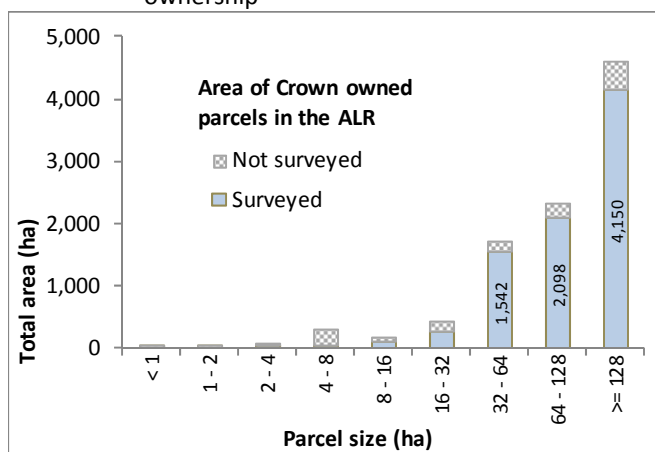


Figure 37 illustrates that of the 9,637 hectares on Crown owned parcels in the ALR:

- <1% (7 hectares) is on parcels less than 1 hectare.
- <1% (91 hectares) is on parcels less than 4 hectares.
- 3% (295 hectares) is on parcels between 4 and 8 hectares.
- 2% (177 hectares) is on parcels between 8 and 16 hectares.
- 94% (9,074 hectares) is on parcels greater than 16 hectares.

Of these 9,637 hectares, only 8,265 were surveyed for land use and land cover as part of this inventory project.

Table 24. Number of farmed, grazed, and not farmed or grazed parcels in the ALR – Crown ownership

Parcel status with respect to farming	Number of parcels	% of parcels in the ALR
Used for farming	1	<1
Used for grazing	79	53 %
Not used for farming or grazing	69	46 %
TOTAL	149	100 %

Table 24 demonstrates that of the 149 Crown owned parcels in the ALR, eighty are “Used for farming or grazing”.

The one Crown parcel that is “Used for farming” is a municipal sewage treatment plant with farmed land cover from the adjacent River Bend Ranch.

Figure 38. Number of farmed, grazed and not farmed or grazed parcels in the ALR by parcel size – Crown ownership

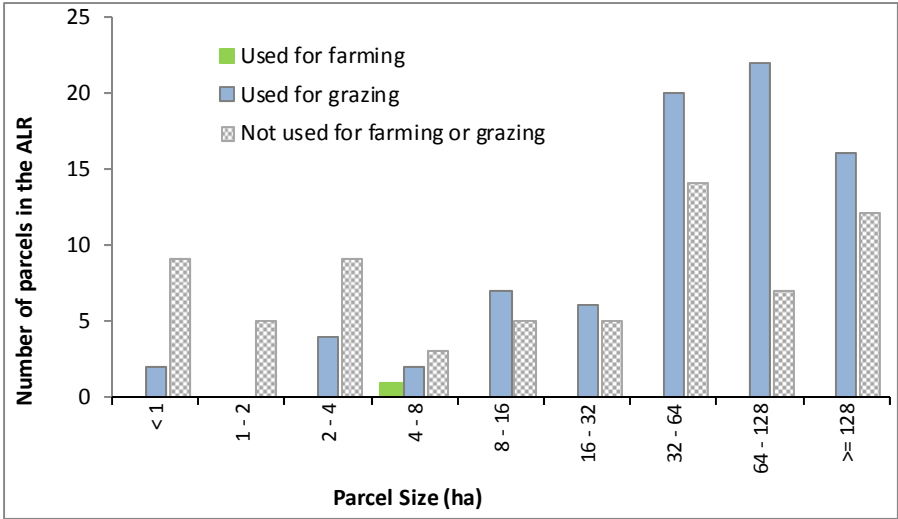


Figure 38 shows that the larger Crown parcels are more commonly used for grazing than the smaller Crown parcels.

Some Crown owned parcels were acquired by provincial and federal agencies from private land owners under conservation agreements for wildlife and fish habitat. These agreements often allow some historical agriculture to remain but the only Crown parcel "Used for farming" is a municipal sewage treatment plant.

Figure 39. Proportion of parcels farmed, grazed and not farmed or grazed by parcel size in the ALR – Crown ownership

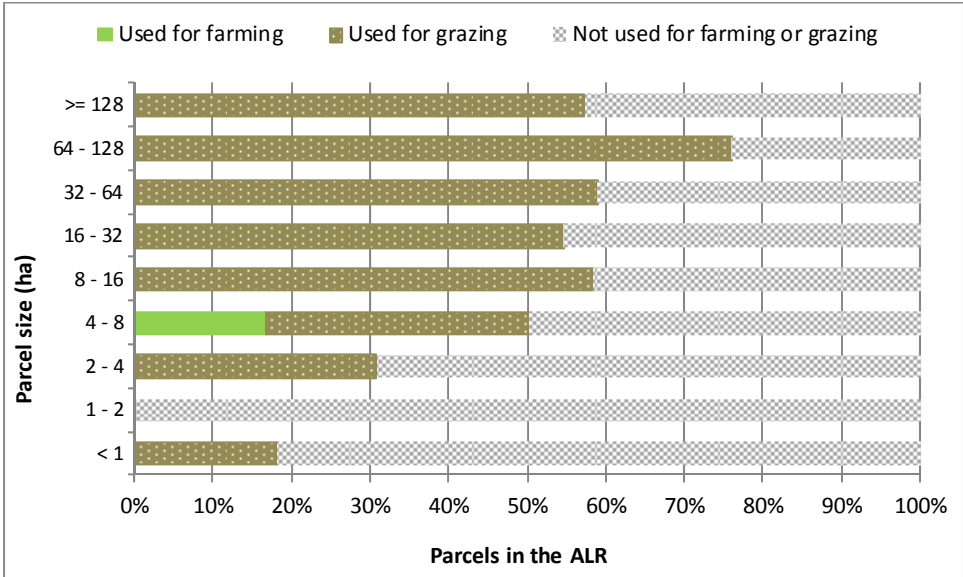
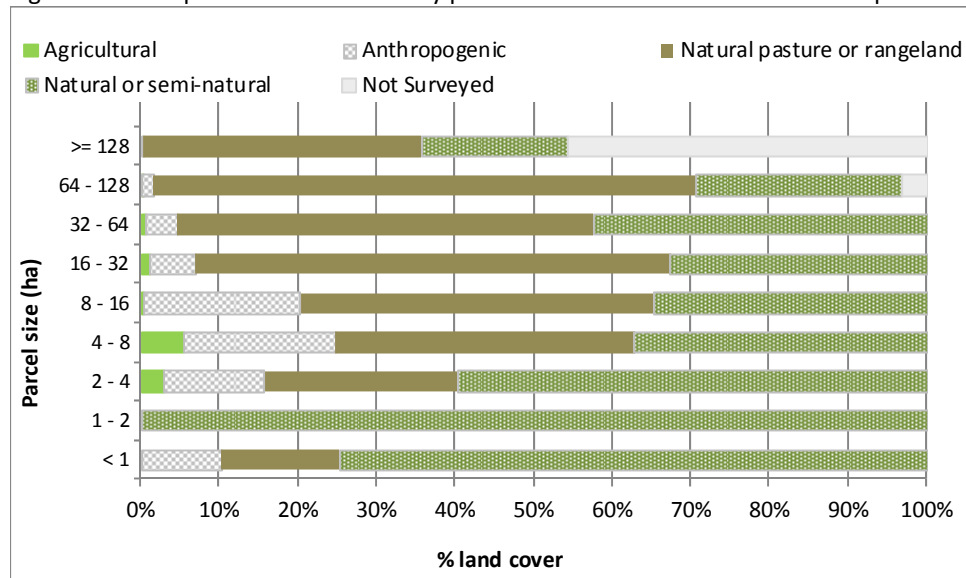


Figure 39 shows that for Crown parcels, the proportion "Used for grazing" increases as the parcels size increases.

Figure 40. Proportion of land cover by parcel size in the ALR– Crown ownership



Similar to Figure 39 above, Figure 40 shows that for Crown parcels, the proportion of parcel area in natural pasture or rangeland land cover increases as parcel size increases.

RESIDENTIAL USE IN THE ALR

The ALR is a provincial zone in which agriculture is the priority use and some “Residential” use is considered a necessary accessory to the agricultural use of a property. However “Residential” use which is not an accessory to agriculture can effectively limit the ability of agriculture to grow, intensify and respond to market demands. When the primary motivation for ownership of ALR land is residential use, the residence is often placed to maximize privacy and views, with little consideration for agricultural opportunities on the parcel. Houses that are not adjacent to the frontage road alienate portions of land from future agriculture. If the occupants are non-farmers, they are more likely to be affected by noise or odour from neighbouring farm operations.

The size of the residence may be another factor to consider. Properties with larger residences have higher property values making it unrealistic for a farmer to acquire and convert this land to farmland in the future.

In the following analysis cabins/cottages, mobile homes, single-family houses, duplexes, townhouses, apartments, motels, hotels, dormitories, and institutional living buildings are included. Single-family houses are further described by estimated size of the building:

- Small single-family house <1,500 sq. ft.
- Medium single-family house 1,500 – 3,500 sq. ft.
- Large single-family house 3,500 – 5,000 sq. ft.
- Estate (very large) single-family house > 5,000 sq. ft.

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.

Properties “Available for farming” are properties not currently “Used for farming” with either no apparent use or an existing non-farm use that is compatible with agriculture, such as Residential.

Properties “Unavailable for farming” are properties not currently “Used for farming” that have an established non-farm use that is incompatible with agriculture.

In Columbia Valley, all residences in the ALR are on privately owned parcels except for two single mobile homes and one mobile home park.

Privately Owned Parcels

Table 25. Farming and residences in the ALR

Privately owned parcels Status with respect to farming	With residence		Without residence		Total number of parcels
	Number of parcels	% of parcels	Number of parcels	% of parcels	
Used for farming	93	11%	52	6%	145
Available for farming - grazing	69	8%	60	7%	129
Available for farming	326	39%	185	22%	511
Unavailable for farming - grazing	-	-	1	< 1%	1
Unavailable for farming	26	3%	16	2%	42
TOTAL	514	62%	314	38%	828

Table 25 shows that 514 or 62% of privately owned ALR parcels have residences. Only 3% of privately owned parcels have residences and are "Unavailable for farming". This table does not include the 294 privately owned ALR parcels not surveyed as part of this inventory.

Table 26. Farming and residence type in the ALR

Privately owned parcels Status with respect to farming	Residences *										Total residences	Total number of parcels
	Single mobile home	Small house	Medium house	Large house	Estate house	Cabin / cottage	Camp site / RV park	Mobile home park	Motel style	Single cabins / resort		
Used for farming	8 (4)	34 (30)	58 (51)	8 (7)	-	1 (1)	-	-	-	-	109	93
Available for farming - grazing	5 (5)	18 (15)	42 (38)	6 (6)	1 (1)	4 (4)	-	-	-	-	76	69
Available for farming	31 (25)	101 (88)	167 (158)	43 (42)	2 (2)	10 (9)	1 (1)	-	1 (1)	-	356	326
Unavailable for farming	4 (3)	9 (6)	10 (6)	4 (4)	-	1 (1)	2 (2)	4 (3)	-	1 (1)	35	26
TOTAL RESIDENCES	48	162	277	61	3	16	3	4	1	1	576	
TOTAL PARCELS	37	139	253	59	3	15	3	3	1	1		514

* xx (yy) - xx indicates the number of residences and (yy) indicates the number of parcels

Table 26. In total, there are 576 residences on 514 privately owned parcels in the ALR (some parcels have more than one residence). Most residences are medium houses (1,500 – 3,500 sq. ft).

Figure 41. Total area in residential footprint by parcel size

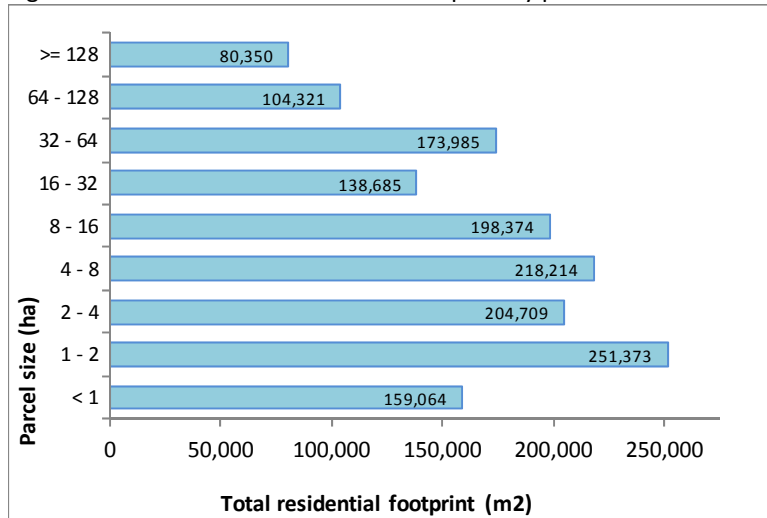


Figure 41 illustrates that there are almost 153 hectares (1,529,075 m2) of ALR land in residential footprints distributed across all parcel sizes.

Figure 42. Proportion of parcels with residences by parcel size

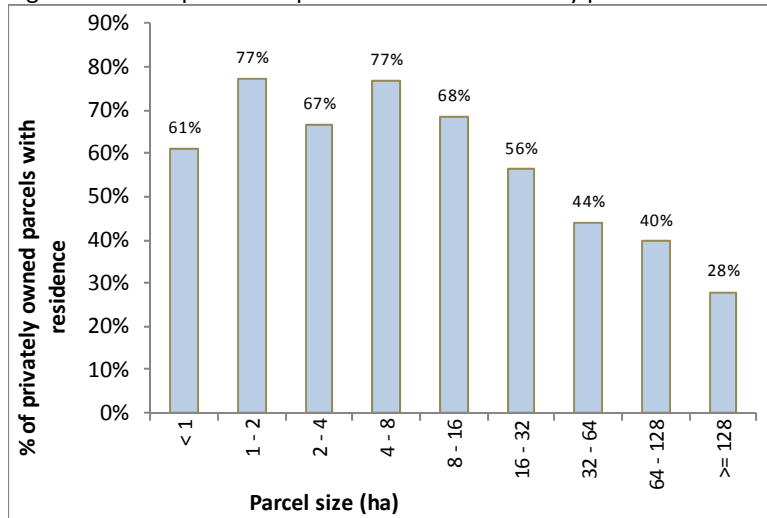


Figure 42 shows that the proportion of privately owned parcels with residences decreases as parcel size increases. Only 28% of parcels >=128 hectares have residences.

Figure 43. Average percent of parcel area in residential footprint by parcel size

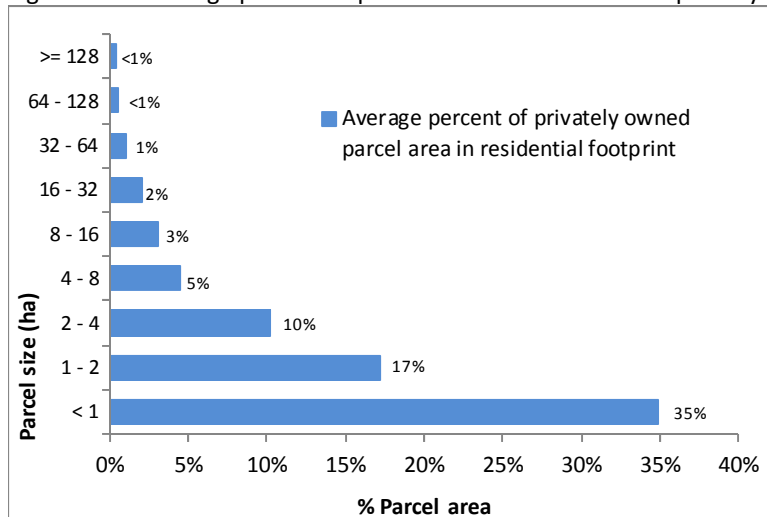


Figure 43 demonstrates that, on average, residential footprints on smaller parcels use a much greater proportion of the parcel area than those on larger parcels.

Figure 44. Average total area in residential footprint by parcel size

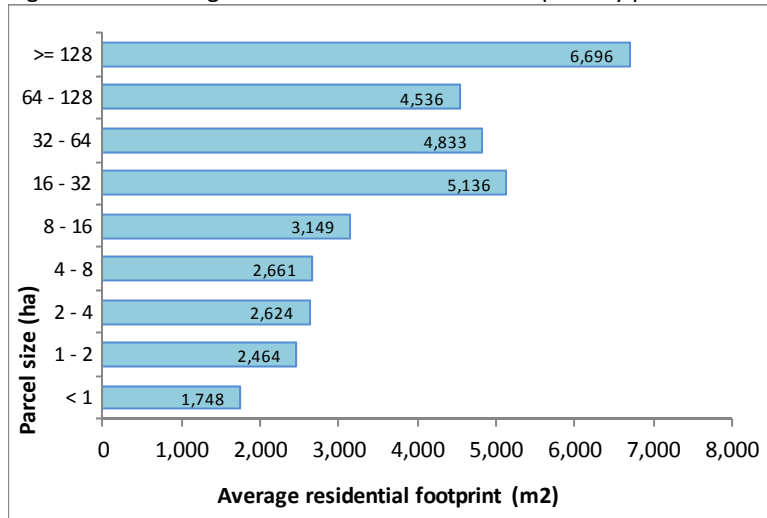
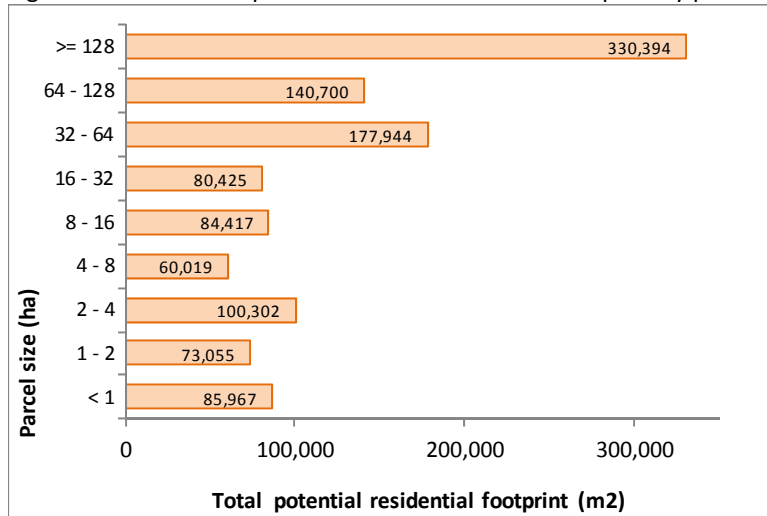


Figure 44 illustrates that even though residential footprints on small parcels use a greater proportion of the parcel area, on average the size of the footprint is smaller compared to the footprint on larger parcels.

Figure 45. Total and potential area in residential footprint by parcel size



There are 297 privately owned parcels in the ALR that are "Used for farming" or "Available for farming" that do not yet have a residence (Refer to Table 25 above).

If all 297 parcels built a residence, using the average percent of parcel area in residential footprint presented above, Figure 45 shows that an additional 113 hectares (1,133,224 m2) of ALR land would be permanently removed from potential production.

The most significant potential loss of ALR land is on parcels >= 128 hectares where 43 parcels do not yet have a residence.

Table 27. Main agriculture activity and largest residence on parcels "Used for farming" in the ALR

Privately owned parcels Main agricultural activity	Largest residence on the parcel					Number of parcels
	Single mobile home	Small house	Medium house	Large house	Cabin / cottage	
Forage, pasture	4	19	28	3	1	55
Equine	-	8	13	3	-	24
Livestock	-	1	6	1	-	8
Grains, cereals, oilseeds	-	1	1	-	-	2
Berries	-	1	-	-	-	1
Poly greenhouse	-	-	1	-	-	1
Trees (plantation)	-	-	1	-	-	1
Vegetables	-	-	1	-	-	1
TOTAL PARCELS	4	30	51	7	1	93

*there are 93 parcels "Used for farming" with 109 residences

There are 93 privately owned parcels with residences that are "Used for farming" (refer to Table 25 above).

Table 27 shows that the main agricultural activities on parcels with residences are forage, pasture and equines.

Table 28. Main agriculture activity on "Used for farming" parcels with Large or Estate residences in the ALR

Privately owned parcels Main agricultural activity	Parcels with "Large" residences			
	Number of parcels	Crop area utilized (ha)	Average % of parcel area in crop	Average parcel area (ha)
Equine	3	76	42 %	122
Forage, pasture	3	93	67 %	48
Livestock	1	91	65 %	139
TOTAL	7*	259		

*there are 8 large residences on 7 parcels "Used for farming".

There are 7 privately owned parcels in the ALR with "Large" residences that are "Used for farming" (see Table 27 above).

Table 28 illustrates the crop area associated with "Large" residences. For instance, 3 parcels use a total of 76 hectares to support their agricultural activities which is mainly equines.

Appendix A

CULTIVATED FIELD CROPS

Table A1. Distribution of crop field sizes for all cultivated land

Crop area (ha)	Number of crop fields							Total number
	Forage, pasture	Grains, cereals, oilseeds	Vegetables	Berries	Ornamentals and shrubs	Trees (plantation)	Fallow land	
< 1	64	6	5	1	2	1	1	80
1 - 2	31	1	1	2	-	-	-	35
2 - 4	52	2	-	-	-	-	-	54
4 - 8	38	4	-	-	-	-	-	42
8 - 16	22	4	-	-	-	-	-	26
16 - 32	28	2	-	-	-	-	-	30
32 - 64	20	1	-	-	-	-	-	21
64 - 128	3	-	-	-	-	-	-	3
>= 128	-	-	-	-	-	-	-	-
TOTAL NUMBER OF FIELDS	258	20	6	3	2	1	1	291
AVERAGE CROP AREA (ha)	9 ha	8 ha	< 1 ha	1 ha	< 1 ha	< 1 ha	< 1 ha	8.9 ha
MEDIAN CROP AREA (ha)	3 ha	5 ha	< 1 ha	1 ha	< 1 ha	< 1 ha	< 1 ha	3.1 ha
AVERAGE PARCEL SIZE (ha)	36 ha	81 ha	2 ha	6 ha	7 ha	2 ha	1 ha	36 ha

Table A2. Distribution of forage and pasture field sizes

Field size (ha)	Number of forage or pasture fields					Total number
	Forage	Pasture	Forage & pasture	Unused *	Unmaintained **	
< 1	26	15	9	6	12	68
1 - 2	10	13	3	3	5	34
2 - 4	24	18	11	4	2	59
4 - 8	12	11	15	1	-	39
8 - 16	9	6	11	1	2	29
16 - 32	10	5	13	-	-	28
32 - 64	2	5	9	2	-	18
64 - 128	-	-	3	-	-	3
>= 128	-	-	-	-	-	-
TOTAL NUMBER OF FIELDS	93	73	74	17	21	278
AVERAGE CROP AREA (ha)	6.2 ha	7.3 ha	15.7 ha	6.4 ha	1.7 ha	8.7 ha
MEDIAN CROP AREA (ha)	2.8 ha	3.0 ha	7.6 ha	1.9 ha	< 1 ha	3.3 ha
AVERAGE PARCEL SIZE (ha)	37 ha	36 ha	56 ha	26 ha	19 ha	36 ha

* Unused refers to forage or pasture which has not been cut or grazed during the current growing season.

** Unmaintained refers to forage or pasture which has not been maintained for several years.

Table A3. Distribution of cereal or grain crop fields

Field size (ha)	Number of cereal, grain and oilseed activities		Total number
	Barley	Canola	
< 1	7	1	8
1 - 2	1	1	2
2 - 4	2	2	4
4 - 8	3	-	3
8 - 16	4	-	4
16 - 32	2	-	2
32 - 64	1	-	1
64 - 128	-	-	-
>= 128	-	-	-
TOTAL NUMBER OF FIELDS	20	4	24
AVERAGE CROP AREA (ha)	8 ha	2 ha	6.7 ha
MEDIAN AREA (ha)	4 ha	2 ha	2.7 ha
AVERAGE PARCEL SIZE (ha)	81 ha	71 ha	81 ha

Table A4. Distribution of natural pasture or rangeland areas

Area (ha)	Number of areas		Total number
	Pasture (natural)	Rangeland (natural)	
< 1	24	7	31
1 - 2	17	4	21
2 - 4	21	5	26
4 - 8	31	10	41
8 - 16	20	12	32
16 - 32	18	28	46
32 - 64	11	53	64
64 - 128	5	42	47
>= 128	-	25	25
TOTAL NUMBER OF AREAS	147	186	333
AVERAGE AREA (ha)	13.1 ha		
MEDIAN AREA (ha)	5.7 ha		
AVERAGE PARCEL SIZE (ha)	34 ha	117 ha	

LIVESTOCK

Table A5. Distribution of livestock operations by type

Parcel size (ha)	Type of activity						Total number of activities
	Beef	Poultry	Sheep / lamb / goat	Llama / alpaca	Unknown livestock	Equine	
< 1	-	1	-	-	-	3	4
1 - 2	-	-	-	1	-	6	7
2 - 4	-	1	-	-	-	7	8
4 - 8	3	1	2	1	-	15	22
8 - 16	-	-	-	-	-	13	13
16 - 32	2	-	-	-	1	7	10
32 - 64	5	-	2	-	-	7	14
64 - 128	6	-	-	-	-	11	17
>= 128	4	-	-	-	-	4	8
TOTAL NUMBER OF ACTIVITIES	20	3	4	2	1	73	103
MEDIAN PARCEL SIZE (ha)	71.7 ha	2.2 ha	23.1 ha	3.3 ha	22.1 ha	9.4 ha	13.5 ha
AVERAGE PARCEL SIZE (ha)	72 ha	3 ha	26 ha	3 ha	22 ha	34 ha	39 ha

Table A6. Distribution of equine activities by parcel size and scale

Parcel size (ha)	Scale of equine activities				Total number of activities
	Very small (1 - 2 equine)	Small (2 - 25 equine)	Medium (25 - 100 equine)	Large (> 100 equine)	
< 1	2	1	-	-	3
1 - 2	-	6	-	-	6
2 - 4	1	6	-	-	7
4 - 8	-	15	-	-	15
8 - 16	1	12	-	-	13
16 - 32	-	7	-	-	7
32 - 64	-	7	-	-	7
64 - 128	-	11	-	-	11
>= 128	-	4	-	-	4
TOTAL NUMBER OF ACTIVITIES	4	69	-	-	73
AVERAGE PARCEL SIZE (ha)	4 ha	36 ha	-	-	34 ha

Figure A1. Distribution of equine activities by parcel size and scale

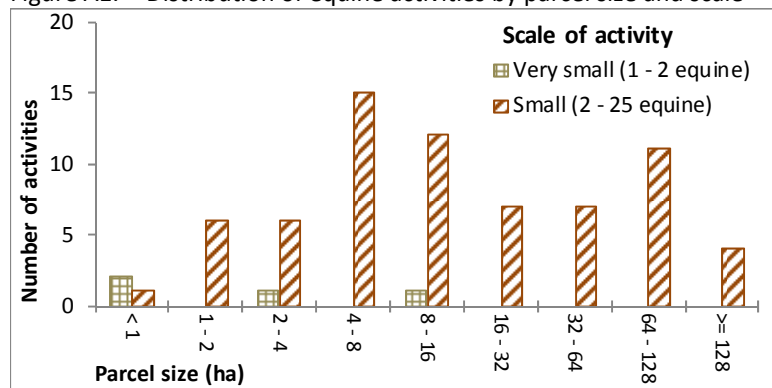


Figure A2. Land cover on parcels with equine activities¹

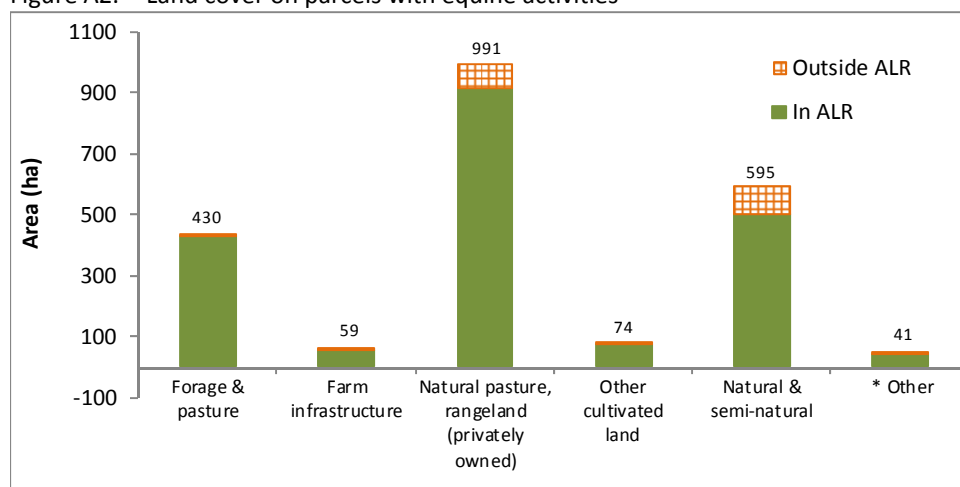


Table A7. Distribution of beef activities by parcel size and scale

Parcel size (ha)	Scale of beef activities				Total number of activities
	Very small (1 cow)	Small (2-25 cattle)	Medium (25-100 cattle)	Large (> 100 cattle)	
< 1	-	-	-	-	-
1 - 2	-	-	-	-	-
2 - 4	-	-	-	-	-
4 - 8	-	2	1	-	3
8 - 16	-	-	-	-	-
16 - 32	-	1	1	-	2
32 - 64	-	3	-	2	5
64 - 128	-	1	3	2	6
≥ 128	-	2	-	2	4
TOTAL NUMBER OF ACTIVITIES	-	9	5	6	20
AVERAGE PARCEL SIZE (ha)	-	64 ha	69 ha	89 ha	72 ha

¹ * Other includes vegetated lands seeded or planted for landscaping, dust, or soil control but not cultivated for harvest or pasture, lands covered by built objects but not farm infrastructure, and bare areas such as piles, pits, fill dumps.

Figure A3. Distribution of beef activities by parcel size and scale

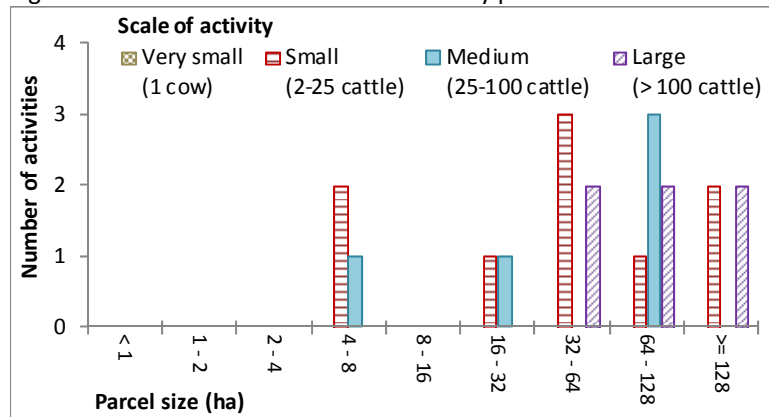
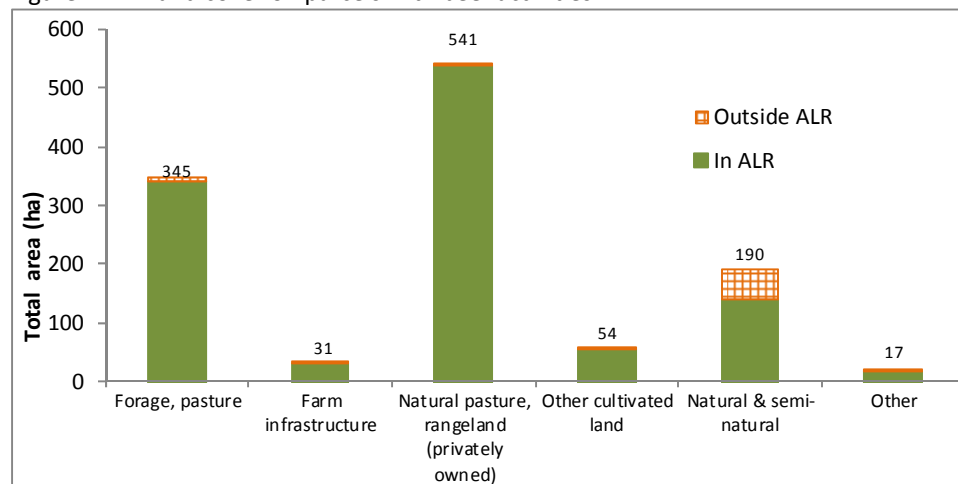


Figure A4. Land cover on parcels with beef activities²



² * Other includes vegetated lands seeded or planted for landscaping, dust, or soil control but not cultivated for harvest or pasture, lands covered by built objects but not farm infrastructure, and bare areas such as piles, pits, fill dumps.

Appendix B - Maps

