

Growing Knowledge



Ministry of
Agriculture

Land Use Inventory Report

Reference Number: 800.510-83.2014

Electoral Area B & Lillooet Squamish-Lillooet Regional District Summer 2013



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**Strengthening Farming Program
Ministry of Agriculture**

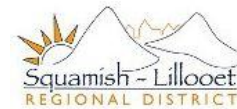
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Disclaimer:

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Acronyms

AGRI	BC Ministry of Agriculture
ALC	Agricultural Land Commission
ALR	Agricultural Land Reserve
ALUI	Agricultural Land Use Inventory
GIS	Geographic Information Systems
SLRD	Squamish-Lillooet Regional District

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, and crop cover structures.

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

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

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

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

Anthropogenic – Transportation – Lands covered by built objects (structures). Includes roads, railways, 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 – Land cover dominated by herbaceous plants with long, narrow leaves characterized by linear venation; including grasses, sedges, rushes, and other related species.

Natural and Semi-natural – Herbaceous – Land cover dominated by 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 areas usually on private land with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock.

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

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

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

Natural 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.

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

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

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

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

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

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

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.

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

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

Land Use

Heritage – Parcels with archaeology or heritage sites.

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

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

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

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

Water management – Areas used to actively or inactively manage water. Includes reservoirs, dikes, ditches, and managed wetlands.

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

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 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.

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

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

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.

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.

Executive Summary

Squamish-Lillooet Regional District (SLRD) is located in the Coast Mountains of southwestern British Columbia. The regional district is responsible for land use planning and is currently developing an Agricultural Area Plan for the District of Lillooet and Electoral Area B. The Agricultural Area Plan will be informed, in part, by the Agricultural Land Use Inventory.

In the summer of 2013, the BC Ministry of Agriculture conducted an Agricultural Land Use Inventory (ALUI) in the District of Lillooet and Electoral Area B. The ALUI was funded in part by SLRD and the Investment Agriculture Foundation of BC.

ALUIs 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 as well as quantifies the amount of land within the Agricultural Land Reserve (ALR) that is unavailable for agriculture. The data can also be used to estimate agricultural water demand with the use an irrigation water demand model.

The ALUI for Electoral Area B and Lillooet 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 were

- 1) all parcels completely or partially within the ALR;
- 2) all parcels classified as having “farm” status by BC Assessment.
- 3) parcels zoned by local/regional governments to permit agriculture and showing signs of agriculture on aerial photography

Indian reserves were surveyed if they met one of the above criteria. Survey totals for land on Indian reserves are presented separately from main inventory totals due to differences in levels of governance, planning, and decision making processes.

The ALR in Electoral Area B and Lillooet consists of 12,890 hectares. Of this area:

- 65% or 8,393 hectares was included in the inventory area.
- 25% or 3,187 hectares was outside of legally surveyed parcels in rights-of way or unsurveyed land
- 10% or 1,310 hectares was in Indian reserves.

Another 5,728 hectares of land outside the ALR was surveyed bring the total inventory area to 14,121 hectares on 419 parcels. In addition to the inventory area, another 7,173 hectares associated with 25 Indian reserves was surveyed. Of these 7,173 hectares, 1,310 hectares are in the ALR and 5,863 hectares are outside.

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 and was assigned up to two land uses.

In the ALR by land cover, 1,720 hectares (13%) was farmed (both actively and inactively), 110 hectares (1%) was anthropogenically modified, and 6,563 hectares (51%) was in a natural or semi-natural state. Of the natural and semi-natural ALR land cover, 1,320 hectares is in natural pasture/rangeland. Another 1,310 hectares (10%) was on Indian reserves and 3,187 hectares (25%) was outside legal parcels and is considered unavailable for farming. An additional 311 hectares of land outside the ALR was farmed.

In the ALR by parcel land use, 2,388 hectares (19%) were defined as “Used for farming,” 2,106 hectares (16%) were “Used for grazing”, and 3,898 hectares (30%) were “Not used for farming”. In this

analysis, farm residential uses and farm roads, were included in the “Used for farming” subtotal. Refer to the definitions section for the “Used for farming” criteria.

The inventory provided insight into ALR land available and with potential for farming by looking at land cover, land use, and physical site limitations. Of the 12,890 hectares of ALR land in Electoral Area B and Lillooet, 1,557 (12%) is actively farmed and 4 hectares (<1%) supports farming (e.g. houses, farm roads, farm buildings, etc). There are 102 hectares (1%) of the ALR unavailable for farming due to existing land use or land cover. There are 5,701 hectares (44%) with limited potential for agriculture due to physical site limitations of which nearly all are topography and/or soils. That leaves 1,012 hectares (8%) of the ALR that is available and has potential to be farmed.

In total, there were 2,009 hectares of cultivated field crops (1,702 hectares in the ALR and 307 hectares outside the ALR). The top crop was forage & pasture with 1,982 hectares or 99% of all cultivated land. There were 27 hectares of other crops including grapes, mixed vegetables, root vegetables, tree fruits, hops, and wheat. In addition to the inventory area, 518 hectares of crops were recorded on Indian reserves including 512 hectares of forage & pasture, 4 hectares of vegetables, and 1 hectare of tree fruits. In the forage & pasture category, 79 hectares were in forage, 218 hectares were in pasture, and 215 hectares were in used/ unmaintained forage or pasture.

Irrigation use was captured by crop type and irrigation system type, to aid in developing a water demand model for agriculture. A total of 1,288 hectares or 64% of all cultivated crops are irrigated in the Lillooet region. Sprinkler systems were the most common with 685 hectares, followed by surface irrigation system (394 hectares), and centre pivot systems (165 hectares). Giant gun systems (24 hectares) and trickle systems (20 hectares) were also recorded. An additional 82 hectares of sprinkler irrigation was found on Indian reserves.

Livestock activities were recorded, but are very difficult to measure using a windshield survey method. Livestock may be in barns, may be mobile, and may utilize more than one land parcel. The inventory data does not identify animal movement between parcels that make up a farm unit, but reports livestock at the parcel where the animals or related structures are observed. In Electoral Area B and Lillooet, equine was the most common type of livestock activity with 24 out of 39 activities (62%), followed by beef with 8 out of 39 activities (21%). Also recorded were 3 poultry, 2 llama/ alpaca, 1 sheep/lamb, and 1 dairy activities. All equine activities are “small” or “very small” scale while 5 of the 8 beef activities are “medium” or “large” scale. All livestock activities in the Lillooet area are “non-intensive”. An additional 12 equine activities were recorded on Indian reserves. No actual livestock numbers were obtainable through the survey, so the results were reported as a range in terms of animal unit equivalents for each parcel.

Further analysis of ALR lands was conducted on 210 parcels with 8,235 hectares or 63.8% of the ALR land. Of all ALR parcels, 60% are greater than 16 hectares. The average ALR parcel size is 53.6 hectares, and the median parcel size is 30.0 hectares. Of the 210 parcels in the ALR, 58 (28%) were “Used for farming”, 16 (8%) were “Used for grazing”, and 136 parcels (65%) were “Not used for farming”. In general, the proportion of parcel “Used for farming” increases as the parcel size increases. Although parcels of all sizes are “Used for farming”, small parcels are less likely to be farmed.

Summary

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

Agrologist Comments

Lillooet was originally named after an Aboriginal pony and was known as Cayoosh Flats. The area is rich in First Nation culture and history and has been home to the St'at'imc people for thousands of years. The first non native settlers arrived in Lillooet with the discovery of gold. The region boomed during the Gold Rush, and was considered the “largest town west of Chicago and North of San Francisco”. At the town's peak in 1860, Lillooet had 16,000 inhabitants. The road leading to Lillooet was long, rugged, and difficult to travel. It became necessary to grow food locally and agriculture expanded in the region. Crops were planted in the fertile valley bottoms and cattle were brought in to form ranches. Vegetables, wheat, beans, tobacco and tree fruits were all grown successfully. The tobacco production was especially successful and local brands were shipped across Western Canada. As the Gold Rush era ended, the population of Lillooet was reduced but many of the settlers decided to stay.

The Pacific Great Eastern Railway was built in 1914 and greatly increased access to the Lillooet area. At this time, the ranching industry was strengthened and more land was put into forage production. During World War II Japanese internment camps were set up on the east Lillooet flats after the attack on Pearl Harbour. Some of the Japanese grew vegetables that were sold locally. After the war, hops were planted and covered most of the flats north of Lillooet which is now a residential area.

For the next number of years, vegetables crops, fruits trees, and ranching were the main agricultural activities in the Lillooet area. In the mid 1980's ginseng production started. With its high selling price, ginseng attracted many growers. At its peak in the late 1990's, the Lillooet area had over 500 acres of ginseng. As prices fell and production slowed, the land was converted back to forage. Currently, forage production and ranching are the main agricultural activities. In the mid 2000's grapes were planted and the first winery opened in Lillooet. Vegetables are still grown on the east Lillooet flats, and recently a new hop farm was established. A weekly farmers market occurs each year starting in May and ending in October. This market demonstrates that there is support for local products.

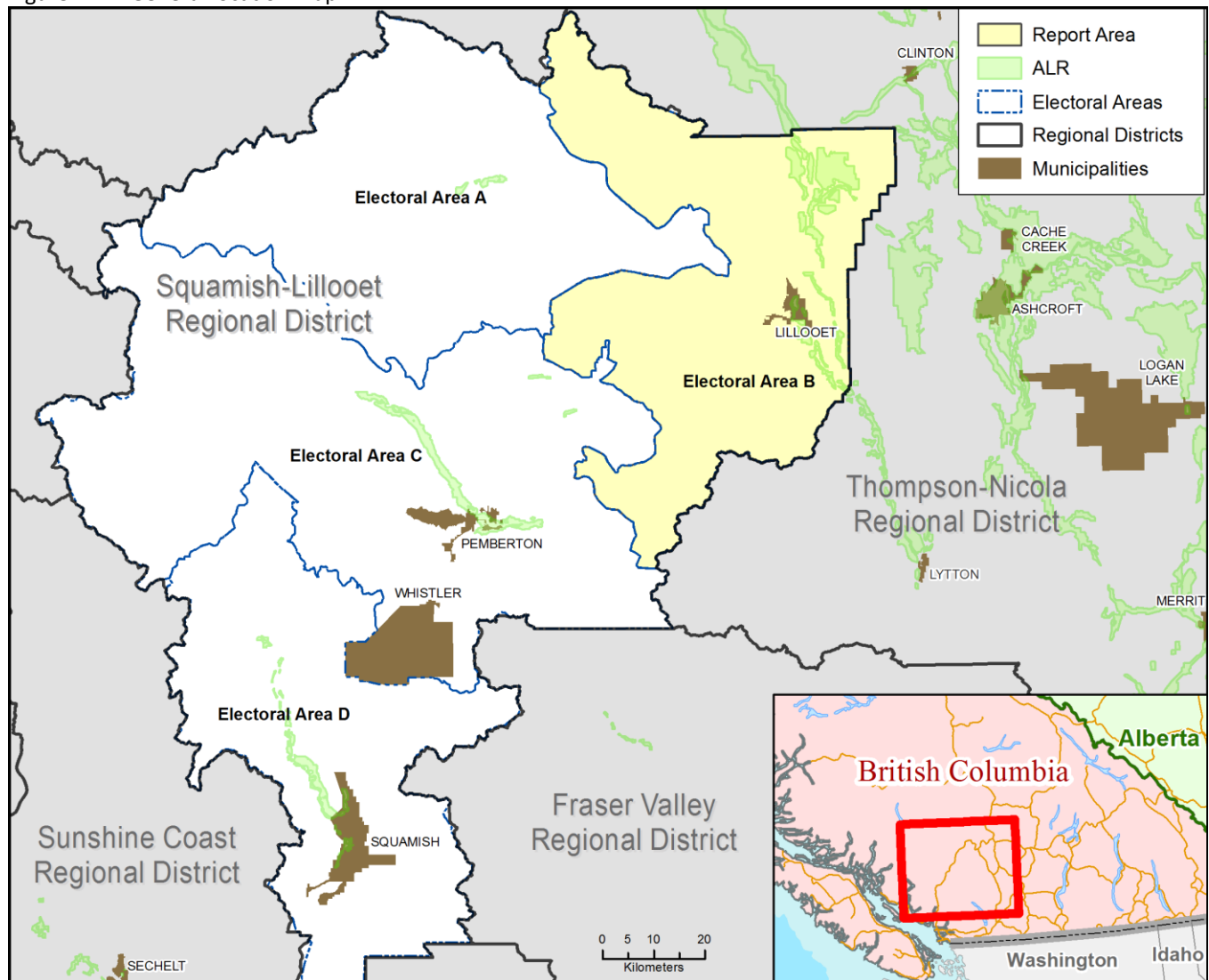
The climate in Lillooet is hot and dry with an average daily high of 28 degrees Celsius in summer. The annual precipitation is 350 mm, of which only 135 mm occurs during the growing season. The irrigation demand is over 600mm. These numbers indicate that precipitation alone does not provide enough water and that irrigation is required to grow a productive crop. Currently, most irrigation uses gravity feed mainlines to redirect water from higher elevation areas. This method of irrigation is generally only available early in the growing season. As the snow pack melts and the streams dry up in the warmer months, there may not be enough water available for irrigation. This is of concern especially on the eastern side of the Fraser River. The development of irrigation storage and infrastructure would allow for greater crop production, but is associated with a high cost.

General Information

Squamish-Lillooet Regional District (SLRD) is located in southwestern British Columbia and spans both sides of the southern Pacific Ranges of the Coast Mountains. The regional district has varied land cover that includes steep mountainous terrain, heavily forested areas, glaciers, river valleys, and floodplains.¹ SLRD is comprised of four Electoral Areas (A, B, C, and D) and the incorporated municipalities of Squamish, Whistler, Pemberton, and Lillooet.

Electoral Area B is the rural area surrounding the District of Lillooet and includes Pavilion, Texas Creek, Yalakom, Bridge River, and Seton Portage. Lillooet and Electoral Area B have a total area including land and water of 372,034 hectares². Lillooet has a population of 2,324² and Electoral Area B has a population of 1,719² which includes 1,144 people residing on Indian reserves.

Figure 1. General location map



¹ Squamish-Lillooet Regional District Regional Growth Strategy. 2008. <http://www.slrd.bc.ca/siteengine/activepage.asp?PageID=17>

² 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.

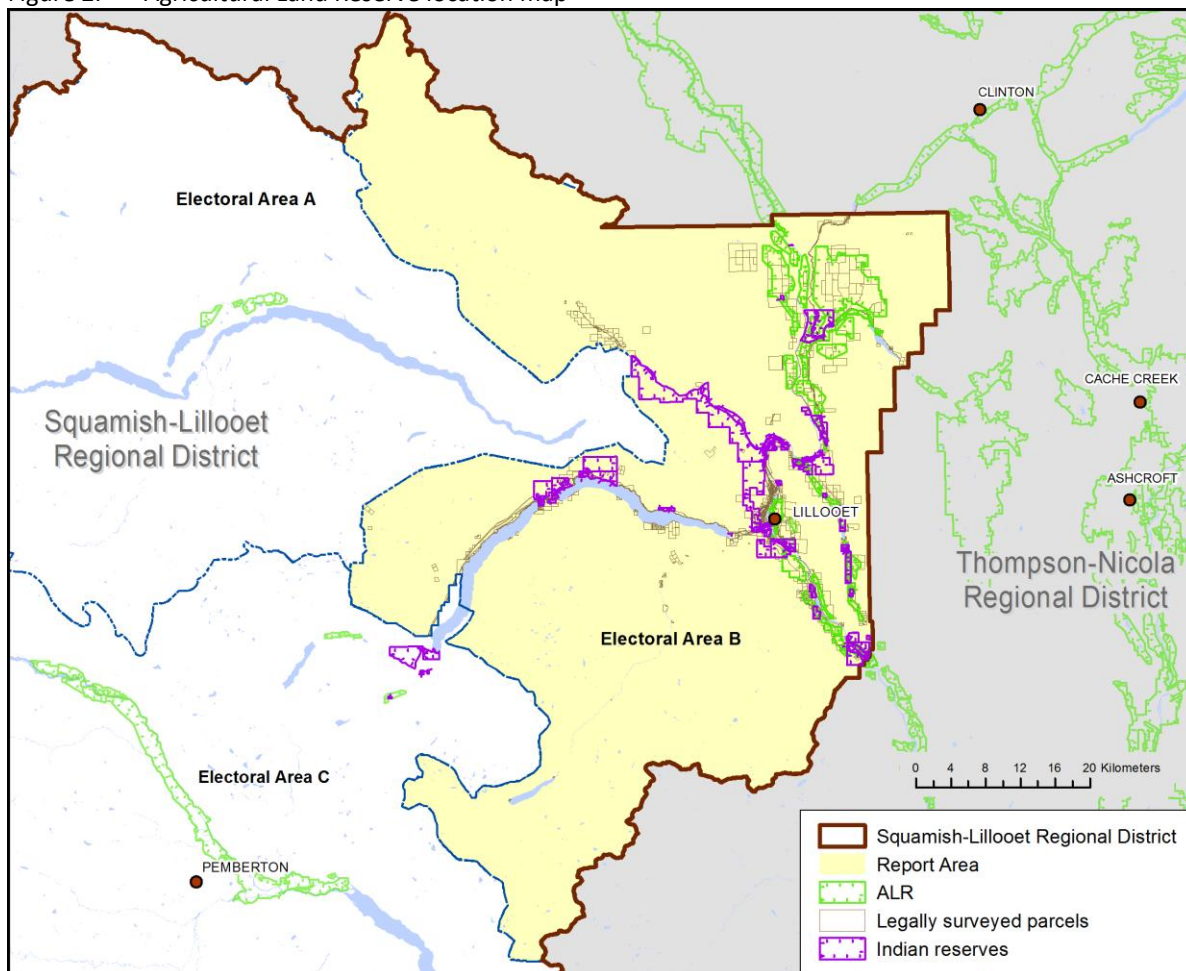
There are 25,349 hectares³ of ALR land within the Squamish-Lillooet Regional District (see Figure 1); 12,890 hectares⁴ or 51% is within the area of interest (Electoral B and Lillooet).

The total size of the area of interest is 372,034 hectares⁵, of this area, only 33,406 hectares are in legally surveyed parcels. With 12,890 hectares⁴ in the ALR, 3% of the area of interest, and 39% of all legal parcels are in the ALR. This area includes:

- 8,393 hectares in surveyed parcels
- 3,187 hectares outside surveyed parcels (rights-of-way, water, unsurveyed Crown land, etc.)
- 1,310 hectares in Indian reserves

Of the 8,393 hectares of ALR in surveyed parcels, 273 hectares are in Lillooet and 120 hectares are in Electoral Area B.

Figure 2. Agricultural Land Reserve location map



³ Provincial Agricultural Land Commission (ALC) Annual Report 2012/13 Pg 39. http://www.alc.gov.bc.ca/publications/2012-13%20ALC_Annual%20Report_Final.pdf

⁴ Agricultural Land Commission, ALR mapping, Land and Resource Data Warehouse, 2012-10-31 (area calculated in GIS).

⁵ 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.

INVENTORY AREA

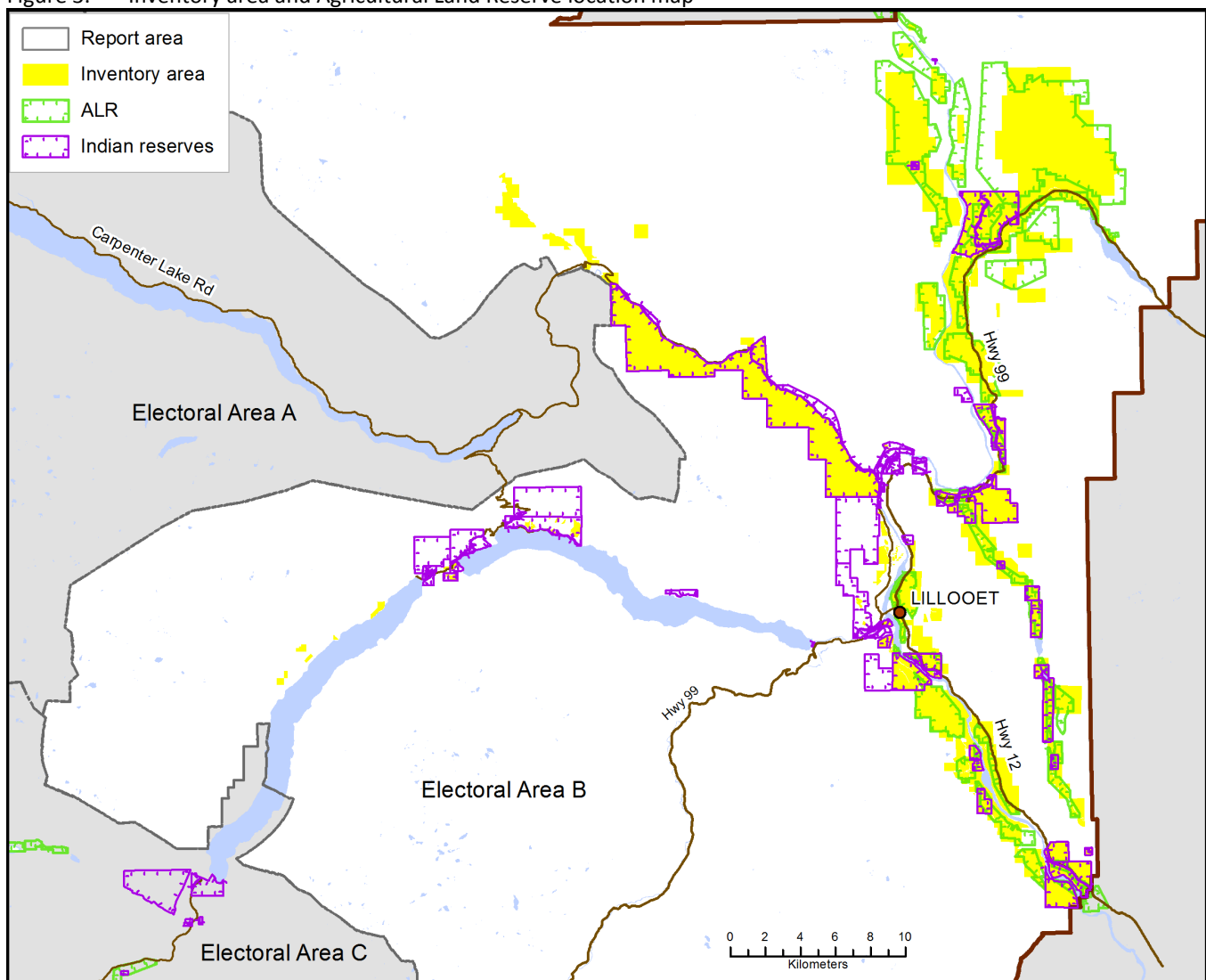
The total inventory area encompasses 419 parcels with a combined area of 14,121 hectares, or 42% of the legally surveyed parcels in the area of interest. Included are all parcels:

- completely or partially within the Agricultural Land Reserve
- classified by BC Assessment as having “Farm” status for property tax assessment
- zoned by local government bylaws to permit agriculture and exhibiting signs of agriculture on aerial photography

The amount of ALR land included in the inventory area is 8,393 hectares located on 276 parcels. This area is 65% of the ALR within Electoral Area B and Lillooet.

Indian reserves were surveyed if they were completely or partially within the Agricultural Land Reserve, or showed signs of agriculture on aerial photography. An additional 7,173 hectares associated with 8 bands and 25 reserves was inventoried. This area is comprised of 1,310 hectares in the ALR and 5,863 hectares outside the ALR. Land inventoried on reserves is reported separately from the main inventory totals due to differences in levels of governance, planning, and decision making processes.

Figure 3. Inventory area and Agricultural Land Reserve location map



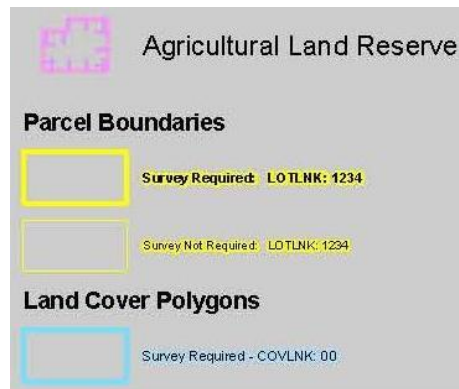
Agricultural Land Use Inventory

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 Lillooet area land use inventory was conducted in the summer of 2013 by a BC Ministry of Agriculture agrologist assisted by a GIS technician. 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)⁶
- Unique identifier for each legal parcel
- The preliminary land cover polygon boundaries (digitized prior to field survey using aerial photography)
- Unique identifier for each preliminary land cover polygon
- The boundary of the Agricultural Land Reserve (ALR)
- Base features such as streets, street names, watercourses and contours
- Aerial photography



⁶ Cadastre mapping (2012) was provided through the Integrated Cadastral 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.

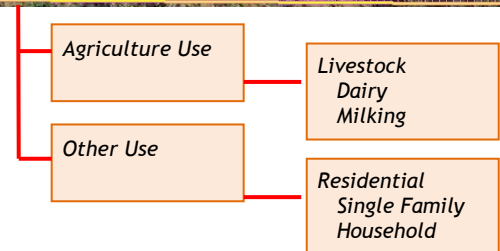
Once acquired through the survey, the data was brought into a Geographic Information System (GIS) to facilitate analysis and mapping. Digital data, in the form of a tabular database and GIS spatial layers (for maps), may be available with certain restrictions through a terms of use agreement.

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

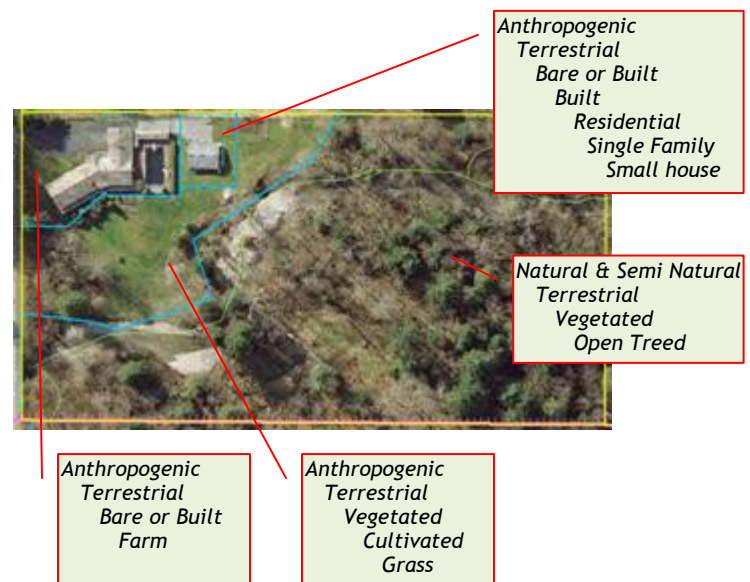
In addition, the availability of non-farm use properties for future farming was assessed based on the amount of potential land for farming on the property and the compatibility of existing uses with future farming activities.



Land cover:

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

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



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

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

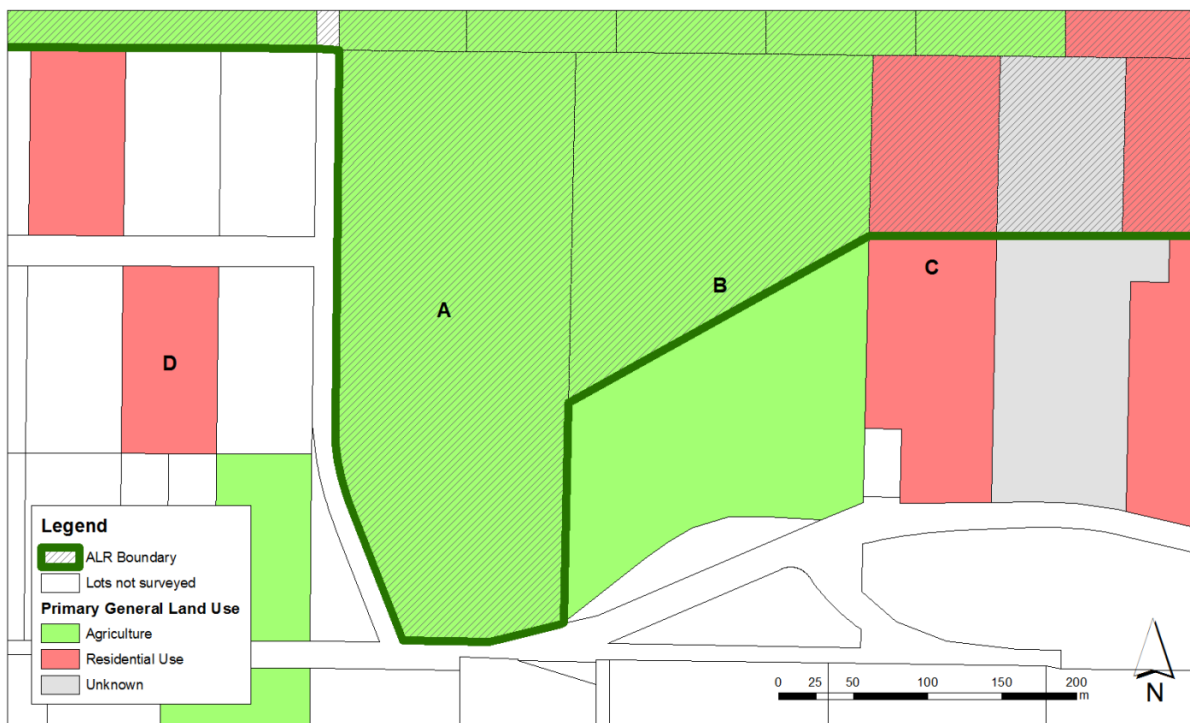
DETERMINATION OF PARCELS WITHIN THE ALR

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

Figure 4 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 4. 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, or 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.

Four land cover types are considered “Farmed”:

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

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

Natural pasture and rangeland are fenced areas with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock. These areas are considered “Grazed” and not “Farmed” although usually these areas 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	In Crown ownership (ha)**
		In ALR (ha)	% of ALR				
Actively farmed	Cultivated field crops	1,557	12%	281	1,837	13%	13
	Farm infrastructure	18	< 1%	6	24	< 1%	<1
	Greenhouses	<1	< 1%	-	<1	< 1%	-
Inactively farmed	Unmaintained field crops	16	< 1%	2	18	< 1%	-
	Unused forage or pasture	129	1%	25	154	1%	2
FARMED SUBTOTAL		1,720	13%	313	2,033	14%	15
Anthropogenic (not farmed)	Managed vegetation	40	< 1%	41	81	< 1%	1
	Non built or bare	5	< 1%	6	12	< 1%	<1
	Residential footprint	9	< 1%	20	29	< 1%	<1
	Settlement	<1	< 1%	5	6	< 1%	-
	Transportation	54	< 1%	21	75	< 1%	52
	Built up - other	<1	< 1%	<1	1	< 1%	<1
SUBTOTAL		110	1%	93	204	1%	54
Natural and Semi-natural	Vegetated	5,208	40%	4,444	9,652	68%	2,011
	Natural pasture or rangeland	1,320	10%	19	1,339	9%	2
	Wetlands	13	< 1%	6	19	< 1%	-
	Natural bare areas	14	< 1%	105	119	< 1%	56
	Waterbodies	7	< 1%	46	54	< 1%	6
SUBTOTAL		6,563	51%	4,620	11,183	79%	2,075
Unknown	Not surveyed	<1	< 1%	701	701	5%	549
TOTAL		8,393	65%	5,728	14,121	100%	2,694
Surveyed	Indian reserves	1,310	10%	5,863	7,173		
Not surveyed	Outside parcels	3,187	25%				
	Parcels areas < 100 sq m	<1	< 1%				
SUBTOTAL		4,497	35%				
TOTAL		12,890	100%	11,591	21,294		

* See "Land Cover" in the Definitions section for terms used in this table.

** In Crown ownership. This total does not land in Indian reserves as this area is reported separately.

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

There are 2,031 hectares of land in "Farmed" land cover although 172 of these hectares are "Inactively farmed" in unmaintained field crops and unused forage or pasture.

Refer to Map 1 for more information.

Figure 5. Land cover and farmed area in the ALR

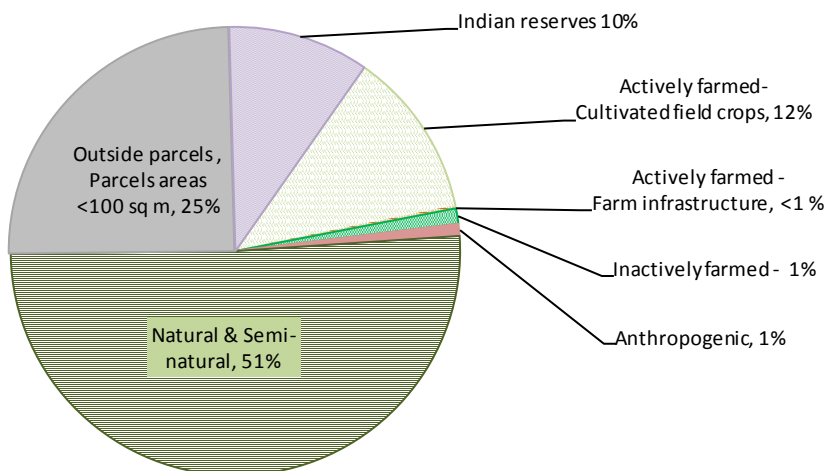


Figure 5 shows the proportion of different land cover types across the ALR in Electoral Area B and Lillooet.

Of the ALR land, 12% is “Actively farmed” while 1% is in unmaintained field crops or unused forage or pasture (“Inactively Farmed”).

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

Over half (51%) of the ALR area is in “Natural & Semi-natural” land cover.

Table 2. Land cover and farmed area on Indian reserves

Land cover*		ALR		Outside ALR (ha)	Total area (ha)
		In ALR (ha)	% of ALR		
Actively farmed	Cultivated field crops	161	1%	142	303
	Farm infrastructure	<1	< 1%	2	2
	Greenhouses	<1	< 1%	-	<1
Inactively farmed	Unmaintained field crops	-	-	8	8
	Unused forage or pasture	139	1%	69	207
FARMED SUBTOTAL		301	2%	220	520
Anthropogenic (not farmed)	Managed vegetation	7	< 1%	24	31
	Non built or bare	<1	< 1%	2	3
	Residential footprint	9	< 1%	11	19
	Settlement	3	< 1%	2	5
	Transportation	14	< 1%	7	20
	Built up - other	-	-	<1	<1
	Waterbodies	<1	< 1%	<1	<1
SUBTOTAL		34	< 1%	45	79
Natural and Semi-natural	Vegetated	964	7%	3,606	4,570
	Natural pasture or rangeland	4	< 1%	1	5
	Wetlands	3	< 1%	4	7
	Natural bare areas	1	< 1%	13	14
	Waterbodies	1	< 1%	64	65
SUBTOTAL		974	8%	3,687	4,661
Unknown	Not surveyed	<1	< 1%	1,911	1,912
TOTAL		1,310	10%	5,863	7,173

Table 2 shows the extent of different land cover types across inventoried land on Indian reserves.

* See "Land Cover" in the Definitions section for terms used in this table.

Table 3. Land cover and farmed area on Indian reserves by reserve name

Band name	Reserve name	Land Cover Category				Total area (ha)
		Farmed (ha)	Anthropogenic (not farmed) (ha)	Natural & Semi-natural (ha)	Not surveyed (ha)	
Bridge River	Bridge River	116	26	3,201	-	3,343
SUBTOTAL		116	26	3,201	-	3,343
Cayoose Creek	Cayoose Creek 1	12	<1	45	-	58
	Pashilqua 2	3	<1	24	276	304
SUBTOTAL		15	<1	69	276	361
Lytton	Fish Lake 7	5	<1	27	-	32
	Nesikpe 6	31	1	88	563	683
SUBTOTAL		36	2	115	563	716
Seton	Mission 5	5	<1	14	-	19
	Slosh 1	19	11	48	-	78
	Slosh 1A	4	-	1	-	5
SUBTOTAL		28	11	64	-	102
T''it''q''et	Lillooet 1	9	<1	9	-	18
	McCartney's Flat 4	43	5	110	-	158
	Riley Creek 1B	17	-	56	-	73
	Towinock	8	7	73	-	88
SUBTOTAL		78	12	247	-	337
Ts''kw''aylaxw	Pavilion 1	-	2	443	447	891
	Pavilion 1A	-	-	15	-	15
	Ts'kw'aylaxw 5	6	<1	10	-	16
SUBTOTAL		6	2	469	447	923
Xaxli''p	Chilhil 6	40	3	83	132	258
	Fountain 1	21	17	69	467	574
	Fountain 1A	-	-	-	5	5
	Fountain 1B	51	3	8	-	62
	Fountain 1D	4	1	14	22	41
	Fountain 3	85	<1	158	-	243
	Fountain 3A	-	<1	2	-	2
	Fountain 4	15	<1	77	-	92
	Fountain Creek 8	3	<1	13	-	16
	Quatlenemo 5	24	<1	73	-	97
SUBTOTAL		242	26	496	626	1,391
TOTAL		520	79	4,661	1,912	7,173

Table 3 shows the land cover types across the Indian reserves in the area of interest. In total, 520 hectares of reserve land is in "farmed" land cover, 79 hectares is in anthropogenic (not farmed), and 4,661 hectares is in natural & semi-natural land cover.

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

Indian reserves are not considered to be legally surveyed parcels. This means that land use cannot be assessed on a parcel basis for reserves and no data on Indian reserves is presented in this section.

Table 4. Land use and farming use by parcel

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						
Used only for farming - no other use		1,542	12 %	195	1,737	12 %	39	9 %	45
Used for farming - Mixed use	Residential	557	4 %	506	1,063	8 %	45	11 %	24
	Recreation & leisure - golf	138	1 %	< 1	138	<1 %	1	<1 %	138
	Gravel extraction	100	<1 %	< 1	100	<1 %	1	<1 %	100
	Utilities	51	<1 %	14	65	<1 %	1	<1 %	65
	Transportation	< 1	<1 %	2	3	<1 %	1	<1 %	3
USED FOR FARMING SUBTOTAL		2,388	19 %	718	3,107	22 %	88	21 %	
Used only for grazing - no other use		1,983	15 %	188	2,171	15 %	15	4 %	145
Used for grazing - & Utilities		124	<1 %	< 1	124	<1 %	1	<1 %	124
USED FOR GRAZING SUBTOTAL		2,106	16 %	188	2,294	16 %	16	4 %	
Not used for farming	No apparent use	2,156	17 %	2,481	4,637	33 %	123	29 %	38
	Transportation	933	7 %	690	1,623	11 %	29	7 %	56
	Residential	369	3 %	1,008	1,378	10 %	139	33 %	10
	Utilities	257	2 %	289	546	4 %	15	4 %	36
	Heritage	112	<1 %	16	128	<1 %	1	<1 %	128
	Forestry	47	<1 %	154	201	1 %	1	<1 %	201
	Industrial	18	<1 %	27	45	<1 %	3	<1 %	15
	Gravel extraction	5	<1 %	18	23	<1 %	3	<1 %	8
	Recreation & leisure	< 1	<1 %	139	139	<1 %	1	<1 %	139
NOT USED FOR FARMING/GRAZING SUBTOTAL		3,898	30 %	4,822	8,720	62 %	315	75 %	
TOTAL		8,393	65 %	5,728	14,121	100 %	419	100 %	
Surveyed	Indian reserves	1,310	10 %	5,863	7,173				
Not surveyed	Outside parcels	3,187	25 %						
	Parcels areas < 100 sq m	< 1	<1 %						
SUBTOTAL		4,497	35 %						
TOTAL		12,890	100 %	11,591	21,294				

* See "Land Use" in the Definitions section for terms in this table.

Table 4 shows that of the ALR in the Lillooet area, 2,388 hectares or 19% is on parcels "Used for farming" and 2,106 hectares or 15% is on parcels "Used for grazing".

One parcel with the mixed use "Used for farming" and recreation & leisure - golf is associated with Sheep Pasture Golf Course.

There are 16 parcels that are "Used for grazing", 15 of which have no other land use.

Refer to Map 2 for more information.

Table 5. Parcel use and land cover in the ALR

Parcel Land Use		Land Cover Category						Total	
		Farmed *		Anthropogenic (not farmed)		Natural & Semi - natural			
		In ALR (ha)	% of ALR area	In ALR (ha)	% of ALR area	In ALR (ha)	% of ALR area	In ALR (ha)	% of ALR area
Used only for farming - no other use		975	8 %	1	<1 %	565	4 %	1,542	12 %
Used for farming - mixed use	Residential	326	3 %	11	<1 %	219	2 %	557	4 %
	Recreation & leisure - golf	116	<1 %	2	<1 %	20	<1 %	138	1 %
	Gravel extraction	75	<1 %	3	<1 %	22	<1 %	100	<1 %
	Utilities	16	<1 %	-	-	35	<1 %	51	<1 %
	Transportation	< 1	<1 %	-	-	-	-	< 1	<1 %
USED FOR FARMING SUBTOTAL		1,510	12 %	17	<1 %	862	7 %	2,388	19 %
Used only for grazing - no ther use		-	-	8	<1 %	1,975	15 %	1,983	15 %
Used for grazing - & Utilities		-	-	-	-	124	<1 %	124	<1 %
USED FOR GRAZING SUBTOTAL		-	-	8	<1 %	2,099	16 %	2,106	16 %
Not used for farming or grazing		211	2 %	85	<1 %	3,602	28 %	3,898	30 %
SUBTOTAL		1,720	13 %	110	<1 %	6,563	51 %	8,393	65 %
Surveyed	Indian reserves							1,310	10 %
Not surveyed	Outside parcels							3,187	25 %
	Parcels areas < 100 sq m							< 1	<1 %
SUBTOTAL								4,497	35 %
TOTAL ALR								12,890	100 %

* Some parcels that are "Not used for farming" 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 Definitions section.

Table 5 combines land use and land cover on ALR land. For example, parcels with the mixed use "Used for farming" and "Residential" have a total of 326 hectares in "Farmed" land cover, 11 hectares in "Anthropogenic" (not farmed) land cover, and 219 hectares in "Natural & Semi-natural" land cover.

Although 2,388 hectares or 19% of the ALR is on parcels "Used for farming" (refer to Table 4), only 1,510 hectares or 12% of the ALR is actually in "Farmed" land cover as many "Used for farming" parcels are also used for other purposes. Much of the "Farmed" land cover in the ALR (326 hectares or 3%) is on parcels also used for "Residential" purposes.

3. Availability of Land for Farming

The demand for locally grown agricultural products is anticipated to grow as the population grows ⁷. 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. Lands suitable for agricultural development may not be available and agricultural sectors that require large land bases, such as dairy or berry, may find it difficult to access sufficient land. 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 tend to have very high land values making it more difficult 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 a very small size, are considered not to have 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.

Indian reserves are not considered to be legally surveyed parcels. This means that land use cannot be assessed on a parcel basis for reserves and no data on Indian reserves is presented in this section.

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

Land status		ALR		Outside ALR (ha)	Total area (ha)	% inventory area
		In ALR (ha)	% ALR Area			
Actively farmed	Cultivated field crops	1,557	12 %	281	1,837	13 %
	Farm infrastructure	18	<1 %	6	24	<1 %
	Greenhouses	< 1	<1 %	-	< 1	<1 %
ACTIVELY FARMED		1,575	12 %	286	1,861	13 %
Supporting farming	Residential footprint	3	<1 %	5	8	<1 %
	Transportation	< 1	<1 %	< 1	1	<1 %
SUPPORTING FARMING		4	<1 %	6	9	<1 %
Unavailable for farming due to existing land use	Transportation	35	<1 %	12	46	<1 %
	Gravel extraction	5	<1 %	9	13	<1 %
	Residential	2	<1 %	18	20	<1 %
	Industrial	< 1	<1 %	3	3	<1 %
Unavailable for farming due to existing land cover	Transportation	19	<1 %	10	29	<1 %
	Natural bare areas	14	<1 %	105	119	<1 %
	Wetlands	13	<1 %	6	19	<1 %
	Waterbodies	7	<1 %	46	54	<1 %
	Residential footprint	6	<1 %	10	16	<1 %
	Built up - other	1	<1 %	5	7	<1 %
UNAVAILABLE FOR FARMING		102	1 %	223	324	2 %
Site limitations	Topography &/or soils	5,692	44 %	4,291	9,983	71 %
	Flooding	6	<1 %	< 1	6	<1 %
	Operational	3	<1 %	4	7	<1 %
LIMITED POTENTIAL FOR FARMING		5,701	44 %	4,295	9,996	71 %
Available & with potential for farming	Natural & Semi-natural - Vegetation	529	4 %	152	681	5 %
	Natural pasture or rangeland	298	2 %	11	309	2 %
	Unused forage or pasture	129	1 %	25	154	1 %
	Anthropogenic - Managed vegetation	38	<1 %	25	63	<1 %
	Unmaintained field crops	16	<1 %	2	18	<1 %
	Anthropogenic - Non built or bare	2	<1 %	2	3	<1 %
AVAILABLE & WITH POTENTIAL FOR FARMING		1,012	8 %	216	1,228	9 %
Availability & potential for farming unknown		< 1	<1 %	701	701	5 %
TOTAL		8,393	65 %	5,728	14,121	100 %
Surveyed	Indian reserves	1,310	10 %	5,863	7,173	
Not surveyed	Outside parcels	3,187	25 %			
	Parcels areas < 100 sq m	< 1	<1 %			
SUBTOTAL		4,497	35 %			
TOTAL		12,890	100 %	11,591	21,294	

Table 6 shows that 1,575 hectares or 12% of the ALR is actively used for farming; <1% is used in support of farming (farm residences, roads, etc); 1% is unavailable for farming; 44% has limited potential for farming; and 8% is available and has potential for farming.

Refer to Maps 2 and 3 for more information.

Figure 6. Availability and potential of ALR lands for farming

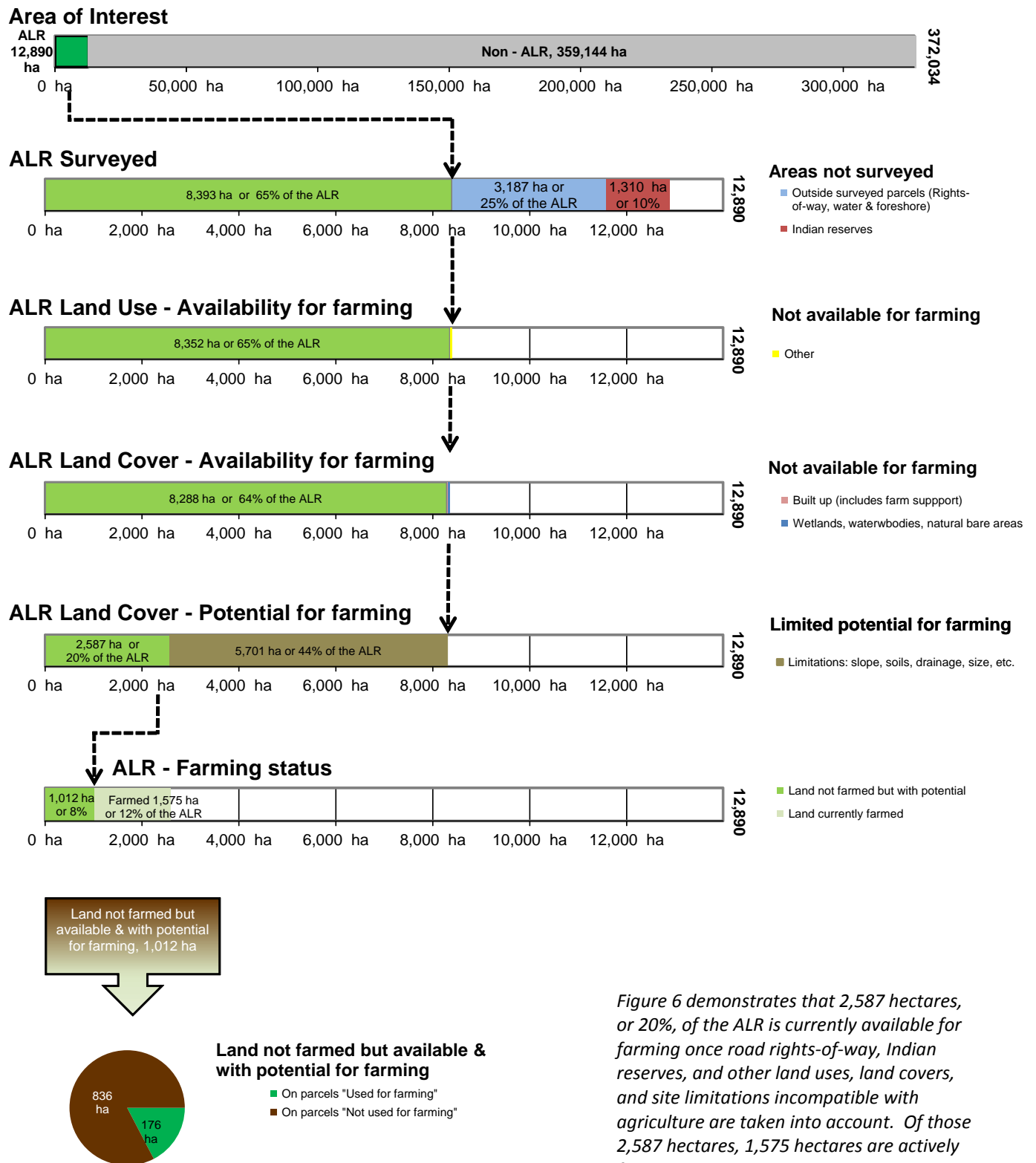


Figure 6 demonstrates that 2,587 hectares, or 20%, of the ALR is currently available for farming once road rights-of-way, Indian reserves, and other land uses, land covers, and site limitations incompatible with agriculture are taken into account. Of those 2,587 hectares, 1,575 hectares are actively farmed and 1,012 hectares are available and have potential for farming.

CHARACTERISTICS OF NOT FARMED BUT AVAILABLE 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. A dairy cow, for example, 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”

Table 7. 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	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 for farming only	12	147	3	149	433	11	444	9 %
Residential	32	24	21	45	203	109	312	2 %
Recreation & leisure - golf	1	5	-	5	116	< 1	116	<1 %
TOTAL	45	176	24	199	752	120	872	11 %

Table 7 demonstrates that the largest potential increase in farmed land on parcels that are already “Used for farming” could come from properties that are exclusively “Used for farming” and parcels with “Residential” use.

Figure 7. Land cover available for farming but not farmed on ALR parcels “Used for farming”

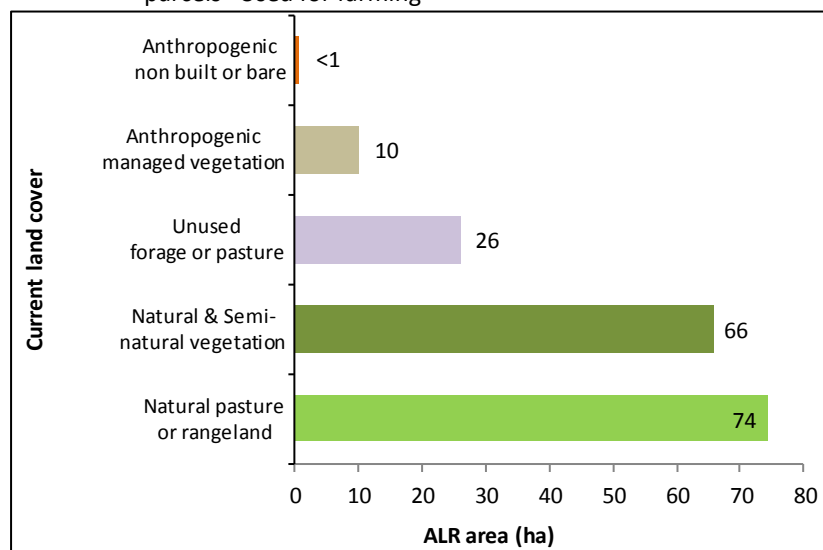


Figure 7 indicates that land currently in “Natural pasture or rangeland” and “Natural & Semi-natural vegetation” would provide the greatest gains in farmed land on parcels that are already “Used for farming”.

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 8. Land use and cover on parcels “Not used for farming” with land available for farming

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)	
Used only for grazing - no other use		7	323	10	332	20 %
Not used for farming or grazing	No apparent use	45	301	78	379	19 %
	Utilities	10	67	15	82	4 %
	Residential	50	59	68	126	4 %
	Heritage	1	57	-	57	4 %
	Forestry	1	17	-	17	1 %
	Transportation	1	7	1	8	<1 %
	Industrial	2	7	19	27	<1 %
	Recreation & leisure	1	-	1	1	-
TOTAL		118	836	193	1,029	53 %

Table 8 illustrates that for parcels currently “Not used for farming”, the greatest potential for increasing actively farmed land could come from parcels that are “Used only for grazing” and from parcels with “no apparent use”.

Figure 8. Land cover available for farming on “Not used for farming” ALR parcels

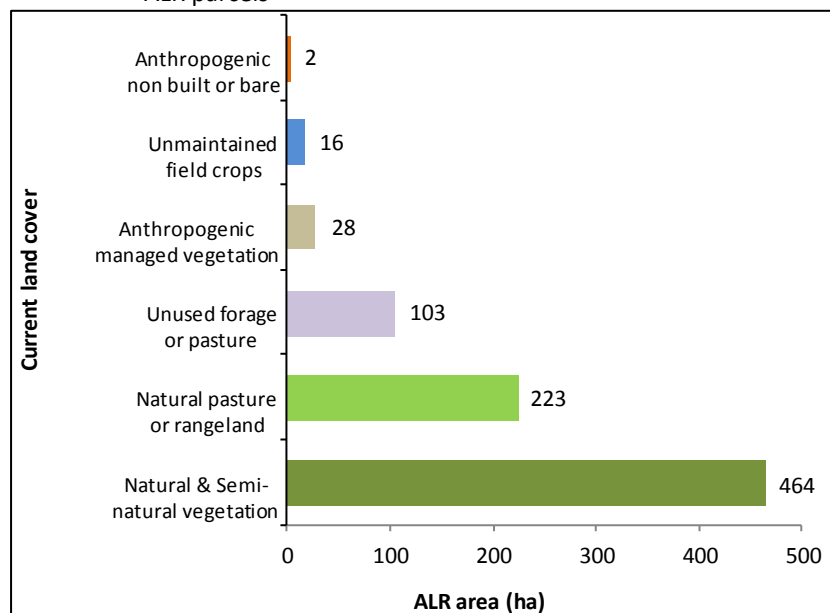


Figure 8 indicates that clearing land covered with “Natural & Semi-natural vegetation” would provide the greatest gains in farmed land on parcels “Not used for farming”.

Figure 9. Natural & semi-natural land cover available for farming on “Not used for farming” ALR parcels

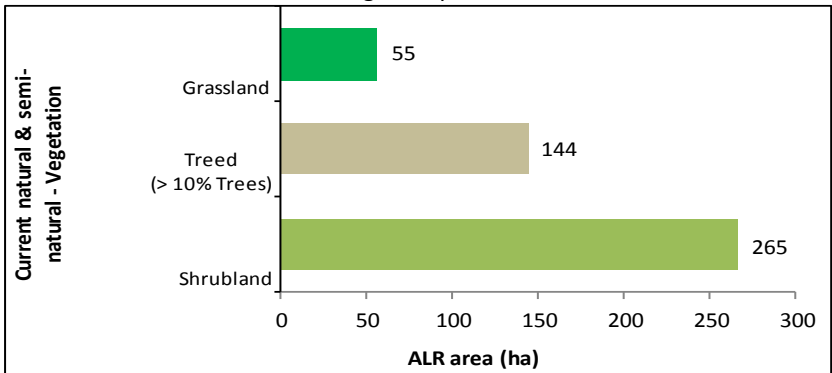


Figure 9 illustrates the types of “Natural and Semi-natural” land cover available for farming on “Not used for farming” parcels.

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

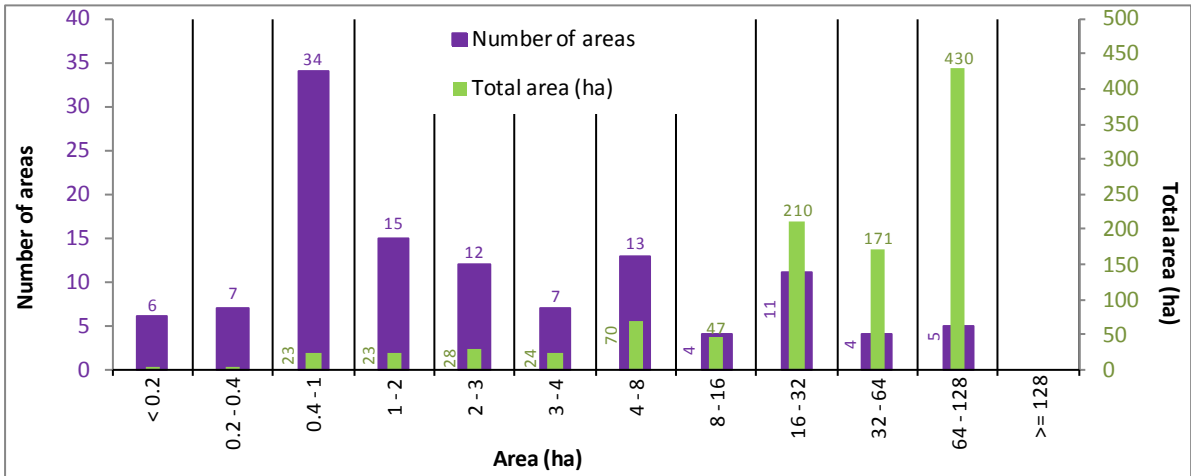


Figure 10 demonstrates that half of the areas available for farming (53 of 107 or 50%) are less than 2 hectares in size. Fewer options are available to efficiently farm small parcels. In general, areas should be at least 4 hectares to provide the widest range of farming options.

There are 37 areas greater than 4 hectares and available for farming but not farmed in Electoral Area B and Lillooet. These areas have a total of 928 hectares, or 90% of the 1,029 hectares available (refer to Table 8).

4. Farming Activities

CULTIVATED FIELD CROPS

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

Included with cultivated field crops is fallow farmland, 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 during the survey season. Excluded are crops grown in crop cover structures such as greenhouses or mushroom barns.

Cultivated crops on Indian reserves are reported separately from the inventory totals. This is primarily due to differences in levels of governance, planning, and decision making.

Cultivated field crops in Electoral Area B and Lillooet are described by five crop groupings:

- **Forage & pasture:** grass, mixed grass/legume
- **Grapes**
- **Vegetables:** mixed vegetables (a variety of vegetable type cultivated together), root vegetables (potatoes, carrots, garlic, dry onions, rutabagas, turnips, beets, or radishes)
- **Tree fruits:** mixed tree fruits
- **Wheat**

Table 9. Main field crop types by area

Type	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land	Number of parcels with crop type
	In ALR (ha)	% of ALR				
Forage & pasture	1,683	13%	299	1,982	99%	185
Grapes	9	< 1%	1	10	< 1%	5
Vegetables	8	< 1%	< 1	9	< 1%	6
Tree fruits	2	< 1%	4	6	< 1%	7
Hops	-	-	2	2	< 1%	1
Wheat	-	-	< 1	< 1	< 1%	1
TOTAL	1,702	13%	307	2,009	100%	205

Table 9 shows the 5 main field crop types produced on the 2,009 hectares of cultivated land in Electoral Area B and Lillooet.

"Forage & pasture" is the dominant cultivated field crop type accounting for 99% of all cultivated land and 13% of the ALR.

There are only 27 hectares of cultivated land in other crop types.

Refer to Map 4 for more information.

Figure 11. Main field crop types by percentage

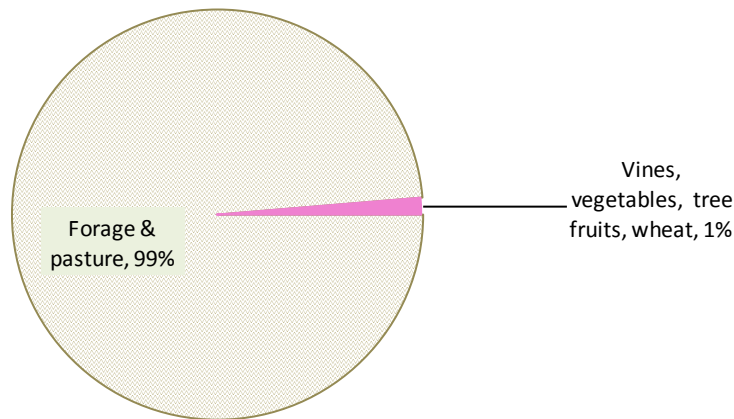


Figure 11 illustrates the predominance of forage & pasture crops.

Figure 12. All cultivated field crops by size⁸

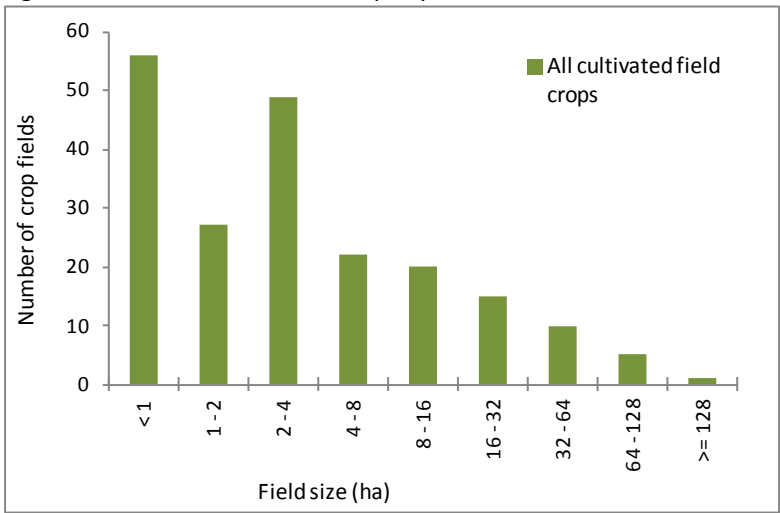


Figure 12 illustrates the number and size distribution of fields used for cultivated field crops.

In Lillooet and Electoral Area B, there are 205 individual crop fields with an average area of 10 hectares and a median area of 3 hectares.

The average parcel size where field crops occur is 33 hectares and the median size is 16 hectares.

If two or more crop fields of the same crop type are present on one parcel, they are counted as one crop field. A parcel may have several different crop fields.

Figure 13. Forage & pasture, vegetable, and berry fields by size

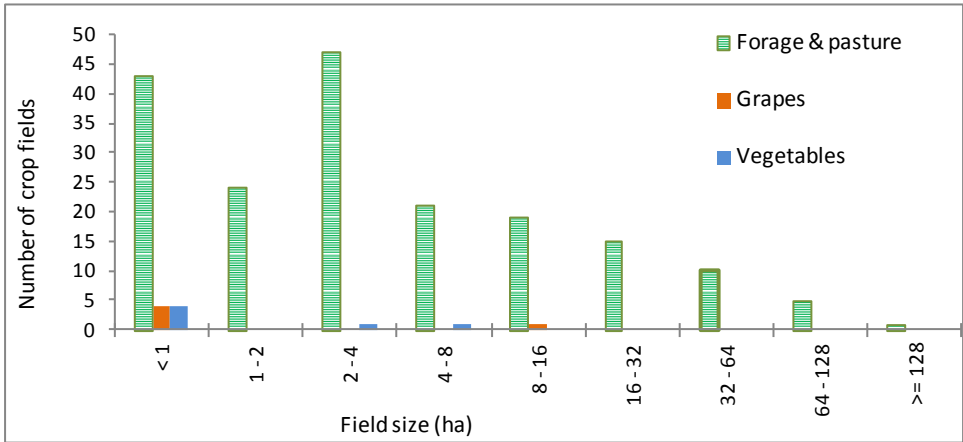


Figure 13 compares the top three main crop types by field sizes.

“Forage & pasture” dominates all field size categories.

Of the 5 grape fields, 4 are <1 hectare. The fifth is 9 hectares in size and is associated with Fort Berens Estate Winery.

⁸ Each distinct crop type on one parcel is counted as one crop activity. Each crop activity will include at least one and perhaps more crop fields. A parcel may have more than one crop activity if there is more than one distinct type of crop on that parcel.

Table 10. Main field crop types by area on Indian reserves

Type	ALR		Outside ALR (ha)	Total area (ha)
	In ALR (ha)	% of ALR		
Forage & pasture	298	2%	214	512
Vegetables	2	< 1%	3	4
Tree fruits	-	-	1	1
TOTAL	300	2%	218	518

Table 10 shows the 3 field crop types produced on surveyed Indian reserves.

Table 11. Forage & pasture crops on Indian reserves

Forage & pasture crops		ALR		Outside ALR (ha)	Total area (ha)
		In ALR (ha)	% of ALR		
Forage (unmanaged)	Grass	14	< 1%	14	29
Forage (unmanaged)	Mixed grass / legume	35	< 1%	16	51
Subtotal		49	< 1%	30	79
Pasture (unmanaged)	Grass	106	< 1%	95	202
Pasture (unmanaged)	Mixed grass / legume	4	< 1%	-	4
Pasture^	Grass	-	-	12	12
Subtotal		110	< 1%	107	218
Unused	Grass	139	1%	69	207
Unmaintained / abandoned	Grass	-	-	7	7
Subtotal		139	1%	76	215
TOTAL		298	2%	214	512

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

Table 11 details the forage & pasture crops on Indian reserves in the inventory area. There are 79 hectares in forage, 218 hectares in pasture, and 215 hectares in unused or unmaintained forage or pasture.

Forage & pasture crops

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

- **Forage (intensively managed):** Management includes weed control & fertilizer / manure applications and crop is cut 4-8 times per year. Often there is no fencing and crop growth is vigorous, even and thick.
- **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 3 times per year and made into silage or haylage. Also used for grazing for 1 to 3 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** 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 cut or grazed during the current growing season, has not been maintained for several years, and probably would not warrant harvest.

Table 12. Forage & pasture crops by area

Forage & pasture crops		ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
		In ALR (ha)	% of ALR			
Forage (managed)	Grass	7	< 1%	< 1	7	< 1%
Forage (managed)	Mixed grass / legume	150	1%	< 1	151	8%
Forage (unmanaged)	Grass	60	< 1%	69	129	6%
Forage (unmanaged)	Mixed grass / legume	540	4%	36	576	29%
Subtotal		757	6%	106	863	43%
Pasture (managed)	Grass	17	< 1%	< 1	17	< 1%
Pasture (unmanaged)	Grass	721	6%	166	887	44%
Pasture (unmanaged)	Mixed grass / legume	42	< 1%	2	44	2%
Subtotal		780	6%	169	949	47%
Unused	Grass	86	< 1%	16	102	5%
Unused	Mixed grass / legume	43	< 1%	8	52	3%
Subtotal		129	1%	25	154	8%
Unmaintained / abandoned	Grass	16	< 1%	< 1	16	< 1%
Subtotal		16	< 1%	< 1	16	< 1%
TOTAL		1,683	13%	299	1,982	99%

Table 12 shows there is slightly more pasture (949 hectares) than forage (863 hectares) in the Lillooet, Electoral Area B region.. Grass is the main pasture crop type, while mixed grass/ legume is the main forage crop type.

Refer to Map 4 for more information.

Figure 14. Forage & pasture fields by size⁹

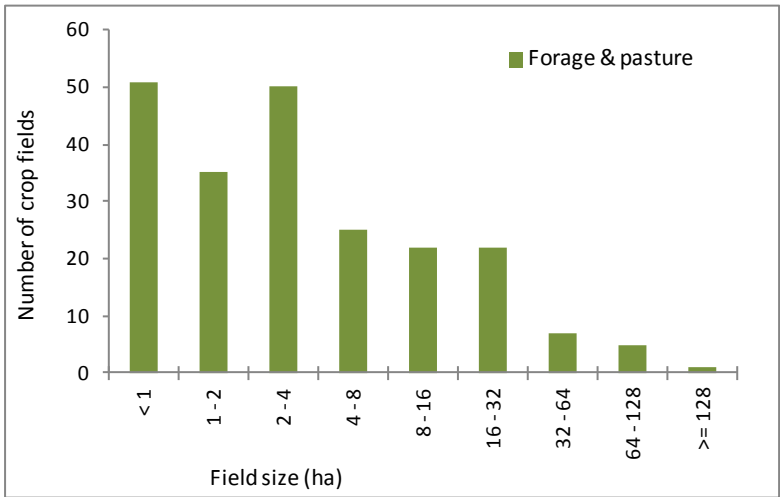


Figure 14 shows that “Forage & pasture” fields occur on a variety of field sizes. Sixty-two percent (62%) of all “Forage & pasture” fields are less than 4 hectares.

In total, there are 218 individual “Forage & pasture” fields with an average crop area of 9 hectares and a median area of 3 hectares.

These fields occur on 185 parcels with an average parcel size of 35 hectares and median parcel size of 16 hectares.

Figure 15. Forage & pasture fields by size and type

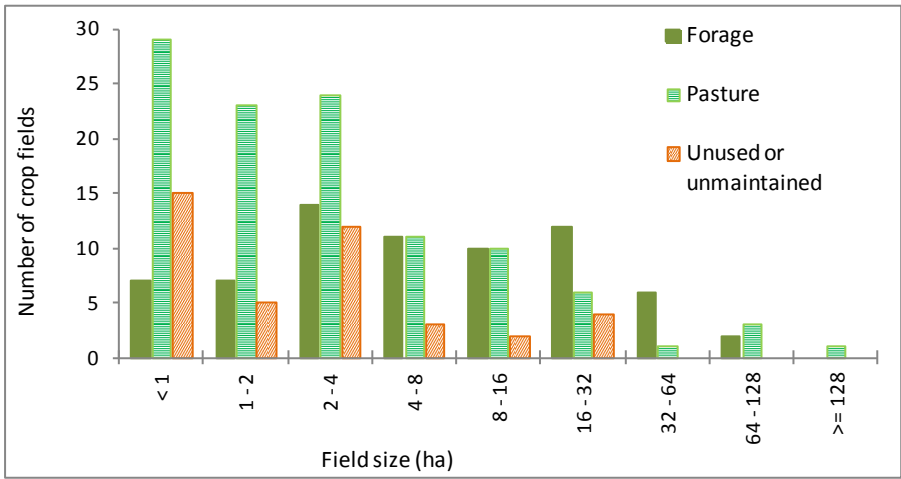


Figure 15 illustrates that there are more pasture than forage fields.

There are 108 pasture fields with an average crop area of 9 hectares, a median crop area of 2 hectares, and an average parcel size of 35 hectares.

In comparison, there are 69 forage fields with an average crop area of 13 hectares, a median crop area of 6 hectares, and an average parcel size of 52 hectares.

On average, forage fields have a larger cultivated area than pasture fields.

⁹ Each distinct forage or pasture activity on one parcel is counted as one activity. Each activity will include at least one and perhaps more fields. A parcel may have more than one activity if there is more than one distinct type of forage or pasture activity on that parcel.

All Crop types

Table 13. All crop types by area

Cultivated field crop	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Pasture (unmanaged)	763	6%	169	932	46%
Forage (unmanaged)	600	5%	105	705	35%
Forage (managed)	158	1%	< 1	158	8%
Unused forage/pasture	129	1%	25	154	8%
Pasture (managed)	17	< 1%	< 1	17	< 1%
Unmaintained forage/pasture	16	< 1%	< 1	16	< 1%
Grapes	9	< 1%	< 1	10	< 1%
Mixed vegetables	8	< 1%	< 1	8	< 1%
Tree fruits	2	< 1%	2	4	< 1%
Hops	-	-	2	2	< 1%
Tree fruits (Unmaintained)	-	-	1	1	< 1%
Grapes (Unmaintained)	-	-	< 1	< 1	< 1%
Root vegetables	< 1	< 1%	-	< 1	< 1%
Wheat	-	-	< 1	< 1	< 1%
TOTAL	1,702	13%	307	2,009	100%

Table 13 shows the 14 individual crops that account for 100% of the cultivated land in Electoral Area B and Lillooet.

Figure 16. All crop types by area

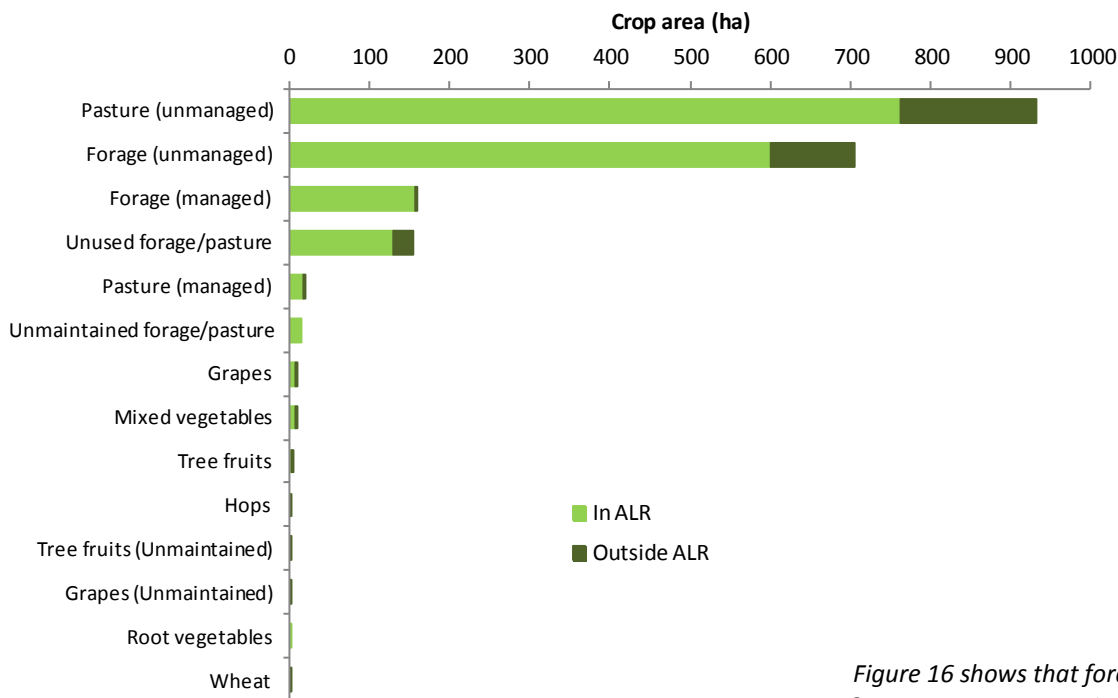


Figure 16 shows that forage & pasture crops comprise all significant crops.

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 14. Natural pasture and rangeland vegetation types by area

Rangeland and natural pasture		ALR		Outside ALR (ha)	Total area (ha)	% of surveyed area	% of rangeland & natural pasture
		In ALR (ha)	% of ALR				
Rangeland (natural)	Grassland	1,320	10%	18	1,338	9%	100%
Pasture (natural)	Treed - open	-	-	1	1	< 1%	< 1%
TOTAL		1,320	10%	19	1,339	9%	100%

Table 14 shows there are 1,338 hectares of rangeland while there was only 1 hectare of natural pasture.

Refer to Maps 3 & 4 for more information.

Figure 17. Natural pasture and rangeland areas by size

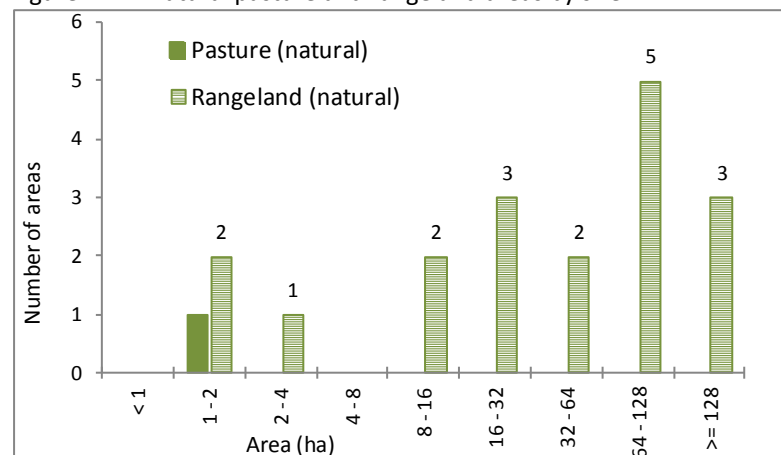


Figure 17 shows that rangeland areas are most likely to be greater than 8 hectares in size.

Rangelands occur on 18 parcels with an average parcel size of 74 hectares.

Rangelands typically utilize more than one parcel. Parcel size statistics do not accurately predict the size of rangeland areas.

GREENHOUSES & CROPS BARNs

Greenhouses are structures covered with translucent material and of sufficient size for a person to work inside¹⁰. 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.

Crop barns are permanent structures with non-translucent walls that are used for growing crops such as mushrooms.

Table 15. Greenhouses by area¹¹

Greenhouses		ALR		Outside ALR (ha)	Total area (ha)	% of greenhouse area
		In ALR (ha)	% of ALR			
Poly greenhouse	Vegetables	0.1	<0.1	-	0.1	60%
	Unknown	<0.1	<0.1	-	<0.1	40%
TOTAL		0.2	<0.1	-	0.2	100%

Table 15 shows that 0.2 hectares of ALR land is covered by poly greenhouses.

Only 2 greenhouses were recorded, 1 with vegetable crops and 1 with an unknown crop type. Both greenhouses are less than 1 hectare in size.

No glass greenhouses or crop barns were recorded.

¹⁰ Source: *Guide for Bylaw Development in Farming Areas*, 2013. Ministry of Agriculture.

¹¹ The areas reported in this table exclude external yards, parking, warehouses and other infrastructure related to the greenhouse or crop barn 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 farmland, land set temporarily set aside for wildlife or other purposes, and land under preparation for planting. Also included are crops grown in greenhouses and crop barns. In addition, individual cultivated field crops are evaluated for percent of crop area under irrigation.

Irrigation on Indian reserves is reported separately from the inventory totals.

Table 16. Main crop types and irrigation

Cultivated field crop	Irrigation system in use (ha)					Total area irrigated (ha)	% of crop area irrigated
	Surface	Sprinkler	Centre pivot	Giant gun	Trickle		
Forage & pasture	394	680	165	24	-	1,263	64%
Grapes	-	-	-	-	10	10	96%
Vegetables	-	< 1	-	-	8	9	100%
Tree fruits	-	4	-	-	-	4	78%
Hops	-	-	-	-	2	2	100%
Wheat	-	-	-	-	-	-	-
TOTAL FIELD CROP AREA IRRIGATED	394	685	165	24	20	1,288	64%
Greenhouses	Flood and trickle irrigation					<1	100%

Table 16 illustrates that 64% of all cultivated field crops are irrigated. All vegetables, hops, and the majority of all grapes and tree fruits are irrigated. Fifty-nine percent (59%) of all forage & pasture crops are irrigated.

Trickle systems are used exclusively on non-forage and pasture crops (grapes, vegetables, and hops).

Refer to Map 1 for more information.

Figure 18. Irrigation systems by percentage of cultivated land

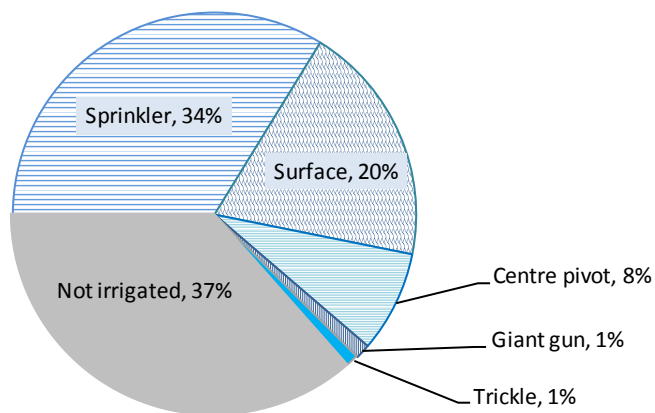


Figure 18 shows that 64% of the cultivated land in Electoral Area B and Lillooet is irrigated. Sprinkler irrigation is the most widely used system found on 34% of cultivated land followed by surface systems on 20% of cultivated land, and centre pivot systems on 8%.

Table 17. All crop types and irrigation

Cultivated field crop	Irrigation system in use (ha)					Total area irrigated (ha)	% crop area irrigated
	Surface	Sprinkler	Centre pivot	Giant gun	Trickle		
Pasture (unmanaged)	375	85	-	-	-	460	49%
Forage (unmanaged)	19	444	140	24	-	627	89%
Forage (managed)	-	133	25	-	-	158	100%
Unused forage/pasture	-	-	-	-	-	-	-
Pasture (managed)	-	17	-	-	-	17	100%
Unmaintained forage/pasture	-	-	-	-	-	-	-
Grapes	-	-	-	-	10	10	100%
Mixed vegetables	-	< 1	-	-	8	8	100%
Tree fruits	-	4	-	-	-	4	100%
Hops	-	-	-	-	2	2	100%
Tree fruits (Unmaintained)	-	-	-	-	-	-	-
Grapes (Unmaintained)	-	-	-	-	-	-	-
Root vegetables	-	< 1	-	-	-	< 1	100%
TOTAL	394	685	165	24	20	1,288	

Table 17 outlines the type of irrigation systems used on the 14 individual field crops in Electoral Area B and Lillooet.

Trickle systems are found only on grapes, mixed vegetables, and hops while surface, centre pivot, and giant gun systems are found exclusively on forage and pasture crops.

Table 18. Main crop types and irrigation on Indian reserves

Cultivated field crop	Irrigation system in use (ha)		Total area irrigated (ha)	% of crop area irrigated
	Sprinkler	Landscape / turf		
Forage & pasture	77	-	77	15%
Vegetables	4	< 1	4	95%
Tree fruits	1	-	1	100%
TOTAL FIELD CROP AREA IRRIGATED	82	< 1	82	16%

Table 18 shows that only 15% of all forage & pasture crops on Indian reserves are irrigated.

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.

Livestock activities on Indian reserves are reported separately from the inventory totals.

"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.

"Homesite" refers to the location of the main ranch or main barn of a livestock operation or farm unit¹². Often, other types of farm infrastructure, such as corrals, paddocks, barns, and feeding/watering facilities, as well as the farm residence, are also at this location. This is the primary location of the farm unit where most livestock management occurs.

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

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, 5000 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, 5000 turkeys, 10,000 chickens (over 100 animal unit equivalents).

¹² Farm unit includes all the property belonging to a farm and may incorporate more than one parcel.

Table 19. Livestock and equine activities

Livestock group	Livestock detail	By parcel		Total activities	By activity type	
		Main type	Secondary type		Intensive	Non Intensive
Beef	Beef total	7	1	8	-	8
Dairy	Dairy total	1	-	1	-	1
Poultry	Chicken	2	-	2	-	2
	Duck	1	-	1	-	1
	Poultry total	3	-	3	-	3
Sheep / lamb	Sheep / lamb total	1	-	1	-	1
Llama / alpaca	Llama / alpaca total	-	2	2	-	2
Equine	Horse	20	2	22	-	22
	Donkey, ass	1	-	1	-	1
	Mixed equine	-	1	1	-	1
	Equine total	21	3	24	-	24
TOTAL		33	6	39	-	39

Table 19 shows equine is the most common type of livestock activity accounting for 24 of 39 or 62% of all livestock activities. Beef is the second most common livestock type with 8 activities or 21%.

All livestock activities are “non-intensive”.

Table 20. Equine activities

Scale of equine activity	By parcel		Total number of activities	By activity type		By location	
	Main Type	Secondary Type		Intensive	Non intensive	Homesite	Non homesite
Very small scale (1 horse)	9	2	11	-	11	11	-
Small scale (2-25 horses)	11	1	12	-	12	10	2
Small scale (2-25 horses) - Boarding	1	-	1	-	1	-	1
TOTAL	21	3	24	-	24	21	3

Table 20 details the 24 equine activities. Only 21 activities are located on “homesites”, and all activities are “small” or “very small” scale.

Table 21. Beef activities

Scale of beef activity	By parcel		Total number of activities	By activity type		By location	
	Main type	Secondary type		Intensive	Non Intensive	Homesite	Non homesite
Very small scale (1 cow)	1	-	1	-	1	1	-
Small scale (2-25 cattle)	1	1	2	-	2	2	-
Medium scale (25-100 cattle)	2	-	2	-	2	2	-
Large scale (> 100 cattle)	3	-	3	-	3	2	1
TOTAL	7	1	8	-	8	7	1

Table 21 details the 8 beef activities. One activity is “very small” scale and is not a significant beef operation. Of the remaining 7 activities, only 6 are located on “homesites” which indicates these activities are associated with 6 beef operations.

Figure 19. Livestock and equine activities by scale and type

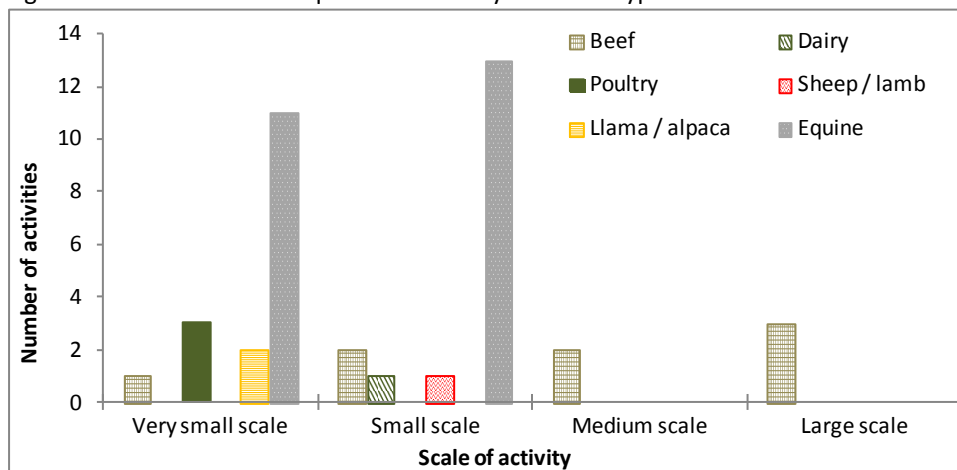


Figure 19 illustrates the scale of livestock activities (including equine).

Most livestock and equine activities are “small” or “very small” scale.

There are 2 “medium” scale activities, and 3 “large” scale activities, all of which are beef.

Figure 20. Livestock and equine activities by scale

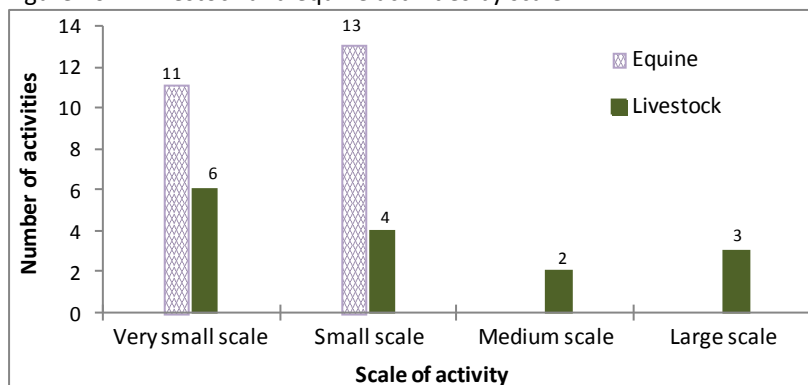


Figure 20 compares the scale of livestock and equine activities.

Even though 24 of the 39 livestock activities are equine, all are “small” or “very small” scale.

There are no “medium” or “large” scale equine activities, while there are 5 “medium” or “large” scale livestock activities.

Figure 21. Livestock and equine activities by parcel size and scale

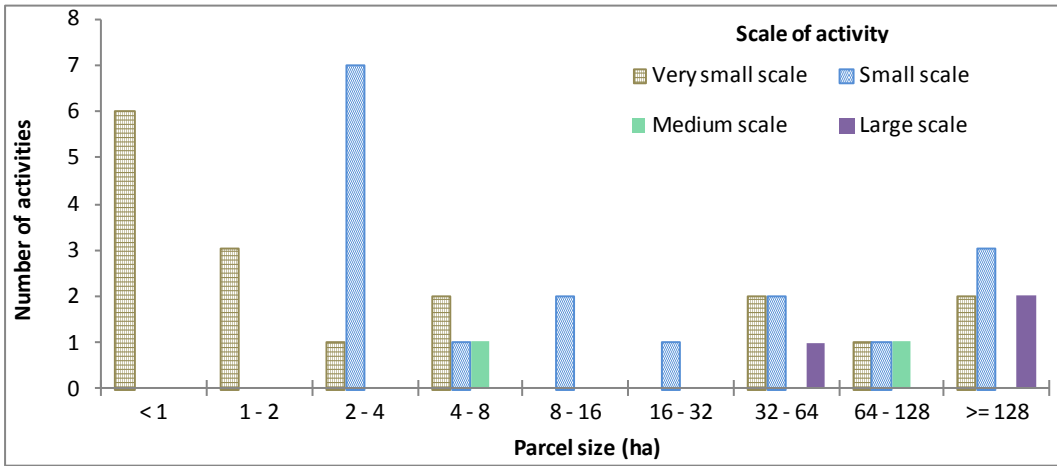


Figure 21 illustrates the distribution of livestock activities by scale across parcel size categories. All “large” and most “medium” scale activities occur on larger parcels. “Very small” scale activities occur on across the spectrum of parcels sizes. Four out the five “very small” scale activities on parcels larger than 32 hectares are associated with equines. “Small” scale livestock activities occur on all parcel size categories greater than 2 hectares.

Figure 22. Livestock and equine activities by parcel size and type

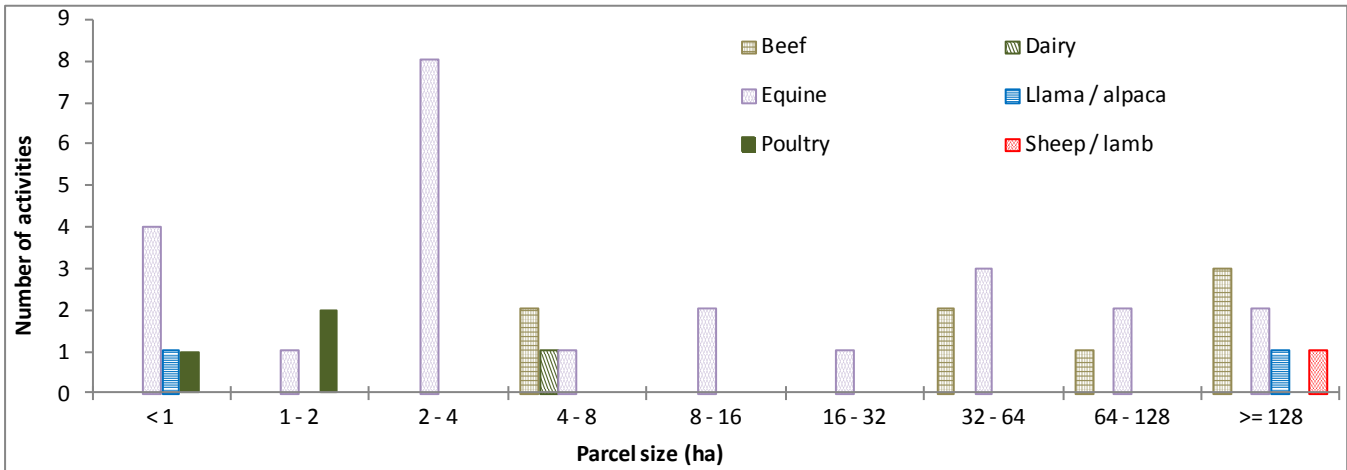


Figure 22 compares the distribution of different livestock types across parcel size categories. Equine activities occurs across all parcels sizes including parcels <1 hectare and parcels >= 128 hectares. All equine and livestock activities occurring on parcels less than 2 hectares are “very small” scale. There are 6 activities on parcels >= 128 hectares. Three are associated with Diamond S Ranch (one beef homesite activity, 1 beef non-homesite grazing activity, and 1 equine activity) and 3 are associated with Cwyn Mawr Ranch and Sheep Pasture Golf Course.

Figure 23. Livestock and equine activities by parcel size

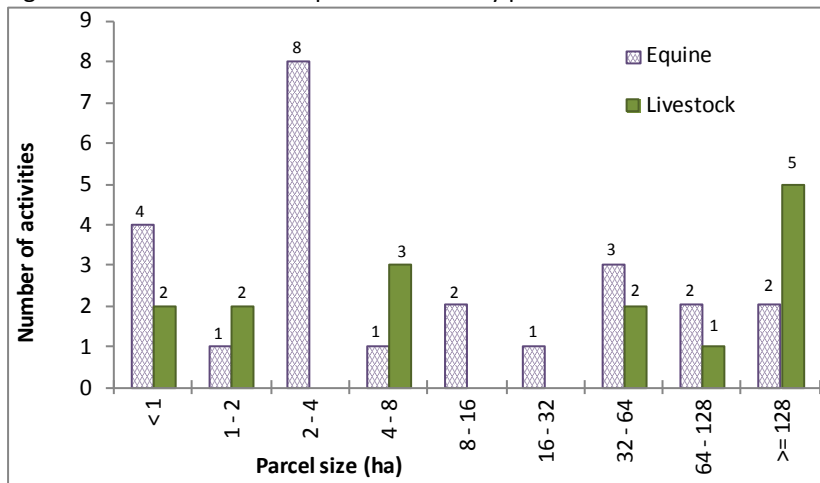


Figure 23 compares the distribution of equine and livestock activities across parcel size categories.

Both equine and livestock activities occur on parcels < 1 hectare and ≥128 hectares.

Figure 24. Average area in forage, pasture, and farm infrastructure on parcels with livestock activities (excluding very small scale)

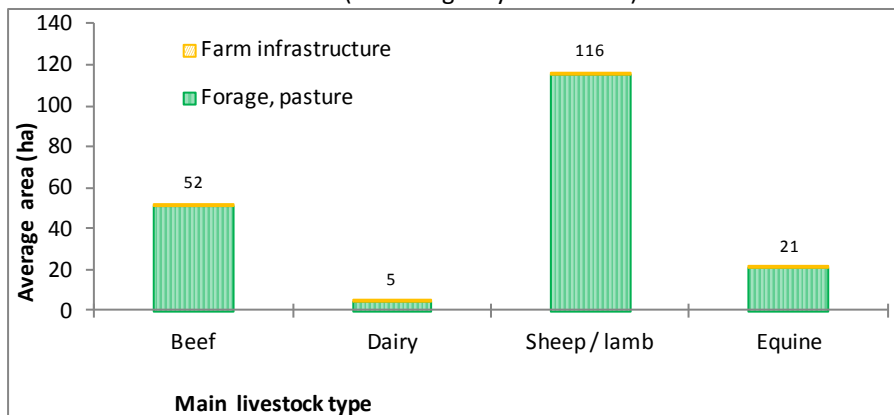


Figure 24 shows that on average, a beef activity is associated with 52 hectares of forage, pasture and farm infrastructure.

There is one sheep/lamb activity that is associated with 116 hectares of forage, pasture and farm infrastructure. This activity is on a parcels that also houses a “small” scale beef activity, a “very small” equine activity, and is associated with Cwyn Mawr Ranch and Sheep Pasture Golf Course.

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

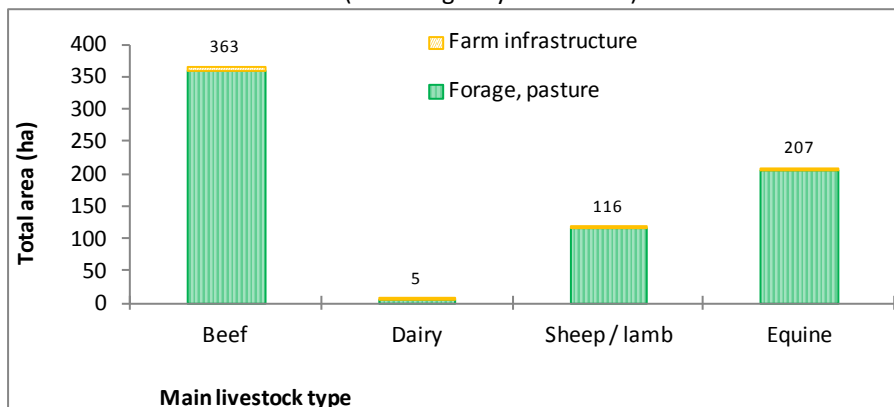


Figure 25 shows that beef activities use a greater total area for forage, pasture than any other livestock activity.

Figure 26. Percent of parcel area utilized for forage, pasture, and farm infrastructure on parcels with livestock activities (excluding very small scale)

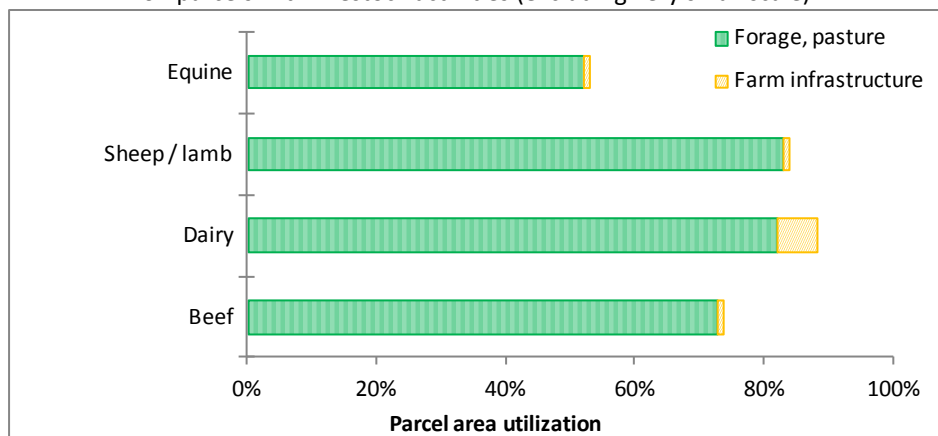


Figure 26 shows that on average, sheep/ lamb, dairy, and beef activities use between 72% and 88% of their parcel area for forage, pasture and farm infrastructure. Equine activities on average, utilize only 53% of their parcel area.

Figure 27. Land cover on parcels with livestock activities (excluding very small scale)

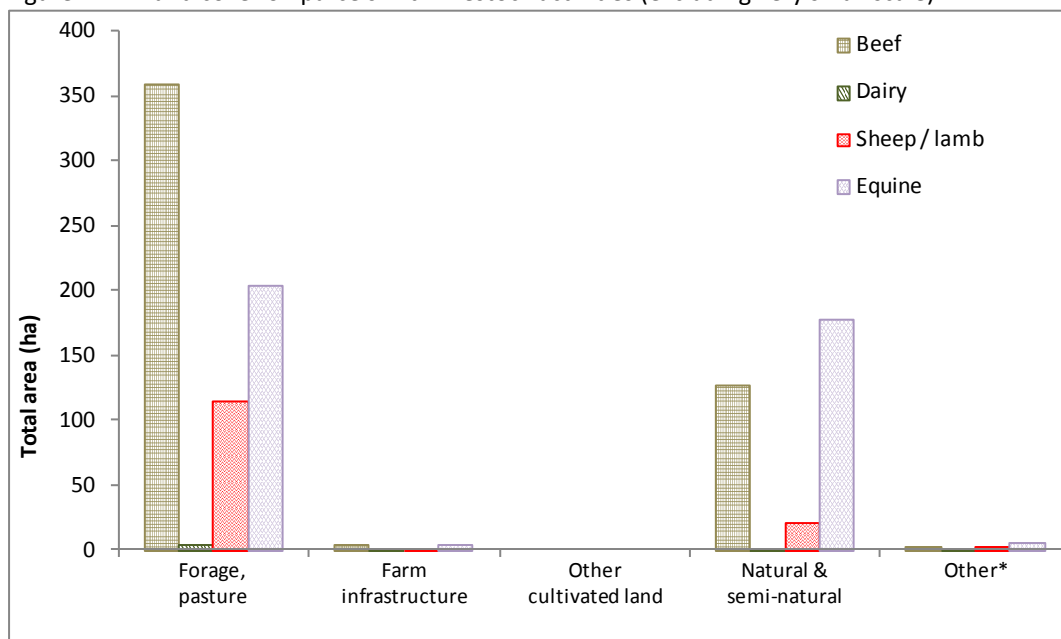


Figure 27 shows that beef, equine, and sheep / lamb activities have significant amounts of forage & pasture associated with them. These operations are growing some of their own feed.

* 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.

Table 22. Equine activities on Indian reserves

Scale of equine activity	By parcel		Total number of activities	By activity type		By location	
	Main Type	Secondary Type		Intensive	Non intensive	Homesite	Non homesite
Very small scale (1 horse)	2	-	2	-	2	2	-
Small scale (2-25 horses)	9	1	10	-	10	10	-
TOTAL	11	1	12	-	12	12	-

Table 22 details the 12 equine activities recorded on Indian reserves. All activities are “small” or “very small” scale. No other livestock activities were recorded on reserves.

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 farm¹³ 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 a temporary roadside fruit stand, a small field u-pick, or egg sales from a 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 components of the farm operation. An example is more than 10 tourist accommodation spots.

Table 23. Value added activities

Scale of activity	Value added	Description	Number of activities	Average parcel size (ha)
Small scale	Direct sales	Permanent retail store	1	4
	Processing	Wine / cider processing	1	26
TOTAL NUMBER OF ACTIVITIES			2	

Table 21 details the 2 “small” scale value added activities recorded in the Lillooet area. The permanent retail store is associated with Golden Cariboo Honey. Although this parcel has a small scale apiary, it does not met the “Used for farming” criteria (refer to the definitions section).

The wine / cider processing is associated with Fort Berens Estate Winery.

¹³ 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.

PARCEL INCLUSION IN THE ALR

The inventory area included 8,393 hectares of ALR on 276 parcels which is 65% of the ALR within Electoral Area B and Lillooet. Another 1,310 hectares or 10% of ALR was inventoried on Indian reserves. ALR land on Indian reserves is not included in the following section as reserves function differently from municipalities in terms governance and decision making.

The remaining 25% of the ALR was excluded from the inventory as it is outside of legally surveyed parcels.

ALR boundaries do not always coincide 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 Electoral Area B and Lillooet 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, 210 parcels, with 8,235 hectares or 63.8% of the ALR land meets the above criteria and is included in the further analysis of the ALR. This includes 33 parcels that have less than 50% of their area in the ALR but each has greater than 12 hectares of ALR land. These 33 parcels have a combined ALR area of 899 hectares.

Figure 28. Parcel inclusion in the ALR

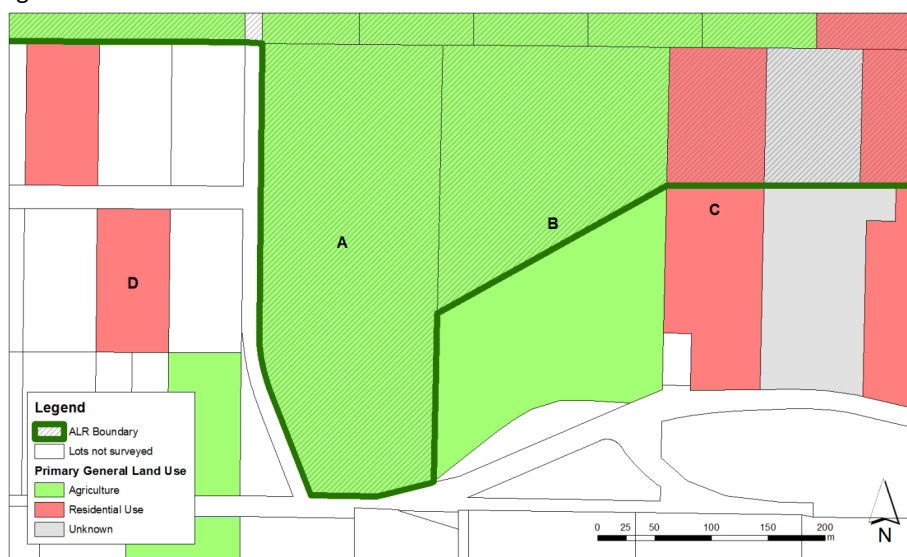


Figure 28 illustrates the distinction between parcels considered to be within or outside the ALR:

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:

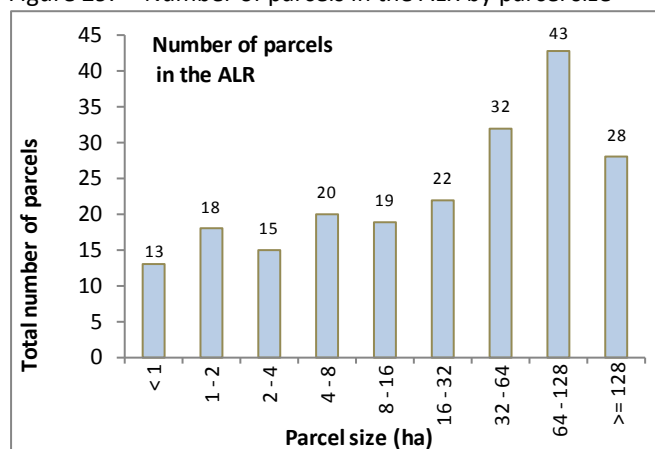
- lot C has less than 50% of its area and less than 10 hectares in the ALR
- lot D is completely outside the ALR.

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, (e.g. intensive market gardens, greenhouse operations, 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 unit¹⁴, 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.

Figure 29. Number of parcels in the ALR by parcel size



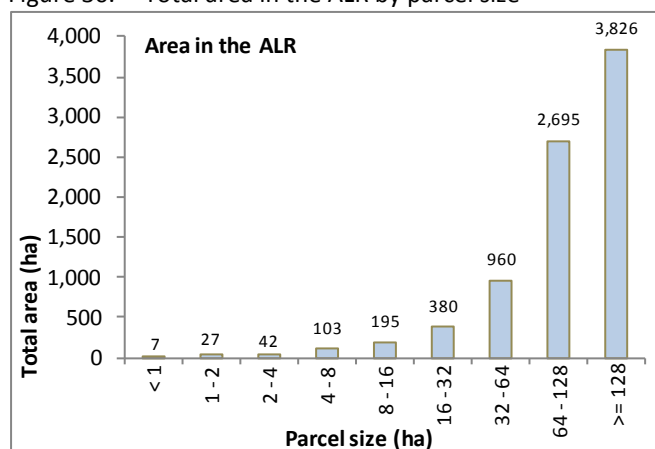
The average ALR parcel size in Electoral Area B and Lillooet is 53.6 hectares and the median parcel size is 30.0 hectares.

Figure 29 illustrates that of the 210 parcels in the ALR:

- 6% (13 parcels) are less than 1 hectare.
- 22% (46 parcels) are less than 4 hectares.
- 9% (20 parcels) are between 4 and 8 hectares.
- 9% (19 parcels) are between 8 and 16 hectares.
- 60% (125 parcels) are greater than 16 hectares.

Refer to Map 5 for more information.

Figure 30. Total area in the ALR by parcel size



In Electoral Area B and Lillooet nearly all of the ALR area is in larger parcels.

Figure 30 illustrates that of the 8,235 hectares in the ALR:

- <1% (7 hectares) is on parcels less than 1 hectare.
- 1% (76 hectares) is on parcels less than 4 hectares.
- 1% (103 hectares) is on parcels between 4 and 8 hectares.
- 2% (195 hectares) is on parcels between 8 and 16 hectares.
- 96% (7,861 hectares) is on parcels greater than 16 hectares.

¹⁴ 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 24. Number of farmed and not farmed parcels in the ALR

Parcel status with respect to farming	Number of parcels	% of parcels in the ALR
Used for farming	58	28 %
Used for grazing	16	8 %
Not used for farming or grazing	136	65 %
TOTAL	210	100 %

Table 24 demonstrates that of the 210 parcels in the ALR, only 58 or 28% are "Used for farming".

Figure 31. Number of farmed and not farmed parcels in the ALR by parcel size

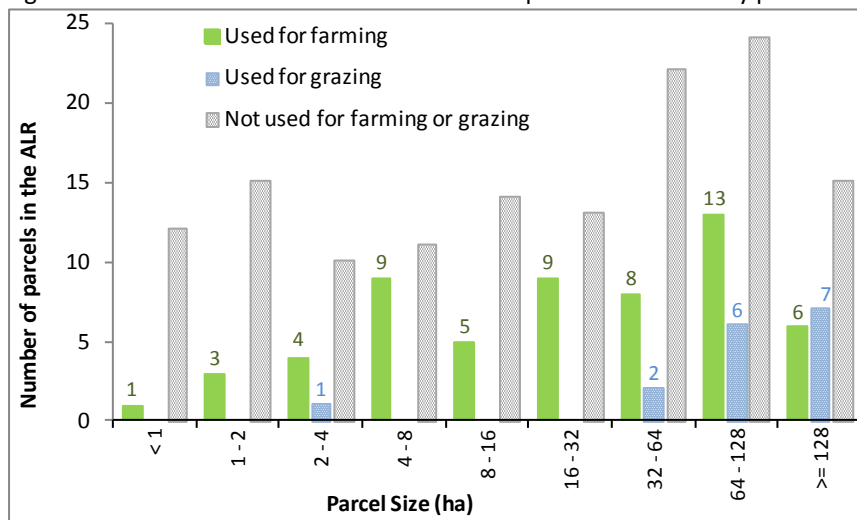


Figure 31 compares the distribution of "Used for farming" parcels with other parcels in the ALR.

The proportion of parcels that are "Used for farming" generally increases with parcel size.

Nearly all parcels that are "Used for grazing" are greater than 32 hectares.

Figure 32. Number of farmed and not farmed parcels in the ALR by parcel size (line chart)

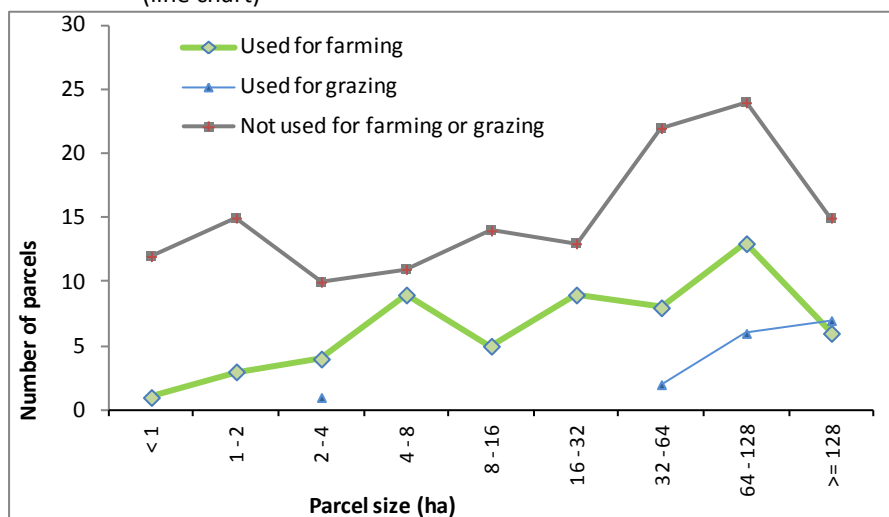


Figure 32 illustrates that although parcels of all sizes are "Used for farming", small parcels are less likely to be farmed.

Figure 33. Proportion of parcels farmed and not farmed by parcel size in the ALR

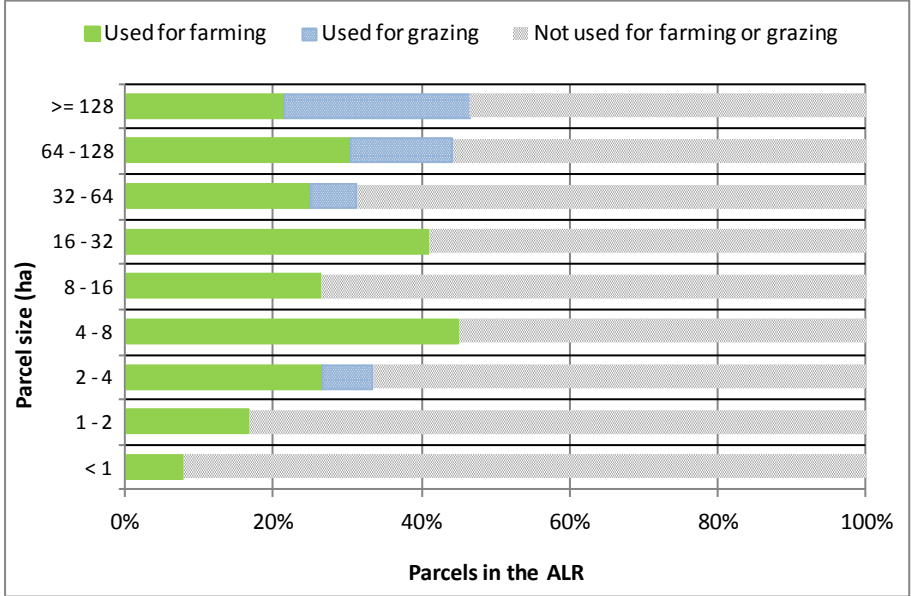


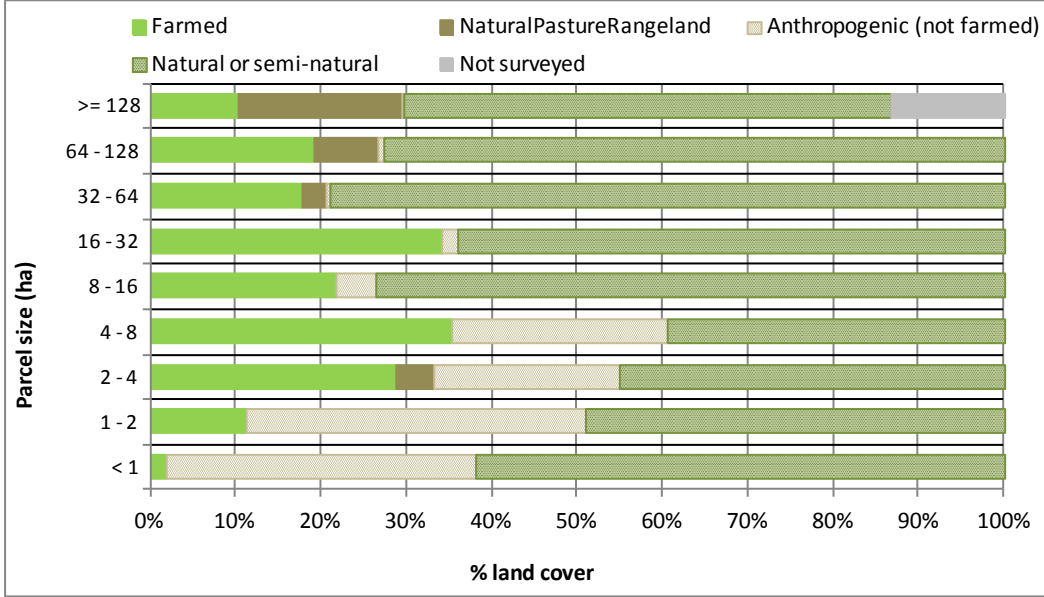
Figure 33 shows that the proportion of parcels “Used for farming” generally increases as the parcel size increases.

Only 8% of parcels less than 1 hectare are “Used for farming”.

There are 6 parcels >= 128 hectares that are “Used for farming”; one is associated with Cwyn Mawr Ranch, and 5 are associated with Diamond S Ranch.

There are 7 parcels >=128 hectares that are “Used for grazing”; all are associated with Diamond S Ranch.

Figure 34. Proportion of land cover by parcel size in the ALR



Similar to Figure 33 above, Figure 34

shows that the proportion of farmed land cover generally increases as the parcel size increases.

The largest proportions of “Anthropogenic” (not farmed) land cover occurs on parcels less than 2 hectares.

Appendix A - Maps

See the Squamish-Lillooet Regional District – Electoral Area B & Lillooet 2013 LUI Maps
http://www.al.gov.bc.ca/resmgmt/sf/gis/loi_reports/SLRD2013_ALUIMaps.pdf

Maps are 34 x 44 inches (ANSI E).