

Growing Knowledge



Ministry of
Agriculture

Agricultural Land Use Inventory

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FVRD – Electoral Area ‘G’ (Including Nicomen Island) Summer 2011



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**Strengthening Farming Program
Ministry of Agriculture**

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Acronyms

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

Cadastre – 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 Cadastre 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 auxiliary buildings or structures. When two residences are on a property, areas associated to both (such as shared driveways, parking or yard), are assigned to the closest residence.

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

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

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

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

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

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

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

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

Natural and Semi-natural – Grassland – Land cover dominated by herbaceous plants with long, narrow leaves characterized by linear venation. Includes 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 area usually on Crown land with uncultivated (not sown) natural or semi-natural grasses, herbs or shrubs used for grazing domestic livestock.

Natural and Semi-natural – Shrubland – 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.

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

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, 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)

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.

Land Use

Institutional & community – Parcel 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. Includes natural areas, long term fallow land, cleared land not in production, abandoned or neglected land, abandoned or unused structures.

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

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

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.

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

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

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

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

Executive Summary

In the summer of 2011, the BC Ministry of Agriculture (AGRI) conducted an Agricultural Land Use Inventory (ALUI) in Fraser Valley Regional District (FVRD) Electoral Area G. The ALUI was funded by Mission Community Services Society and was completed with in-kind support from FVRD.

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, and the amount of land within the Agricultural Land Reserve (ALR) that is not available for agriculture. The data can also be used to estimate agricultural water demand with the use of an irrigation water demand model.

The ALUI for Electoral Area G 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 i) all parcels completely or partially in the ALR, ii) all parcels with “Farm” status for property tax assessment, and iii) parcels zoned to permit agriculture.

The ALR in Electoral Area G consists of 5,171 hectares. Eighty-one percent (81%) of this or 4,183 hectares was surveyed as part of this inventory. The remaining 19% or 988 hectares of ALR was in Indian reserves, road rights of ways and foreshore. An additional 685 hectares of land outside the ALR was surveyed, bringing the total survey area to 4,868 hectares on 586 parcels.

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, a total area of 3,246 hectares (63%) was farmed (both actively and inactively), 162 hectares (3%) was anthropogenically modified, and 775 hectares (15%) was in a natural or semi-natural state. The remaining 988 hectares (19%) was not included in the inventory. An additional 41 hectares of land outside the ALR was farmed. See Table 1 and Map B1 for details.

In terms of land use, the entire parcel was examined, and a “Used for farming” definition was applied based on the percentage and/or scale of the parcel in cultivated crops, farm infrastructure, and/or certain scales of livestock production. For a detailed definition of “Used for farming”, refer to the Definitions section. In the ALR by land use, 3,657 hectares (71%) was defined as “Used for farming,” and 526 hectares (10%) was defined as “Not used for farming”. In this analysis, farm residential uses and farm roads, were included in the “Used for farming” subtotal. The remaining 988 hectares (19%) was not included in the inventory. See Table 3 and Maps B3 and B4 for details.

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 5,171 h hectares of ALR land in Electoral Area G, 3,239 hectares (63%) was actively farmed. Another 62 hectares supports farming (e.g. houses, farm roads, farm buildings, etc). There are 239 hectares of the ALR unavailable for farming due to existing land use (e.g. it was in dykes for water management) or land cover (e.g. it was in wetlands, non-farm residential uses, etc.). There are 449 hectares (9%) with limited potential for agriculture due to physical site limitations (e.g. drainage, flooding, topography). Nineteen percent or 988 hectares of the ALR was not included in the inventory. That leaves 195 hectares (4%) of the ALR that is available and has potential to be farmed. The majority of the land that is available and has potential for farming is

currently in natural and semi-natural vegetation (149 hectares). See Table 5, Figure 6, and Maps B5-B7 for details.

In total, there were 3,141 hectares of cultivated field crops (3,109 hectares in the ALR and 32 hectares outside the ALR). Forage & pasture was the most common crop with 2,619 hectares or 83% of all cultivated land. Berries were the second most common with 296 hectares (9% of all cultivated land), followed by turf with 142 hectares (5%) and nursery & tree plantation crops with 66 hectares (2%). Within the forage & pasture category, there were 2,275 hectares of forage (grass, mixed grass/ legume, and corn), 280 hectares of pasture, 59 hectares of forage & pasture, and 6 hectares of unused forage or pasture. Within the berry category, there were 295 hectares of blueberries and 1 hectare of strawberries. See Tables 8-11 and Maps B8-B10 for more information.

In addition to the cultivated field crops, there were 13 greenhouse activities comprising 21 hectares of land. Nineteen hectares were producing nursery crops. See Table 16 and Map B8 for more information.

Irrigation use was captured by crop type and irrigation system type, to aid in developing a water demand model for agriculture. Trickle systems were the most commonly used (275 hectares) and were found primarily on blueberries. Giant gun systems were the next most common (264 hectares) and were used primarily on forage & pasture. Sprinkler systems were third (213 hectares) and were used on a variety of crops. Only 24% of all cultivated field crops were irrigated. See Table 17 and Map B11 for more information.

Livestock activities were also recorded, but are very difficult to measure using a windshield survey method. Livestock may not be visible if they are in barns or on another land parcel. The inventory data does not identify animal movement between parcels that make up a farm unit, but reports livestock at the parcel where the animals or related structures are observed. 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.

Electoral Area G is an important dairy production area. Forty-nine dairy activities were recorded, of which 40 or 82% are medium scale (25- 100 cattle) or large scale (>100 cattle). All mediums and large scale dairy activities in Electoral Area G are “intensive”. Although equines are not important for food production, they contribute to the rural lifestyle. Small equine activities are common in Electoral Area G accounting for 59 out of 145 livestock activities. All equine activities are “non-intensive” and very small scale (1 equine) or small scale (2-25 equines). Other significant livestock activities include 2 intensive beef activities and 2 intensive poultry activities. See Table 19 and Maps B12-B14 for more information.

Further analysis of ALR lands was conducted on 469 parcels with 4,155 hectares or 80.3% of the ALR in Electoral Area G. Of the 469 parcels in the ALR, 318 (68%) are “Used for farming” and 151 parcels (32%) are “Not used for farming”. Of the 151 “Not used for farming” parcels, 54% are on parcels less than one hectare. The majority of all parcels greater than one hectare are “Used for farming”.

Summary

This report provides insight into the current status of agriculture on the land base and to 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

Electoral Area G has about 5,000 ha in the ALR, and is a small but highly productive agriculture area that is bordering and in some parts, surrounded by, the Fraser River. The area generally has good soils, a water table that is close to the surface, abundant good quality water for irrigation, fairly flat topography, and excellent access to transportation corridors. The area is protected by dykes from flooding from the Fraser but has issues with seepage during high freshets.

Electoral Area G is a “dairy cluster” with dairy production being the most prevalent type of agriculture activity. This small area produces about 9% of the total amount of milk in the province. Other types of agriculture in Electoral Area G include berry, turf and nursery production. However forage and pasture, which is primarily grown for dairy cow feed, uses about 83% of the cropped area in Electoral Area G.

Agriculture is very healthy economically in Electoral Area G; the Gross Farm Receipts for 2010 were \$41,124,085. When adjusted for inflation, the Gross Farm Receipts show an increase of about 18% between 2005 and 2010, which is very strong growth. In addition, the farm capital numbers are also very strong, with the value of land, animals, buildings and equipment, at \$327,273,426 for 2010. These gains are consistent with the strong economic performance of the supply managed sectors (dairy and poultry) over this time period and with some land conversion to intensively managed high value crops, (berry and nursery). Agriculture is a key employer, and economic driver of the FVRD, and can be a net tax contributor for local governments.

The Land Use Inventory shows that the agriculture land use in Electoral Area G is very efficient, and is developed at close to maximum capacity. Of the ALR area, 60% of the land cover is in field crops and an associated 4% is in houses, roads and the necessary infrastructure to support agriculture.

Transportation networks and dykes, etc. comprise another 1% of the ALR. About 5% of the land base is not available for farming, with most of that tied up in wetlands and waterbodies. There is an additional 8% of the landbase (about 400 ha) that is compromised due to drainage and flooding limitations. Some of this area is outside the dyke with no access roads. This leaves approximately 200 ha (about 4% of the ALR) that may be available for farmland expansion, most of which is in natural or semi-natural vegetation. Some of this area is within bluffs in fields or in fields that are not currently cultivated, but much of it is aligned with waterways and has provides valuable environmental goods and services.

Therefore, clearing land for farmland expansion would come at some environmental cost in this area, and this area could be considered fully utilized with respect to agriculture. The remaining land base is in parcels outside of the study area, in Indian reserves, rights-of-way and foreshore, etc.

Healthy farm businesses, like other small businesses, often need to increase productivity. The dairy sector in this area is very healthy economically and it will be challenged to find ways to grow and accommodate quota increases given the land base limitations in Electoral Area G. Some farmers have increased their access to land by leasing and utilizing land in the back of small parcels. The intensity of both operational management and field management could be intensified to further increase production capacity without requiring more land. Some practices that could be adopted include:

- Winter cropping - establishing a winter wheat, rye grass or other type of forage crop on corn land to get an extra crop of forage as often as possible (perhaps every three out of five years or so)
- Irrigating fields during very dry summers to optimize forage production

- Modifying manure management practices to streamline production, using techniques such as liquid-solid manure separation in order to get some manure that is low enough in solids that it is suitable to spread or fertigate on fields in mid-summer.

Current practices such as leasing the back of smaller parcels deserve special mention as this helps to optimize production on the limited land base available in this area.

Agriculture is dynamic and therefore changes in agriculture land use will likely been seen over time from forage production to more intensive crop production, such as berries and nursery, if agriculture receives adequate planning and infrastructure support.

The challenge in Electoral Area G is finding ways to maintain the healthy agriculture land use while allowing the agriculture sector to grow when the land base is almost fully utilized. A number of actions and policies may be useful to consider in general categories such as residential development, non-farm use and subdivision to enhance planning which can strengthen agriculture. These policies could perhaps be explored through pro-active processes such as developing an Agriculture Area Plan.

As stated, agriculture is very dynamic as it grows and farm businesses respond to market demands. Like other successful business owners, farmers will invest in infrastructure, land and animals, etc. in order to gain efficiency and maximize returns. With this in mind, there may be a need to address issues and infrastructure requirements to ensure that the investments of farmers are protected. Developing more complex and proactive ways to interact with the agriculture sector and dynamic planning tools such as creating an agriculture advisory committee may be of assistance to FVRD planners in supporting this vital sector. Engaging in strengthening farming in this way can enhance the vitality and the economic performance of this sector.

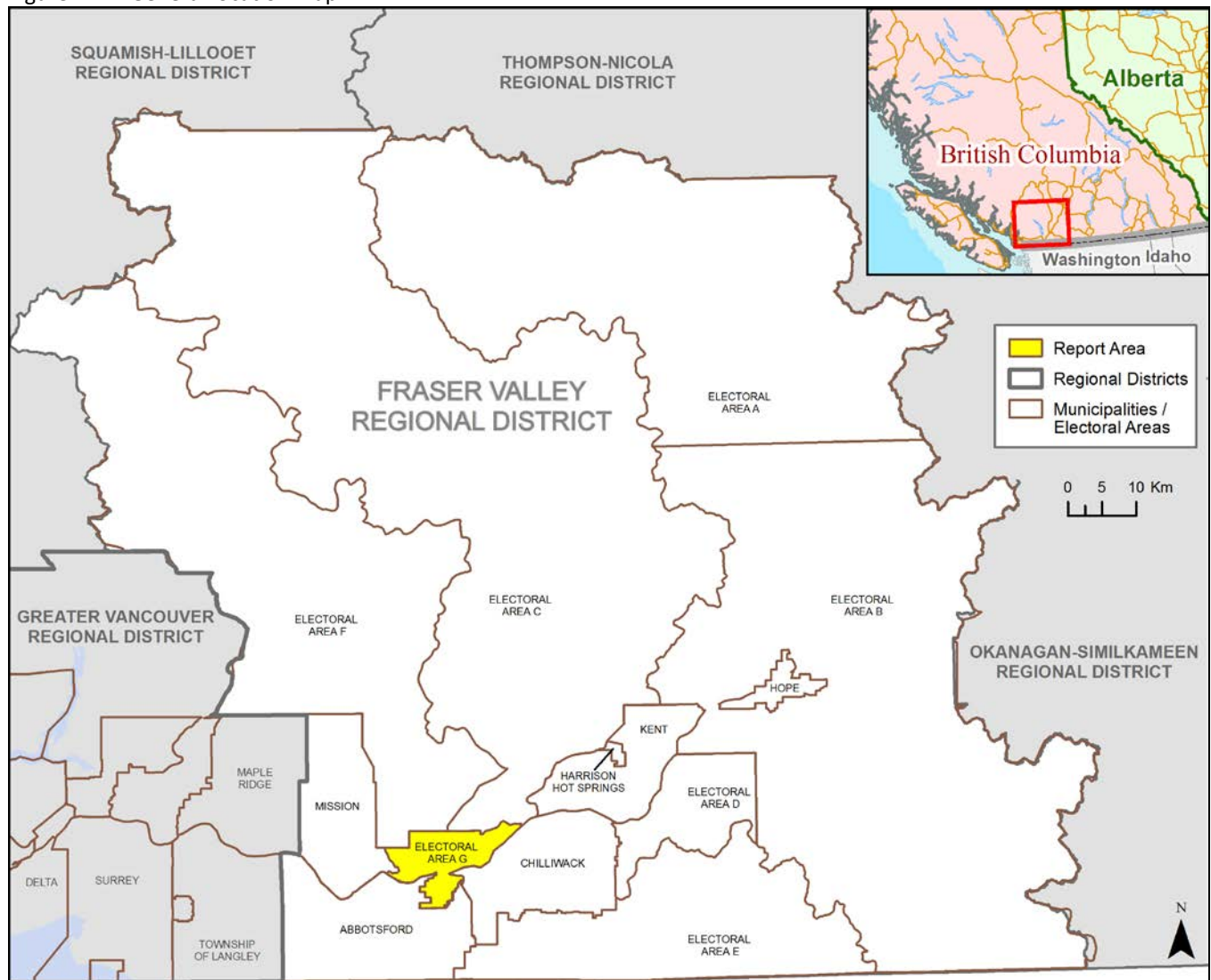
General Information

The Fraser Valley Regional District (FVRD) is located in southwestern BC and is comprised of seven electoral districts and six municipalities.

Electoral Area G is located in the south western area of FVRD and contains the communities of Deroche, Nicomen Island, Dewdney, Hatzic Island, and portions of Sumas Mountain. Electoral Area G is bordered by the Fraser River and Chilliwack to the east, Abbotsford to the south, and Mission to the west. Much of the electoral area is bordered by the Fraser River and is largely characterized by lowland floodplains and rural farming communities.

Electoral Area G has a population of 1,764¹ and a total area including land and water of 11,680² hectares.

Figure 1. General location map



¹ Statistics Canada, 2011 Census; <http://www12.statcan.gc.ca/census-recensement/index-eng.cfm>

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

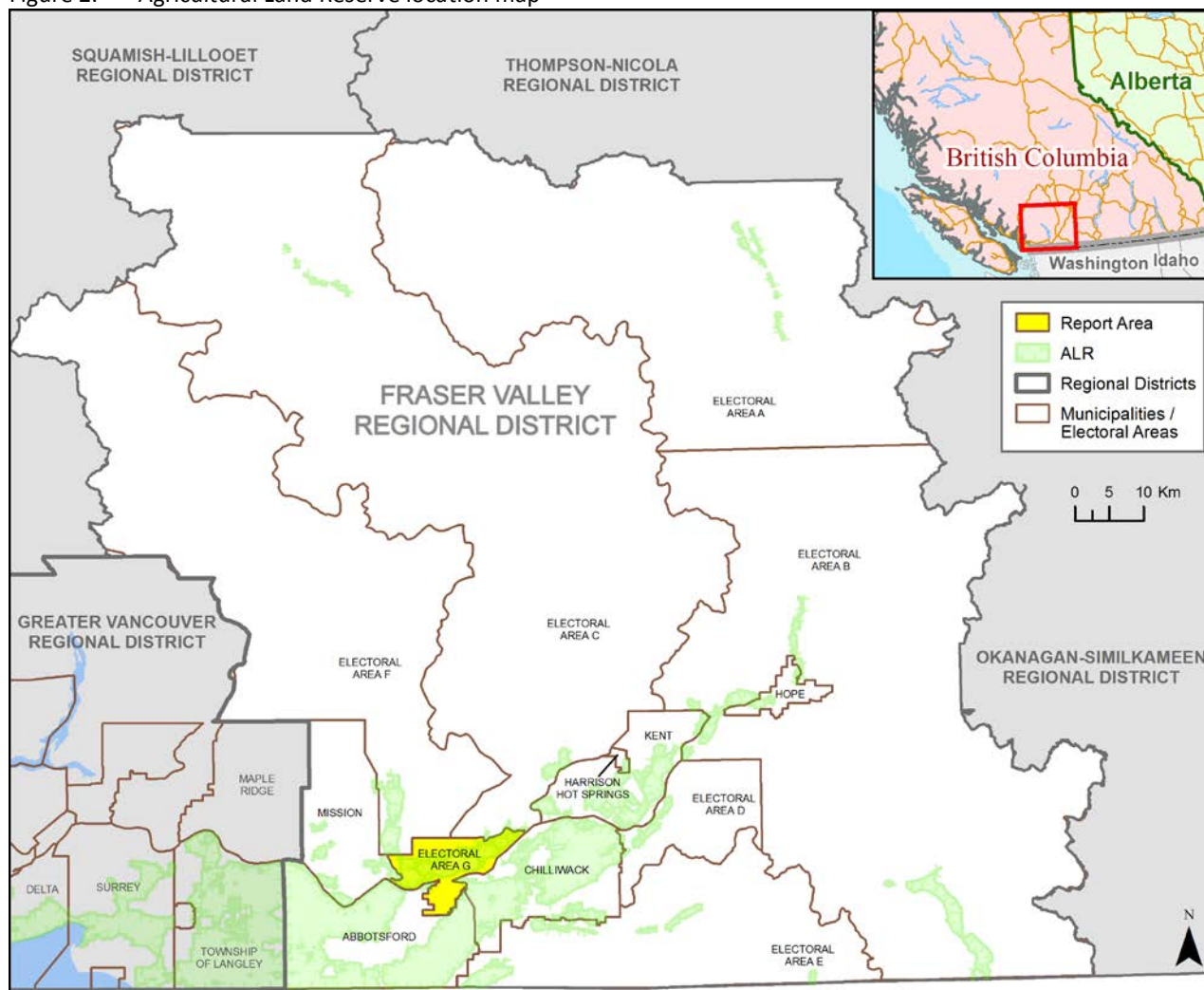
The Agricultural Land Reserve (ALR) is a provincial land use zone that was designated in 1973 in which agriculture is recognized as the priority use. Within the ALR, farming is encouraged and non-agricultural uses are controlled.

There are 71,685 hectares³ of ALR land within Fraser Valley Regional District (shown in Figure 2); 5,171 hectares⁴ or 7% is within Electoral Area G.

The land area of Electoral Area G is 9,898 hectares⁵. With 5,171 hectares³ in the ALR, over 52% of the land area of Electoral Area G is in the ALR. This area includes:

- 4,183 hectares in surveyed parcels
- 988 hectares outside surveyed parcels
 - 663 hectares of Indian reserves
 - 203 hectares of rights-of-way
 - 122 hectare of foreshore
 - < 1 hectare of parcels less than 100 sq m

Figure 2. Agricultural Land Reserve location map



³ Provincial Agricultural Land Commission (ALC) Annual Report 2009/10 & 2010/11 Pg 39. http://www.alc.gov.bc.ca/publications/Annual_Report_2009-10_and_2010-11.pdf.

⁴ Agricultural Land Commission, ALR mapping, Land and Resource Data Warehouse, 2011-01-31 (area calculated in GIS).

⁵ Calculated in GIS.

INVENTORY AREA

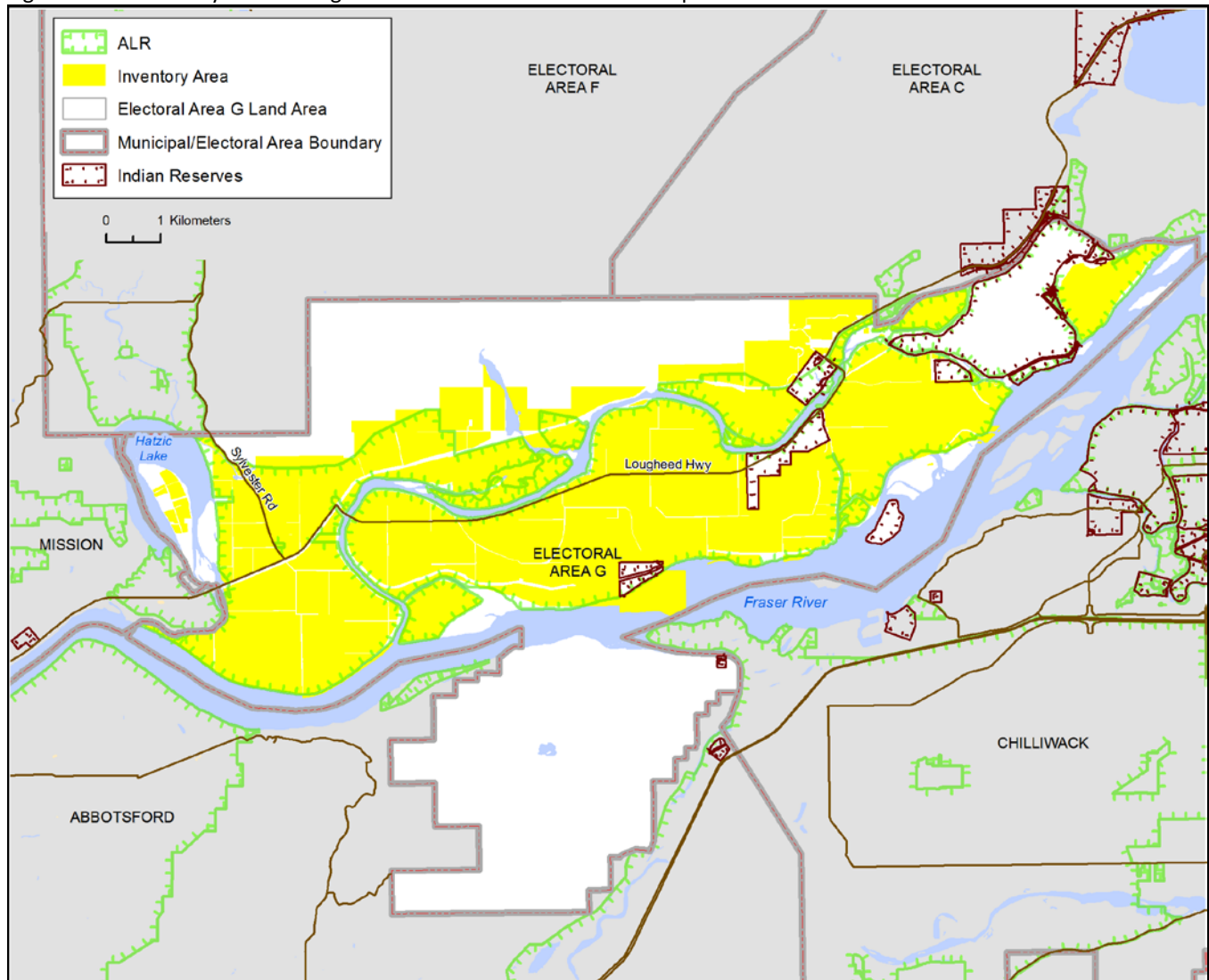
The total inventory area encompasses 586 parcels with a combined area of 4,868 hectares, or 49% of the land area in Electoral area G. Included are all parcels:

- completely or partially within the Agricultural Land Reserve
- classified by BC Assessment as having “Farm” status for property tax assessment
- zoned to permit agricultural use by FVRD bylaws

The amount of ALR land included in the inventory area is 4,183 hectares located on 485 parcels. This area is nearly 81% of the ALR within Electoral Area G. The remaining 19% of the ALR was excluded from the inventory as it is in Indian reserves, designated rights-of-way, foreshore, and parcels less than 100 square metres.

An additional 81 hectares of land on 3 Indian reserves was inventoried. The survey crew noted the presence of agriculture on 3 reserves and surveyed a portion of the Lakahahmen 11, Skweahm 10, and Papekwatchin 4 reserves. As the reserves were not completely surveyed, the findings are summarized in separate tables and are not included in the inventory totals.

Figure 3. Inventory area and Agricultural Land Reserve location map



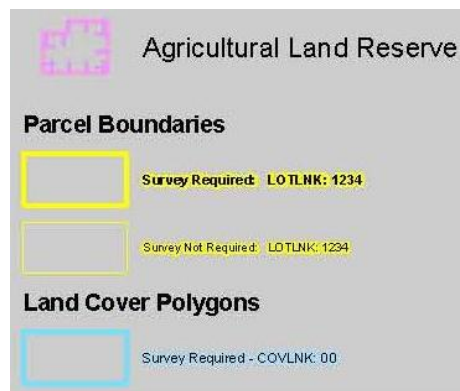
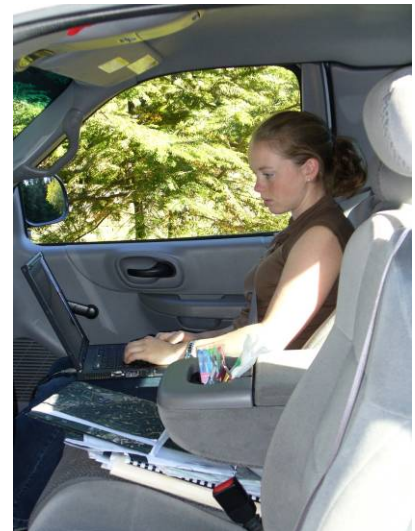
Agricultural Land Use Inventory

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 Electoral Area G land use inventory was conducted in the summer of 2011 by a professional agrologist assisted by a GIS technician and a driver⁶. 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)⁷
- Unique identifier for each legal parcel
- The preliminary land cover polygon boundaries (digitized prior to field survey using aerial photography)
- Unique identifier for each preliminary land cover polygon
- The boundary of the Agricultural Land Reserve (ALR)
- Base features such as streets, street names, watercourses and contours
- Aerial photography



⁶ Vehicle and driver provided by the Fraser Valley Regional District.

⁷ Cadastre mapping (2011) was provided by the Fraser Valley Regional District through the Integrated Cadastral Information Society.

DESCRIPTION OF THE DATA

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

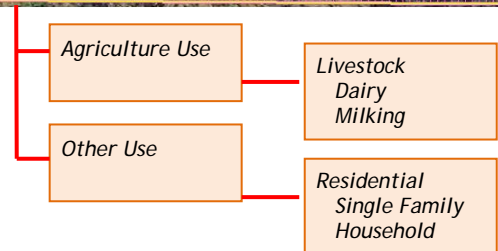
Once acquired through the survey, the data was brought into a Geographic Information System (GIS) to facilitate analysis and mapping. Digital data, in the form of a tabular database and GIS spatial layers (for maps), may be available with certain restrictions through a terms of use agreement.

General land use:

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

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

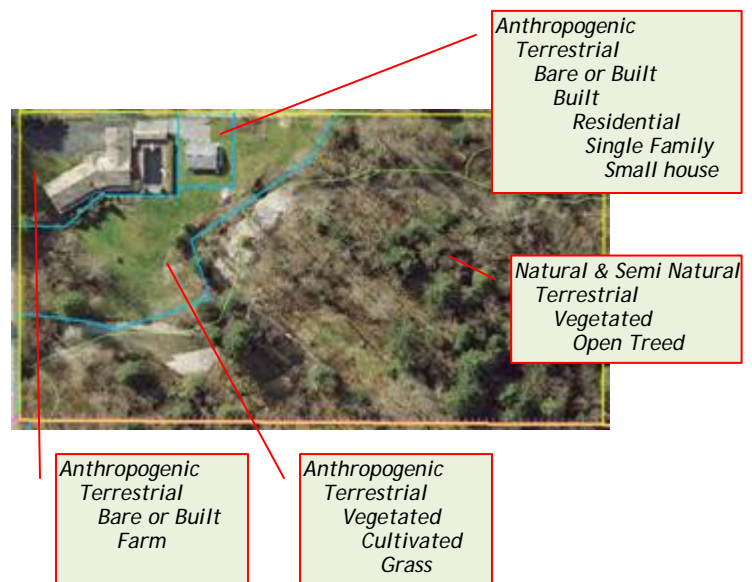
In addition, the availability of non-farm use properties for future farming was assessed based on the amount of potential land for farming on the property and the compatibility of existing uses with future farming activities.



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. In order to maintain data precision, absolute data values are preserved throughout the analysis and summarization processes. During the final formatting of the summarized tables and charts, data values are rounded to the nearest whole number. This can result in the tables and charts not appearing to add up correctly.

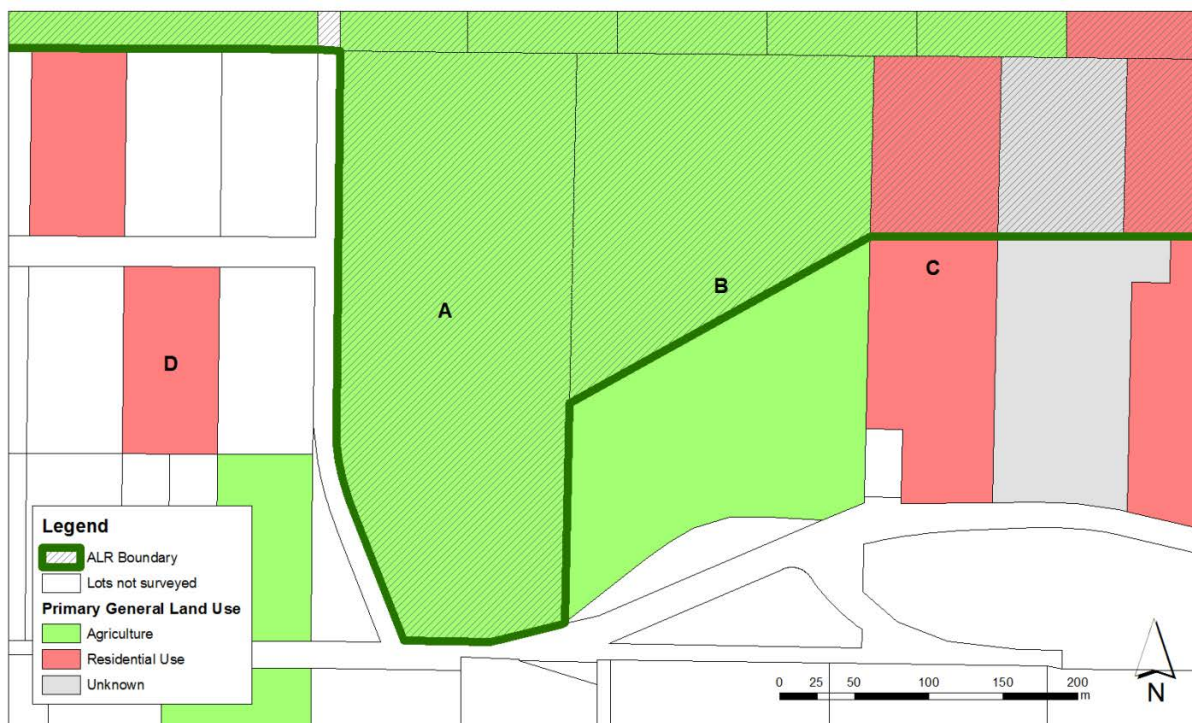
DETERMINATION OF PARCELS WITHIN THE ALR

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 ALR (ha)	% of ALR			
Actively farmed	Cultivated field crops	3,102	60%	26	3,127	64%
	Farm infrastructure	117	2%	8	126	3%
	Greenhouses	20	< 1%	<1	21	< 1%
Inactively farmed	Unmaintained field crops	7	< 1%	-	7	< 1%
	Unused forage or pasture	-	-	6	6	< 1%
FARMED SUBTOTAL		3,246	63%	41	3,288	68%
Anthropogenic (not farmed)	Managed vegetation	30	< 1%	15	46	< 1%
	Residential footprint	66	1%	12	78	2%
	Settlement	6	< 1%	2	8	< 1%
	Non Built or Bare	<1	< 1%	31	32	< 1%
	Built up - Other	3	< 1%	4	7	< 1%
	Transportation	5	< 1%	<1	5	< 1%
	Waterbodies	<1	< 1%	-	<1	< 1%
	Utilities	50	< 1%	<1	50	1%
SUBTOTAL		162	3%	65	227	5%
Natural and Semi-natural	Vegetated	589	11%	459	1,048	22%
	Wetlands	98	2%	4	102	2%
	Waterbodies	71	1%	112	182	4%
	Natural pasture	17	< 1%	-	17	< 1%
	Natural bare areas	<1	< 1%	3	4	< 1%
SUBTOTAL		775	15%	578	1,354	28%
TOTAL		4,183	81%	685	4,868	100%
Surveyed	Indian reserves	81	2%			
Not surveyed	Indian reserves	582	11%			
	Rights-of-way	203	4%			
	Foreshore	122	2%			
	Parcels < 100 sq m	<1	< 1%			
SUBTOTAL		988	19%			
TOTAL		5,171	100%			

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

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

In Electoral Area G, 3,288 hectares of land is in "Farmed" land cover although 13 of these hectares are "Inactively farmed" in unmaintained field crops and unused forage or pasture.

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

Figure 5. Land cover and farmed area in the ALR

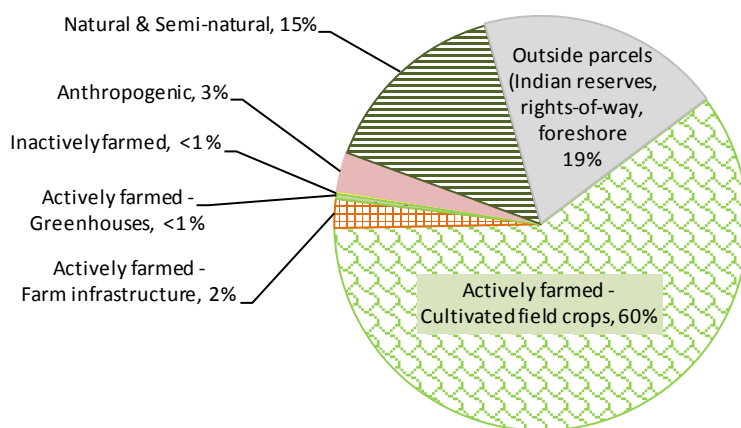


Figure 5 shows the proportions of the different land cover types across the ALR in Electoral Area G.

Of Electoral Area G's ALR land, 62% is "Actively farmed" while < 1% is in unmaintained field crops (Inactively farmed").

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

Table 2. Land cover and farmed area on surveyed Indian reserves

Land cover*		ALR		Outside ALR (ha)	Total area (ha)
		In ALR (ha)	% of ALR		
Actively farmed	Cultivated field crops	52	1%	<1	52
	Farm infrastructure	<1	< 1%	-	<1
FARMED SUBTOTAL		53	1%	<1	53
Anthropogenic (not farmed)	Residential footprint	2	< 1%	<1	2
	Transportation	<1	< 1%	-	<1
Natural and Semi-natural	Vegetated	26	< 1%	<1	26
SUBTOTAL		28	< 1%	<1	29
TOTAL		81	2%	<1	81

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

Table 4 shows the extent of different land cover types across surveyed Indian reserves in Electoral Area G.

Fifty-three (53) hectares of farmed land cover was recorded. This area is not included in the "Farmed" land cover subtotal in Table 1.

2. Land Use and Farm Use

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

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

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

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 can not be assessed on a parcel basis for reserves and no data on Indian reserves is presented in this section.

Table 3. 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		1,035	20 %	26	1,062	22 %	108	18 %	10
Used for farming - mixed use	Residential	2,566	50 %	100	2,666	55 %	218	37 %	12
	Transportation	39	<1 %	< 1	39	<1 %	2	<1 %	19
	Institutional & community	17	<1 %	-	17	<1 %	1	<1 %	17
USED FOR FARMING SUBTOTAL		3,657	71 %	126	3,784	78 %	329	56 %	
Not used for farming	No apparent use	346	7 %	285	631	13 %	63	11 %	10
	Residential	111	2 %	165	276	6 %	155	26 %	2
	Water management	45	<1 %	< 1	45	<1 %	21	4 %	2
	Institutional & community	15	<1 %	3	18	<1 %	3	<1 %	6
	Gravel extraction	4	<1 %	61	66	1 %	3	<1 %	22
	Transportation	3	<1 %	< 1	3	<1 %	3	<1 %	1
	Commercial & service	< 1	<1 %	< 1	< 1	<1 %	3	<1 %	< 1
	Utilities	< 1	<1 %	5	6	<1 %	2	<1 %	3
	Industrial	< 1	<1 %	7	7	<1 %	2	<1 %	4
	Recreation & leisure	-	-	20	20	<1 %	1	<1 %	20
	Forestry	-	-	11	11	<1 %	1	<1 %	11
NOT USED FOR FARMING SUBTOTAL		526	10 %	558	1,084	22 %	257	44 %	
TOTAL		4,183	81 %	685	4,868	100 %	586	100 %	
Surveyed	Indian reserves	81	2 %						
Not surveyed	Indian reserves	582	11 %						
	Rights-of-way	203	4 %						
	Foreshore	122	2 %						
	Parcels < 100 sq m	< 1	<1 %						
SUBTOTAL		988	19 %						
TOTAL		5,171	100 %						

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

Table 3 shows that 3,657 hectares or 71% of Electoral Area G's ALR is on parcels "Used for farming".

Electoral Area G has a large farming base with 20% of the ALR area in parcels exclusively "Used for farming". The majority of "Used for farming" parcels are also used for "Residential" purposes.

One parcel associated with the North Fraser Firehall #1 is mixed use "Used for farming" and "Institutional & community".

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

Table 4. 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		889	17 %	6	<1 %	140	3 %	1,035	20 %
Used for farming - mixed use	Residential	2,271	44 %	70	1 %	225	4 %	2,566	50 %
	Transportation	26	<1 %	2	<1 %	11	<1 %	39	<1 %
	Institutional & community	16	<1 %	< 1	<1 %	-	-	17	<1 %
SUBTOTAL		3,202	62 %	80	2 %	376	7 %	3,657	71 %
Not used for farming		45	<1 %	82	2 %	400	8 %	526	10 %
SUBTOTAL		3,246	63 %	162	3 %	775	15 %	4,183	81 %
Surveyed	Indian reserves							81	2 %
Not surveyed	Indian reserves							582	11 %
	Rights-of-way							203	4 %
	Foreshore							122	2 %
	Parcels < 100 sq m							< 1	<1 %
	SUBTOTAL							988	19 %
TOTAL ALR							5,171	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 Definition section of the report.

Table 4 combines land use and land cover on ALR land in Electoral Area G. For example, parcels with the mixed use "Used for farming" and "Residential" have a total of 2,271 hectares in "Farmed" land cover, 70 hectares in "Anthropogenic" (not farmed) land cover, and 225 hectares in "Natural & Semi-natural" land cover.

Although 3,657 hectares or 71% of Electoral Area G's ALR is on parcels "Used for farming" (refer to Table 3), only 3,202 hectares or 62% of the ALR is actually in "Farmed" land cover as many "Used for farming" parcels are also used for other purposes. In fact, the majority of the "Farmed" land cover in the ALR (44%) 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 grows⁸. 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 agriculture sectors that require large land bases, such as dairy or berry, may find it difficult to access sufficient land. With the main agricultural sector in Electoral Area G being dairy production, producers may have to use more intensive practices such as advanced nutrient management technology, irrigation, etc. to be able to expand their production on the available land base.

New land for farmland expansion is a critical factor in maintaining healthy farm businesses. The analysis of the availability of land for farming examines how much land is available for farming, how much land 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.

In Electoral Area G, properties in the ALR and “Used for farming” have an average assessed value of \$30,773 per hectare, while properties in the ALR but unavailable for farming have an average assessed value of \$990,510 per hectare.

(Calculated using 2011 BC Assessment database – total property value)

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 can not be assessed on a parcel basis for reserves and no data on Indian reserves is presented in this section.

⁸ 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 5. 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	3,102	60 %	26	3,127	64 %
	Farm infrastructure	117	2 %	8	126	3 %
	Greenhouses	20	<1 %	< 1	21	<1 %
ACTIVELY FARMED		3,239	63 %	35	3,274	67 %
Anthropogenic areas supporting farming	Residential footprint	46	<1 %	< 1	47	<1 %
	Built up - Other	12	<1 %	< 1	12	<1 %
	Transportation	3	<1 %	< 1	3	<1 %
	Artificial Waterbodies	< 1	<1 %	-	< 1	<1 %
SUPPORTING FARMING		62	1 %	< 1	63	1 %
Unavailable for farming due to existing land use	Water management	27	<1 %	< 1	27	<1 %
	Residential	2	<1 %	-	2	<1 %
	Institutional & community	< 1	<1 %	1	2	<1 %
	Transportation	< 1	<1 %	-	< 1	<1 %
	Industrial	< 1	<1 %	7	7	<1 %
Unavailable for farming due to existing land cover	Wetlands	97	2 %	4	101	2 %
	Waterbodies	70	1 %	112	182	4 %
	Residential footprint	18	<1 %	11	29	<1 %
	Utilities	15	<1 %	< 1	15	<1 %
	Built up - Other	6	<1 %	2	8	<1 %
	Transportation	2	<1 %	< 1	3	<1 %
	Natural bare areas	< 1	<1 %	3	4	<1 %
UNAVAILABLE FOR FARMING		239	5 %	141	380	8 %
Site limitations	Drainage and/or Flooding	398	8 %	53	452	9 %
	Slope	45	<1 %	204	249	5 %
	Operational	5	<1 %	5	10	<1 %
	Soils	-	-	23	23	<1 %
LIMITED POTENTIAL FOR FARMING		449	9 %	286	734	15 %
Available & with potential for farming	Natural & Semi-natural - Vegetation	149	3 %	203	352	7 %
	Anthropogenic - Managed vegetation	27	<1 %	12	39	<1 %
	Natural pasture	11	<1 %	-	11	<1 %
	Unmaintained field crops	7	<1 %	-	7	<1 %
	Anthropogenic - Non Built or Bare	< 1	<1 %	-	< 1	<1 %
	Unused forage or pasture	-	-	6	6	<1 %
AVAILABLE & WITH POTENTIAL FOR FARMING		195	4 %	222	417	9 %
TOTAL		4,183	81 %	685	4,868	100 %
Surveyed	Indian reserves	81	2 %			
Not surveyed	Indian reserves	582	11 %			
	Rights-of-way	203	4 %			
	Foreshore	122	2 %			
	Parcels < 100 sq m	< 1	<1 %			
SUBTOTAL		988	19 %			
TOTAL		5,171	100 %			

Table 5 shows that 417 hectares or 9% of the inventory area is available for farming and is not limited by existing land use, land cover, or other site limitations. Nearly half of this (195 hectares or 4%) is in the ALR. Being within the ALR is an important factor, as there is more assurance to farmers that their farmland assets will be protected.

Drainage and/or flooding limitations were recorded on 398 hectares or 8% of all ALR land. Although these lands have limited potential for agriculture, they are not necessarily excluded from all types of production.

Refer to Map B5 and B6 in Appendix B for more information.

Figure 6. Availability and potential of ALR lands for farming

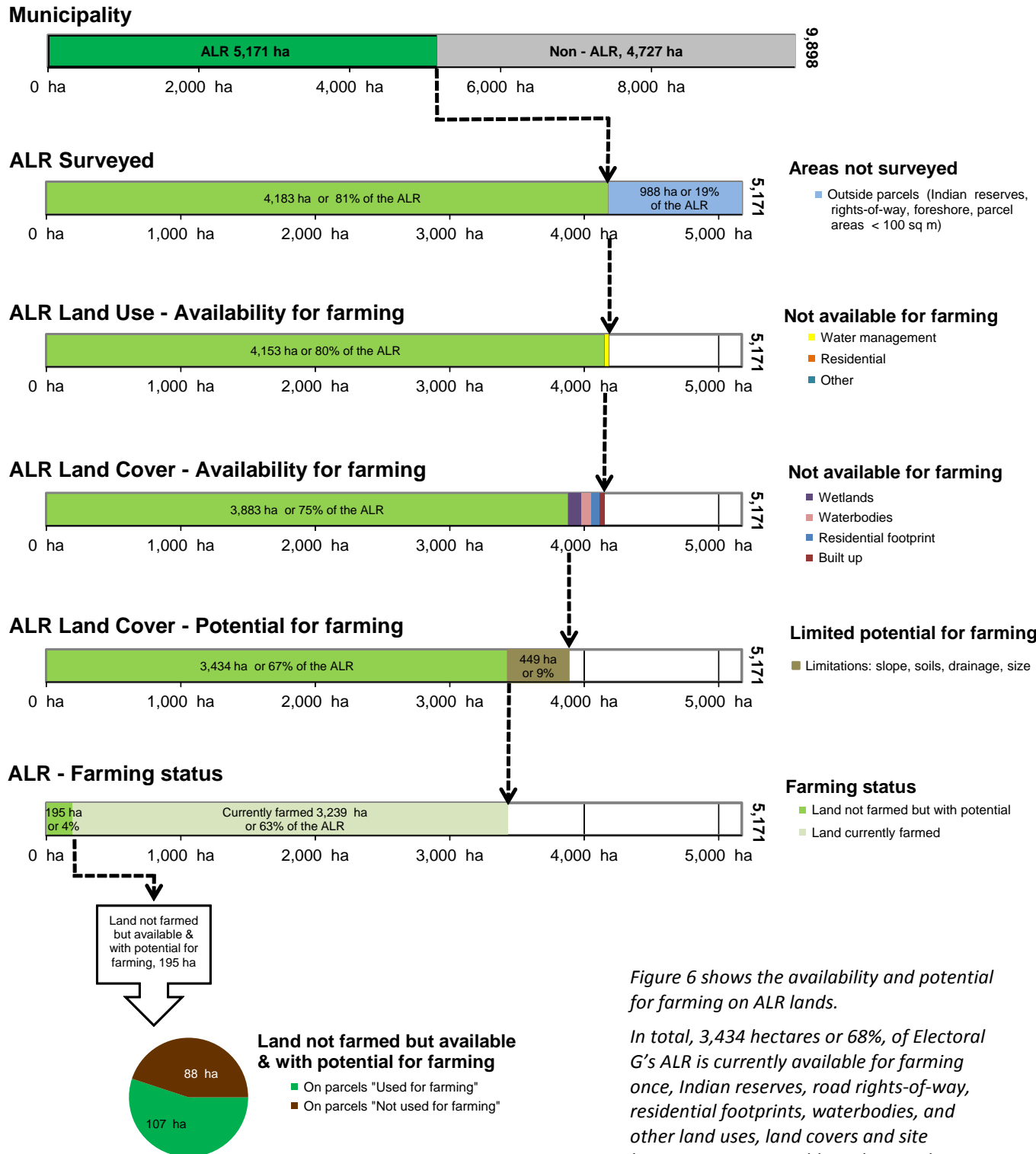


Figure 6 shows the availability and potential for farming on ALR lands.

In total, 3,434 hectares or 68%, of Electoral G's ALR is currently available for farming once, Indian reserves, road rights-of-way, residential footprints, waterbodies, and other land uses, land covers and site limitations incompatible with agriculture are taken into account. Of those 3,434 hectares, 3,239 hectares are actively farmed and 195 hectares are available and have potential for farming.

Refer to Map B6 in Appendix B for more information.

CHARACTERISTICS OF NOT FARMED BUT AVAILABLE LANDS

The potential for future agriculture expansion is affected by the size of the available areas. Small areas can effectively be used for some intensive agricultural operations such as mushrooms, floriculture, greenhouses, poultry, and container nurseries. Small areas may also be 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, berries, and a variety of field crops. For example, a dairy cow produces sufficient manure per year to fertilize 0.4 hectares of forage production which means a dairy operation consisting of 50 cows would require access to 20 hectares of land. Without sufficient land area to utilize the manure as a fertilizer, the dairy operation would have to find other, more expensive, methods to handle the manure produced on the farm.

On Parcels “Used For Farming”

Table 6. 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)	
Residential	48	68	21	89	690	2	693	2 %
Used for farming only	18	39	14	54	156	2	158	1 %
Transportation	1	< 1	-	< 1	-	-	-	<1 %
TOTAL	67	107	35	143	846	5	850	3 %

Table 6 demonstrates that the largest potential increase in farmed land on parcels that are already “Used for farming” could come from properties that currently have “Residential” use.

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

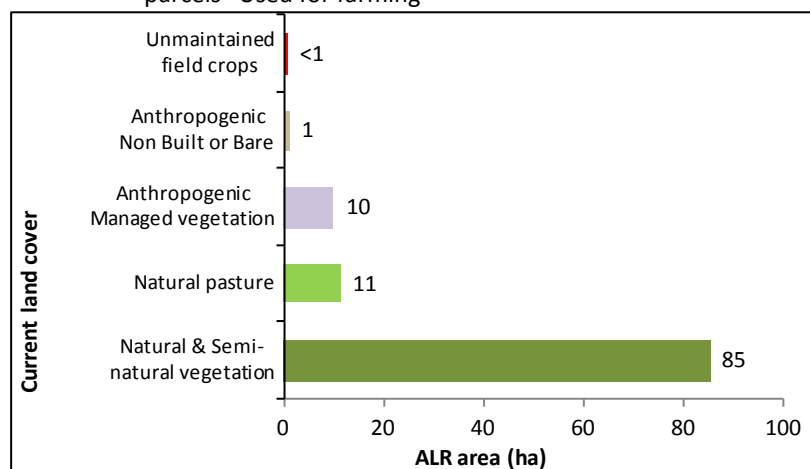


Figure 7 indicates that clearing land covered with “Natural & Semi-natural” vegetation would provide the greatest gains in farmed land on parcels that are already “Used for farming”.

Clearing this land would have to be measured against the potential loss of environmental benefits.

On Parcels “Not Used For Farming”

Table 7. 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)	
Not used for farming	Residential	69	56	62	118	2 %
	No apparent use	17	19	86	104	<1 %
	Institutional & community	1	13	2	15	<1 %
	Utilities	1	-	5	5	-
	Recreation & leisure	1	-	19	19	-
	Gravel extraction	1	-	2	2	-
	Forestry	1	-	11	11	-
TOTAL		91	88	187	274	3 %

Table 7 illustrates that for parcels currently “Not used for farming”, the greatest potential for increasing actively farmed land would come from parcels with “Residential” use and parcels with “No apparent use”.

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

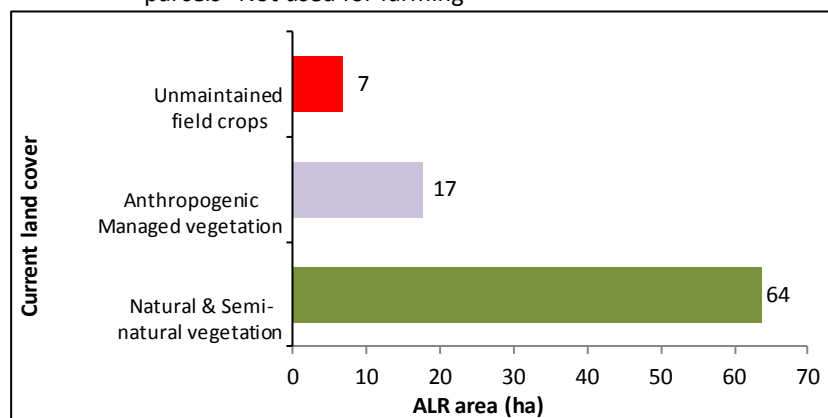


Figure 8 indicates that clearing land covered with “Natural & Semi-natural” vegetation would provide the greatest gains in farmed land on parcels currently “Not used for farming”.

Anthropogenic managed vegetation consists mainly of landscaping and lawns surrounding residential uses. Converting this to agricultural use may not be supported by landowners.

Figure 9. Size of areas available for farming but not farmed on parcels “Not used for farming”

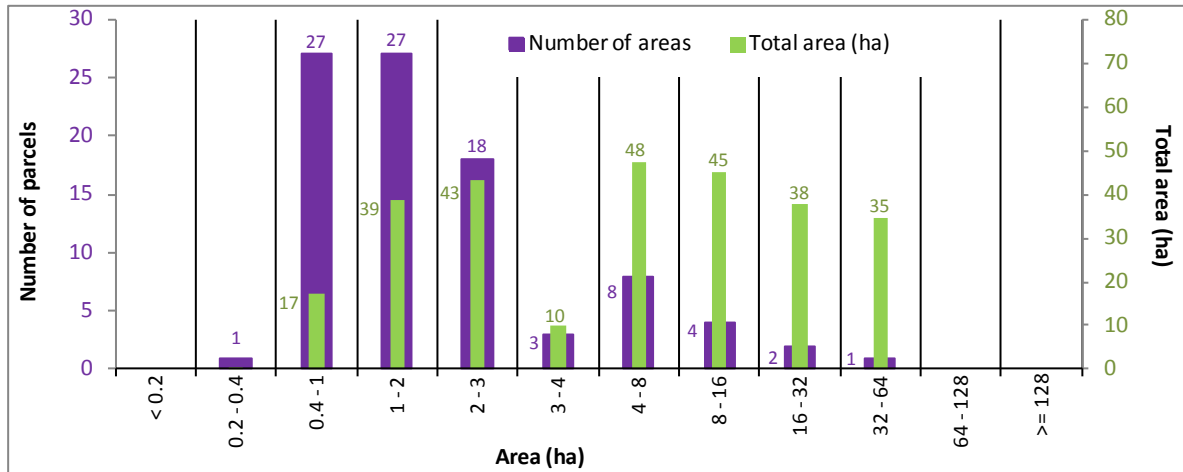


Figure 9 demonstrates that the majority of areas available for farming (55 of 91 or 60%) are less than 2 hectares in size. The smaller the area, the fewer options are available to efficiently farm. In general, areas should be 4 hectares or more to provide the widest range of farming options.

In Electoral Area G, there are 15 areas greater than 4 hectares with a combined area of 165 hectares that are available, have potential for farming, and are on parcels “Not used for farming”. This is 60% of the 274 hectares (refer to Table 7) that are available and have potential for farming in the Electoral Area G inventory area.

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 field crops in Electoral Area G are described by ten crop groupings:

- **Forage & pasture:** grass, forage corn
- **Berries:** blueberries, strawberries
- **Turf**
- **Nursery & tree plantations:** ornamentals & shrubs, mixed nursery, cedar hedging, Christmas trees
- **Specialty:** rhubarb, hops
- **Other:** fallow land (cultivated land that has not been seeded or planted for one or more growing seasons) and land in crop transition
- **Vegetables:** mixed vegetables (a variety of vegetable types cultivated in a field), sweet corn
- **Tree fruits:** mixed
- **Vines:** grapes, kiwis
- **Nut trees:** hazelnut/filbert

Table 8. Main field crop types by area

Type	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Forage & pasture	2,587	50%	32	2,619	83%
Berries	296	6%	< 1	296	9%
Turf	142	3%	-	142	5%
Nursery & tree plantations	66	1%	< 1	66	2%
Specialty	8	< 1%	-	8	< 1%
Other*	3	< 1%	-	3	< 1%
Vegetables	2	< 1%	-	2	< 1%
Tree fruits	2	< 1%	< 1	2	< 1%
Vines	< 1	< 1%	< 1	< 1	< 1%
Nut trees	< 1	< 1%	-	< 1	< 1%
TOTAL	3,109	60%	32	3,141	100%

* Other includes fallow land (cultivated land that has not been seeded or planted for one or more growing season) and land in crop transition.

Table 8 shows the 10 main field crop types produced on the 3,141 hectares of cultivated land in Electoral Area G.

“Forage & pasture” is the most common type of field crop accounting for 83% of all cultivated land and 50% of the ALR in the electoral area.

Berries are the second most common type of field crop accounting for 9% of all cultivated land and 6% of the ALR.

Refer to Map B8 in Appendix B for more information.

Figure 10. Main field crop types by percentage

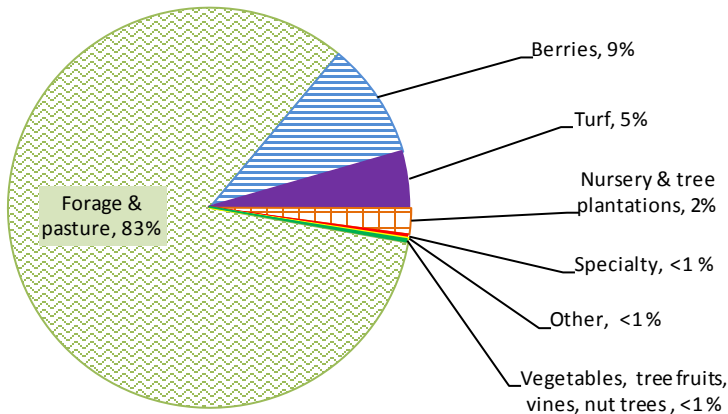


Figure 10 shows the proportion of main field crop types across Electoral Area G's cultivated land.

“Forage & pasture” combined with “Berries” comprise 92% of all cultivated land in the electoral area.

Figure 11. All cultivated crop fields by size

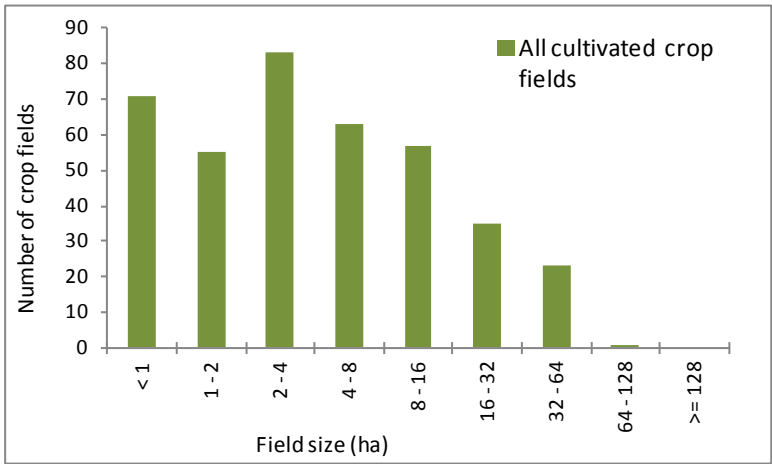


Figure 11 illustrates the number and size distribution of fields used for cultivated crop fields.

In Electoral Area G, there are 388 individual crop fields with an average area of 8 hectares and a median area of 4 hectares.

Field crops occur on 363 parcels with an average parcel size of 11 hectares and a median parcel size of 5 hectares.

Refer to Table A1 in Appendix A for more information.

Figure 12. Forage & pasture, berries, turf, and nursery & tree plantation fields by size

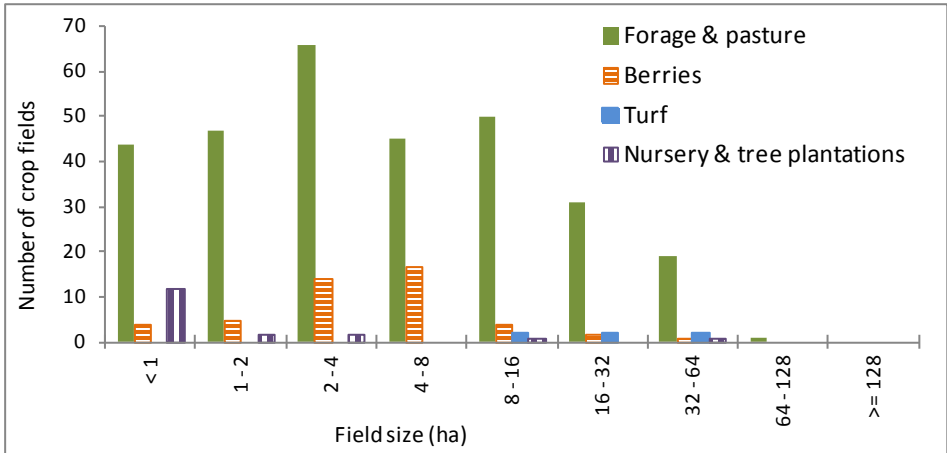


Figure 12 compares the top four main crop types by field sizes.

“Forage & pasture” fields dominate all field size categories with cultivated crops.

There are 6 turf fields, all greater than 8 hectares in size.

By comparison, there are 18 nursery fields of which two-thirds are less than 1 hectare.

Refer to Table A1 in Appendix A for more information.

Forage & pasture crops

Forage is a cultivated crop that is cut and made into silage or hay for 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, and is 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 9. Forage & pasture crops by area

Forage & pasture crops		ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
		In ALR (ha)	% of ALR			
Forage (intensively managed)	Grass	1,080	21%	< 1	1,080	34%
Forage (intensively managed)	Mixed grass / legume	48	< 1%	-	48	2%
Forage (managed)	Grass	429	8%	2	431	14%
Forage (managed)	Mixed grass / legume	44	< 1%	< 1	44	1%
Forage (managed)	Forage corn	567	11%	< 1	568	18%
Forage (unmanaged)	Grass	6	< 1%	-	6	< 1%
Forage (unmanaged)	Mixed grass / legume	3	< 1%	< 1	3	< 1%
Forage^	Grass	91	2%	3	94	3%
Subtotal		2,268	44%	6	2,275	72%
Pasture (managed)	Grass	37	< 1%	< 1	37	1%
Pasture (unmanaged)	Grass	97	2%	18	115	4%
Pasture (unmanaged)	Mixed grass / legume	3	< 1%	-	3	< 1%
Pasture^	Grass	124	2%	1	125	4%
Subtotal		260	5%	19	280	9%
Forage & pasture (managed)	Grass	59	1%	-	59	2%
Subtotal		59	1%	-	59	2%
Unused	Grass	-	-	6	6	< 1%
Subtotal		-	-	6	6	< 1%
TOTAL		2,587	50%	32	2,619	83%

Table 9 shows there is far more forage than pasture in Electoral Area G.

Grass is the main forage crop type.

Refer to Map B9 in Appendix B for more information.

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

Figure 13. Forage & pasture fields by size and type⁹

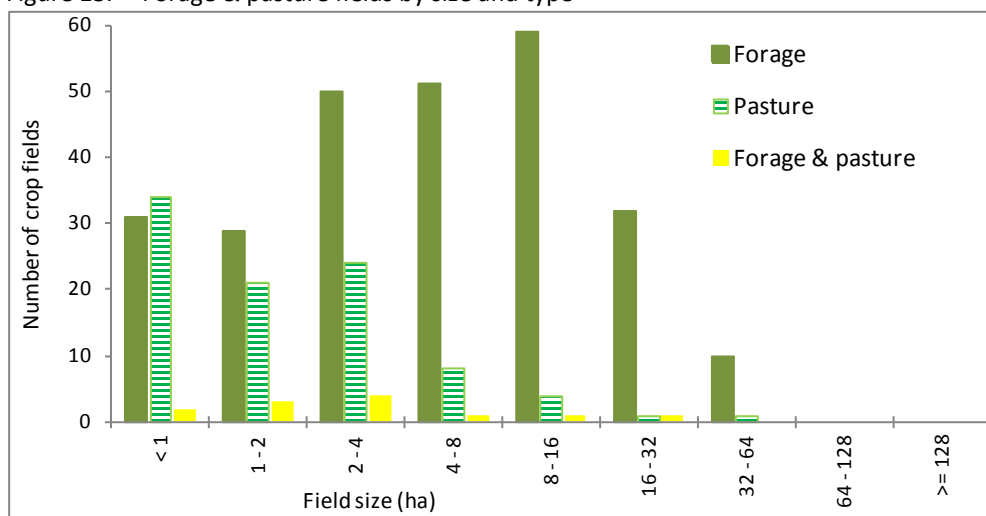


Figure 13 illustrates the variation in field sizes between pasture and forage. There are far more forage than pasture fields, especially in larger field size categories.

There are 262 forage fields with an average crop area of 9 hectares, a median area of 5 hectares, and an average parcel size of 15 hectares.

By comparison, there are 93 pasture fields with an average area of 3 hectares, a median area of 2 hectares, and an average parcel size of 11 hectares.

Forage fields are generally larger than pasture fields mainly due to equipment requirements for efficient field management.

Refer to Table A2 in Appendix A for more information.

Table 10. Forage crops by area (pasture crops excluded)

Forage crops	ALR		Outside ALR (ha)	Total area (ha)	% of forage crops	% of cultivated land
	In ALR (ha)	% of ALR				
Grass	1,664	32%	6	1,670	72%	53%
Mixed grass / legume	95	2%	< 1	95	4%	3%
Forage corn	567	11%	< 1	568	24%	18%
TOTAL	2,327	45%	6	2,333	100%	74%

* Forage includes "forage" as well as "forage & pasture".

Table 10 shows that the majority of the forage area is in grass (72%).

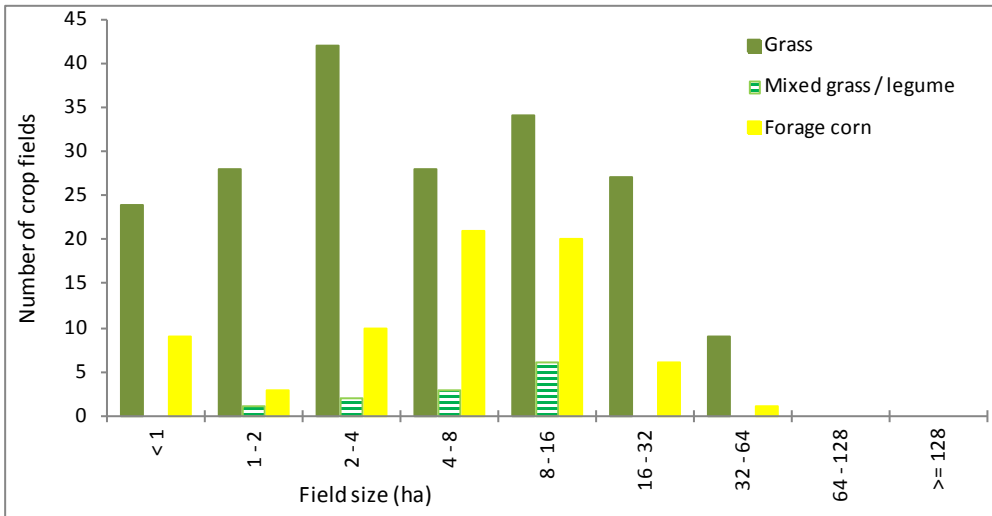
Grass and mixed grass legume comprise 76% of all forage crops, while forage corn comprises 24%.

The ratio of forage grass to forage corn is expected to remain relatively constant barring any major changes to livestock feeding regimes or animal counts.

Refer to Map B9 in Appendix B for more information.

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.

Figure 14. Forage fields by size and crop type (pasture crops excluded)



* Forage includes "forage" as well as "forage & pasture".

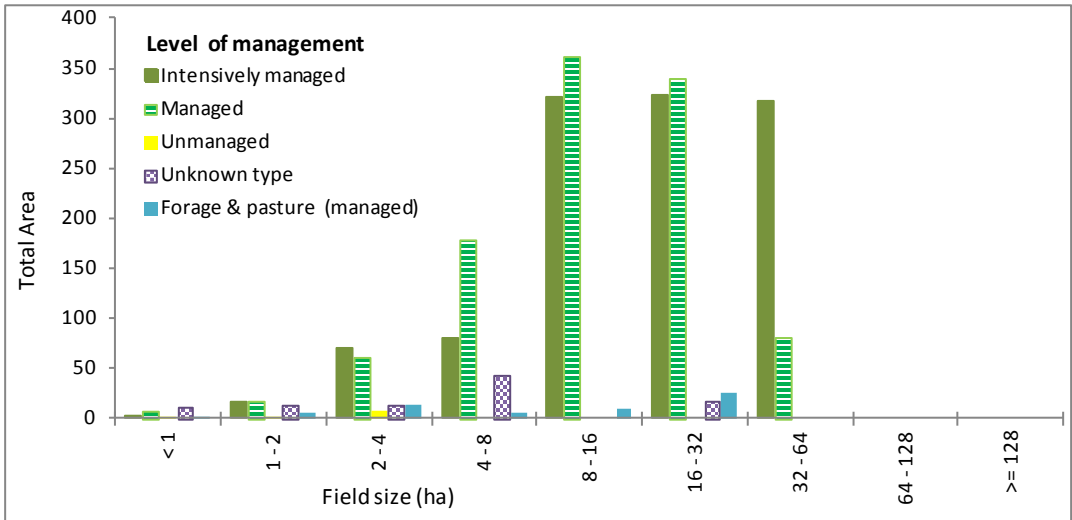
Figure 14 shows the field size distribution of forage fields in Electoral Area G.

Although both grass and forage corn crops occur across all field size categories with forage crops, there are far more grass (192) than corn fields (70).

On Nicomen Island, there are instances where multiple forage fields, spanning different legal lots and with different owners, are leased to farmers who manage and farm the fields as a single unit. This helps to efficiently bring smaller lots into production.

Refer to Table A3 in Appendix

Figure 15. Forage fields by size and management type (pasture crops excluded)



* Forage includes "forage" as well as "forage & pasture".

Figure 15 displays the distribution of forage management practises across parcel sizes.

"Managed" and "intensively managed" fields account for the majority of all forage crops in Electoral Area G.

Refer to Table 9 for more information.

Berry crops

Berry crops are primarily perennials. Perennial berry crops do not change frequently as they require several years to mature and some crop types require extensive land preparation. Strawberries are a perennial crop which is usually rotated or grown on different land each year to minimize build-up of crop-specific pest and disease problems. Since this inventory is a snapshot in time, the strawberry crops seen during the survey year may not be present in the same location the following year.

Two plant age categories are described:

- **Young:** Plants are young and have not reached peak production
- **Mature:** Plants are mature and are capable of reaching peak production

Table 11. Berry crops by area

Berry crops		ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
		In ALR (ha)	% of ALR			
Blueberries	Mature	243	5%	< 1	243	8%
	Young	52	1%	< 1	52	2%
	Subtotal	295	6%	< 1	295	9%
Strawberries	Mature	1	< 1%	-	1	< 1%
	Subtotal	1	< 1%	-	1	< 1%
TOTAL		296	6%	< 1	296	9%

Table 11 shows that Electoral Area G has 296 hectares in berry crops. Nearly all berry crops are blueberries (295 hectares) with only 1 hectare of strawberries. Refer to Map B10 in Appendix B for more information.

Figure 16. Blueberry and strawberry fields by size

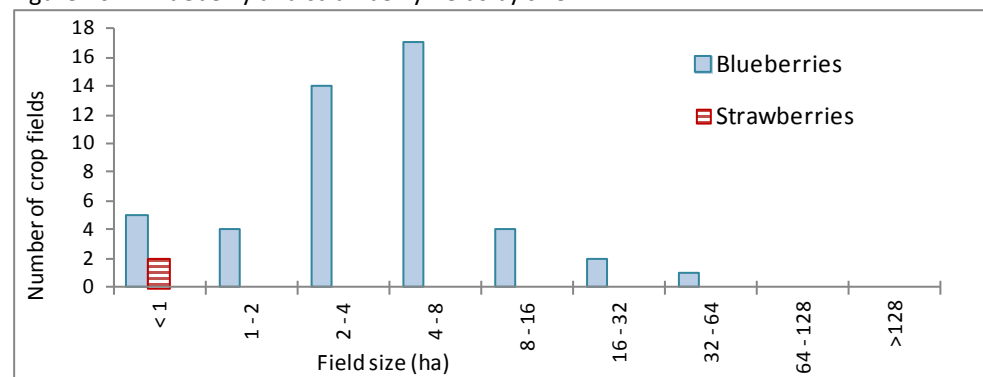


Figure 16 shows the field size distribution of berry fields in Electoral Area G.

There are 47 blueberry fields with an average crop area of 6 hectares, a median area of 4 hectares, and an average parcel size of 10 hectares.

In comparison, there are only 2 strawberry fields with an average crop area of <1 hectare, a median area of <1 hectare and an average parcel size of 5 hectares.

Refer to Table A4 in Appendix A for more information.

Nursery & tree plantations

Nursery operations produce a variety of plants, trees, and shrubs that can be grown under a range of conditions. Nursery crops are cultivated for transplant and can be soil or container based. Intensive container based nurseries have the potential to thrive on a relatively small parcels.

Tree plantations are characterized by trees and woody shrubs that are harvested on site for fibre or other products. Tree plantations are not cultivated for transplant except in rare cases such as ball & burlap Christmas trees.

Nursery and tree plantations in Electoral Area G include:

- **Nursery** : ornamentals and shrubs, cedar hedging and mixed operations
- **Tree plantations** : Christmas trees, and unidentified plantation types

Table 12. Nursery & tree plantations by area

Nursery & tree plantations		ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
		In ALR (ha)	% of ALR			
Nursery	Ornamentals and shrubs	38	< 1%	< 1	38	1%
	Nursery - mixed	23	< 1%	-	23	< 1%
	Cedar hedging	< 1	< 1%	-	< 1	< 1%
	Cedar hedging - Unmaintained	< 1	< 1%	-	< 1	< 1%
	Nursery - Unmaintained	< 1	< 1%	-	< 1	< 1%
Subtotal		62	1	< 1	62	2
Tree plantation	Trees (plantation)	2	< 1%	-	2	< 1%
	Christmas trees	2	< 1%	-	2	< 1%
Subtotal		4	< 1	-	4	< 1%
Nursery or tree plantation - unknown		< 1	< 1%	-	< 1	< 1%
Subtotal		< 1	< 1	-	< 1	< 1%
TOTAL		66	1%	< 1	66	2%

Table 12 shows that Electoral Area G has a total of 66 hectares in nursery & tree plantations. Nearly all of this is in the ALR.

Refer to Map B10 in Appendix B for more information.

Figure 17. Nursery & tree plantations by size and type

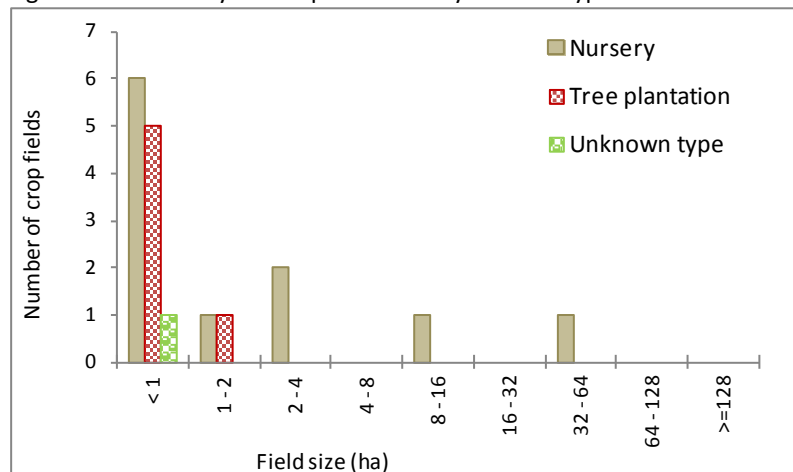


Figure 17 shows most nursery & tree plantations in Electoral Area G are less than 1 hectare in size.

There are 18 individual nursery & tree plantation fields with an average area of 4 hectares and a median area of < 1 hectares.

Nursery & tree plantations occur on 15 parcels with an average parcel size of 14 hectares and a median size of 5 hectares.

Refer to Table A5 in Appendix A for more information.

Top 20 Individual Crops

Table 13. Top 20 crop types by area

Cultivated field crop	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Forage (intensively managed)	1,128	22%	< 1	1,128	36%
Forage (managed)	1,041	20%	3	1,044	33%
Blueberries	295	6%	< 1	295	9%
Turf	142	3%	-	142	5%
Pasture [^]	124	2%	1	125	4%
Pasture (unmanaged)	100	2%	18	118	4%
Forage [^]	91	2%	3	94	3%
Forage & pasture (managed)	59	1%	-	59	2%
Ornamentals and shrubs	38	< 1%	< 1	38	1%
Pasture (managed)	37	< 1%	< 1	37	1%
Nursery - mixed	23	< 1%	-	23	0.7%
Forage (unmanaged)	9	< 1%	< 1	9	0.3%
Rhubarb (Unmaintained)	7	< 1%	-	7	0.2%
Unused forage/pasture	-	-	6	6	0.2%
Fallow land*	3	< 1%	-	3	0.1%
Tree plantation	2	< 1%	-	2	0.1%
Christmas trees	2	< 1%	-	2	0.1%
Tree fruits	2	< 1%	< 1	2	0.1%
Rhubarb	1	< 1%	-	1	< 0.1%
Strawberries	1	< 1%	-	1	< 0.1%
TOTAL	3,103	60%	32	3,135	99.8%

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

* Fallow land is cultivated land that has not been seeded or planted for one or more growing season.

Table 13 shows the top 20 individual crops that account for 99.8% of the cultivated land in Electoral Area G.

Figure 18. Top 20 crop types by area

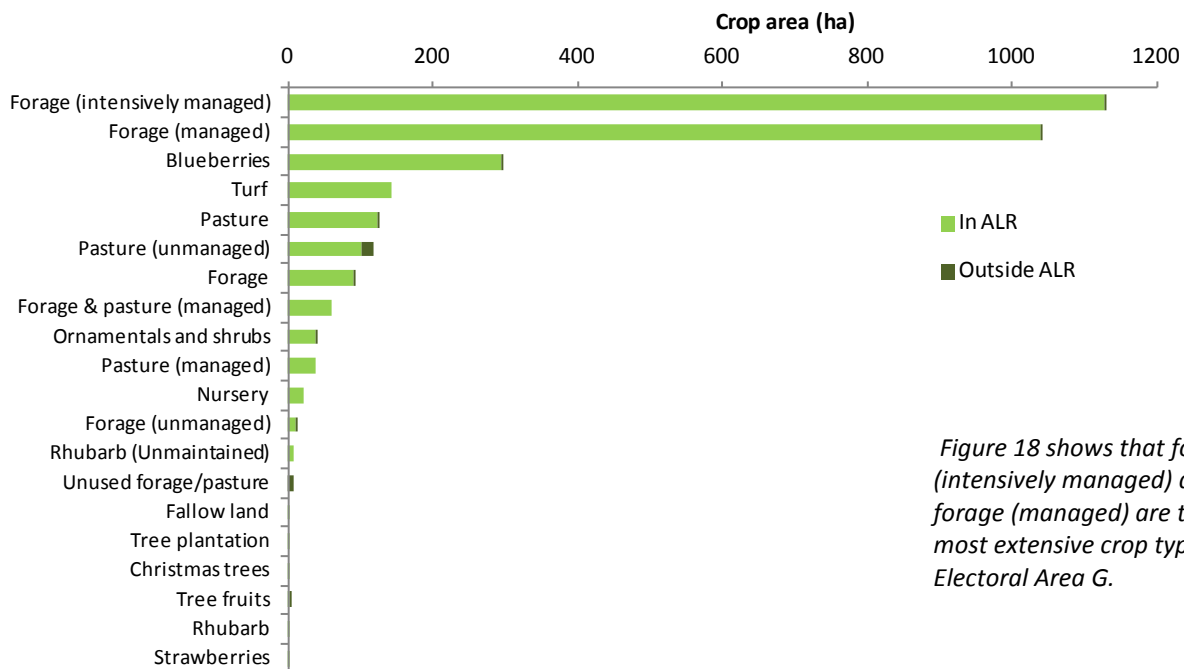


Figure 18 shows that forage (intensively managed) and forage (managed) are the most extensive crop types in Electoral Area G.

Cultivated crops on Indian reserves

Table 14. Main field crop types by area on surveyed Indian reserves

Forage crops	ALR		Outside ALR (ha)	Total area (ha)	Number of crop fields
	In ALR (ha)	% of ALR			
Forage	52	< 1%	< 1	52	3
TOTAL	52	< 1%	< 1	52	3

Table 14 shows 52 hectares of forage was recorded on Indian reserves in Electoral Area G. This is in addition to the 3,141 hectares of cultivated field crops on surveyed parcels (refer to Table 8).

Table 15. Forage crops by area on surveyed Indian reserves

Forage & pasture crops		ALR		Outside ALR (ha)	Total area (ha)
		In ALR (ha)	% of ALR		
Forage (managed)	Grass	15	< 1%	-	15
Forage (managed)	Forage corn	37	< 1%	< 1	37
TOTAL		52	1%	< 1	52

Table 15 shows that of the 52 hectare of forage crops found on Indian reserves, 15 hectares are in forage grass and 37 hectares are in forage corn.

Refer to Map B9 in Appendix B for more information.

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 16. Greenhouses by area¹¹

Greenhouse type		ALR		Outside ALR (ha)	Total area (ha)	% of greenhouse area
		In ALR (ha)	% of ALR			
Glass greenhouse	Unknown	-	-	1	1	4%
Subtotal		-	-	1	1	4%
Poly greenhouse	Nursery	19	0.4%	< 1	19	92%
	Floriculture	< 1	< 0.1%	-	< 1	2%
	Unknown	< 1	< 0.1%	-	< 1	2%
Subtotal		20	0.4%	< 1	20	96%
TOTAL		20	0.4%	1	21	100%

Table 16 shows that 20 hectares of ALR land are covered by poly greenhouses. Nineteen (19) of these hectares are associated with Nicomen Nursery.

There is one glass greenhouse that accounts for 1 hectare of land outside the ALR.

No crop barns were recorded in Electoral Area G.

Refer to Map B8 in Appendix B for more information.

Figure 19. Distribution of greenhouse activities by crop type¹²

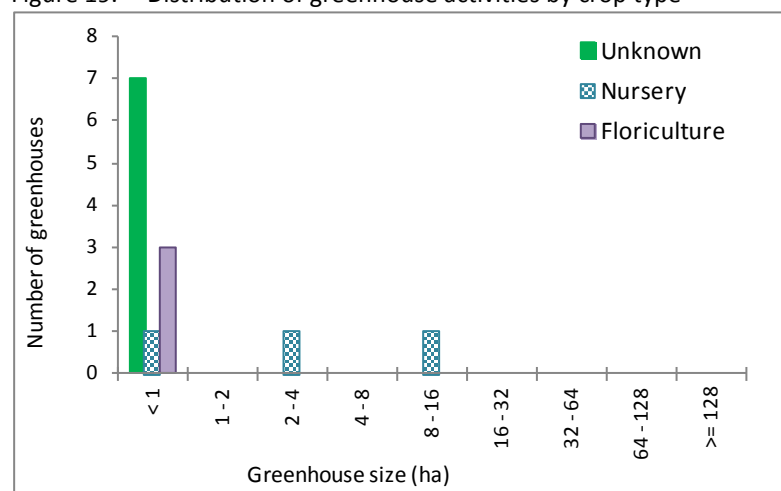


Figure 19 shows that 13 greenhouses were reported in Electoral Area G, 7 with unknown crops, 3 with floriculture, and 3 with nursery crops.

Most greenhouses are less than 1 hectare. There are 2 greenhouses larger than 1 hectare (3.3 and 15.4 hectares) that are associated with Nicomen Nursery.

¹⁰ Source: *Guide for Bylaw Development*, 1998 Issue (Working Copy) by Ministry of Agriculture and Food.

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.

¹² Each distinct greenhouse type on a parcel is counted as one activity. Each greenhouse activity will include at least one and perhaps more greenhouse structures of the same building type if the buildings edges are adjacent to one another.

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. Insufficient water sources or water delivery infrastructure can limit the potential to increase agricultural production through irrigation. In Electoral Area G, there are abundant sources of water for irrigation.

Irrigation is captured at the field or land cover level by system type (sub-surface, sprinkler, giant gun, trickle, *etc.*) 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 and land under preparation for planting. Also included are crops grown in greenhouses and crop barns. In addition, the top 20 cultivated field crops are evaluated for percent of crop area under irrigation.

Table 17. Main crop types and irrigation

Cultivated field crop	Irrigation system in use (ha)			Total area irrigated (ha)	% of crop area irrigated
	Sprinkler	Giant gun	Trickle		
Turf	142	-	-	142	100%
Berries	11	3	274	288	97%
Nursery & tree plantations	59	-	-	59	90%
Vegetables	< 1	-	< 1	2	89%
Vines	< 1	-	-	< 1	30%
Forage & pasture	-	260	-	260	10%
Tree fruits	-	-	-	-	-
Specialty	-	-	-	-	-
Other*	-	-	-	-	-
Nut trees	-	-	-	-	-
TOTAL FIELD CROP AREA IRRIGATED	214	264	275	752	24%
Greenhouses - Mix of flood and trickle irrigation				21	100%

* Other includes fallow land (cultivated land that has not been seeded or planted for one or more growing season) and land in crop transition.

Table 17 illustrates that all turf and nearly all berry crops are irrigated. The majority of vegetable and nursery & tree plantation crops are also irrigated.

Trickle systems are the most common with 275 hectares, followed by giant gun systems with 264 hectares and sprinkler systems with 212 hectares.

Refer to Map B11 in Appendix B for more information.

Figure 20. Irrigation systems by percentage of cultivated land

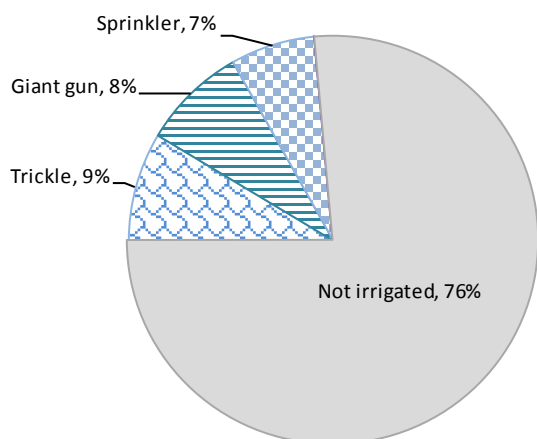


Figure 20 shows that trickle irrigation systems occur on 9% of all cultivated land, followed by giant gun systems with 8% and sprinkler systems with 7%.

Table 18. Top 20 crop types and irrigation

Cultivated field crop	Irrigation system in use (ha)			Total area irrigated (ha)	% crop area irrigated
	Sprinkler	Giant gun	Trickle		
Forage (intensively managed)	-	139	-	139	12%
Forage (managed)	-	87	-	87	8%
Blueberries	11	3	274	288	98%
Turf	142	-	-	142	100%
Pasture^	-	-	-	-	-
Pasture (unmanaged)	-	-	-	-	-
Forage^	-	8	-	8	9%
Forage & pasture (managed)	-	26	-	26	44%
Ornamentals and shrubs	38	-	-	38	100%
Pasture (managed)	-	-	-	-	-
Nursery - mixed	20	-	-	20	89%
Forage (unmanaged)	-	-	-	-	-
Rhubarb (Unmaintained)	-	-	-	-	-
Unused forage/pasture	-	-	-	-	-
Fallow land*	-	-	-	-	-
Tree plantation	< 1	-	-	< 1	28%
Christmas trees	-	-	-	-	-
Tree fruits	-	-	-	-	-
Rhubarb	-	-	-	-	-
Strawberries	-	-	-	-	-
TOTAL	212	264	274	750	

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

* Fallow land is cultivated land that has not been seeded or planted for one or more growing season.

Table 17 outlines the irrigations system types used on the top 20 field crops in Electoral Area G. Trickle systems are found almost exclusively on blueberry crops while giant gun systems are found primarily on forage & pasture crops.

LIVESTOCK

Livestock activities are very difficult to measure using a windshield survey method. Livestock are often confined in structures making it difficult for the surveyor to see the animals. Local knowledge and other indicators such as animal confinement type (barn type), feeder system type, manure handling system type, and other visible elements may be used to infer the type of livestock and scale of activity that exist on a parcel. In addition, livestock are mobile and may utilize more than one land parcel. Livestock visible on a certain parcel one day may be visible on a different parcel the next day. This inventory does not attempt to identify animal movement between parcels that make up a farm unit but reports livestock at the parcel where the animals or related structures were observed.

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

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

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

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

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)

Table 19. All livestock activities (including equine)

Livestock group	Livestock detail *	By parcel		Total activities	By activity type	
		Main type	Secondary type		Intensive	Non Intensive
Beef	Beef total	10	-	10	2	8
Dairy	Dairy total	49	-	49	40	9
Poultry	Chicken	5	-	5	2	3
	Chicken (Duck)	1	1	2	-	2
	Chicken (Goat)	-	1	1	-	1
	Turkey	-	1	1	-	1
	Goose	-	1	1	-	1
	Poultry total	6	4	10	2	8
Swine	Swine total	-	1	1	-	1
Sheep / lamb / goat	Sheep / lamb	2	1	3	-	3
	Sheep / lamb (Beef)	1	-	1	-	1
	Goat	2	2	4	-	4
	Sheep / lamb / goat total	5	3	8	-	8
Llama / alpaca	Llama / alpaca total	2	1	3	-	3
Unknown livestock	Unknown livestock total	4	-	4	-	4
Inactive	Inactive total	1	-	1	1	-
Equine	Horse	32	11	43	-	43
	Miniature horse	2	-	2	-	2
	Donkey	1	-	1	-	1
	Mixed (EQ)	4	1	5	-	5
	Equine - unknown type	8	-	8	-	8
	Equine total	47	12	59	-	59
TOTAL		123	21	145	44	100

* When livestock type appears in parentheses, it indicates the livestock activity is a mixed herd or flock.

Table 19 details the livestock types in Electoral Area G. Dairy and equine are the most common types of livestock. Although equine is the most abundant livestock type, the scale of each activity is generally smaller than dairy operations. See Figure 22 below.

All equine activities are “non intensive” while the majority (82%) of all dairy activities are “intensive”. There are also 2 intensive beef and two intensive poultry activities in the electoral area.

One former dairy was recorded as an inactive livestock activity.

Refer to Maps B12, B13, and B14 in Appendix B for more information.

Table 20. Equine activities

Type of activity	Scale of equine activity	By parcel		Total number of activities	By activity type	
		Main Type	Secondary Type		Intensive	Non intensive
	Very small scale (1 horse)	3	2	5	-	5
	Small scale (2-25 horses)	41	10	51	-	51
Boarding	Small scale (2-25 horses)	3	-	3	-	3
TOTAL		47	12	59	-	59

Table 20 demonstrates that all equine activities are “very small” or “small” scale.

Three equine activities were recorded as horse boarding facilities.

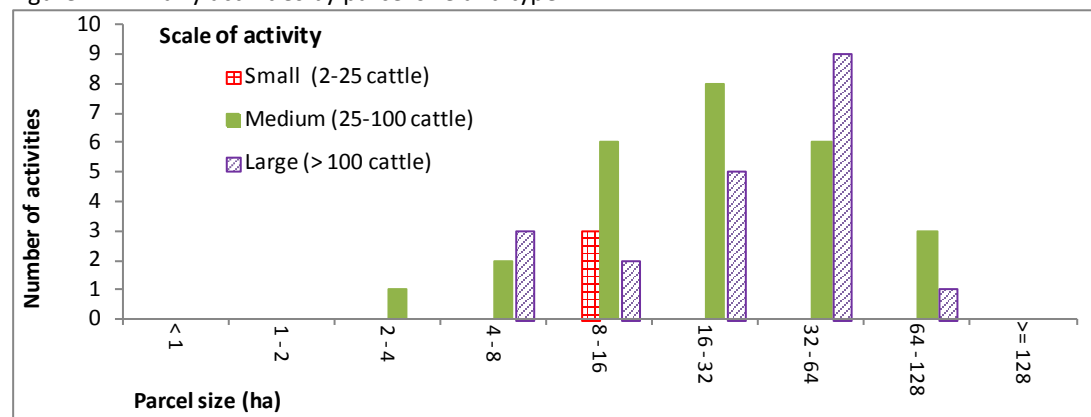
Table 21. Dairy activities

Scale of dairy activity	By parcel		Total number of activities	By activity type	
	Main type	Secondary type		Intensive	Non intensive
Small scale (2 - 25 cattle)	3	-	3	-	3
Medium scale (25 - 100 cattle)	26	-	26	20	6
Large scale (>100 cattle)	19	-	19	19	-
Large scale - dry cow - (>100 cattle)	1	-	1	1	-
TOTAL	49	-	49	40	9

Table 20 demonstrates that nearly all dairy activities in Electoral Area G are “medium” or “large” scale with only 3 “small” scale activities.

Most dairy activities are “intensive”.

Figure 21. Dairy activities by parcel size and type



Dairy production is the dominant form of agricultural in Electoral Area G.

Figure 24 demonstrates that dairy operations in Electoral Area G are found primarily on parcels larger than 4 hectares.

Refer to Table A6 in Appendix A for more information.

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

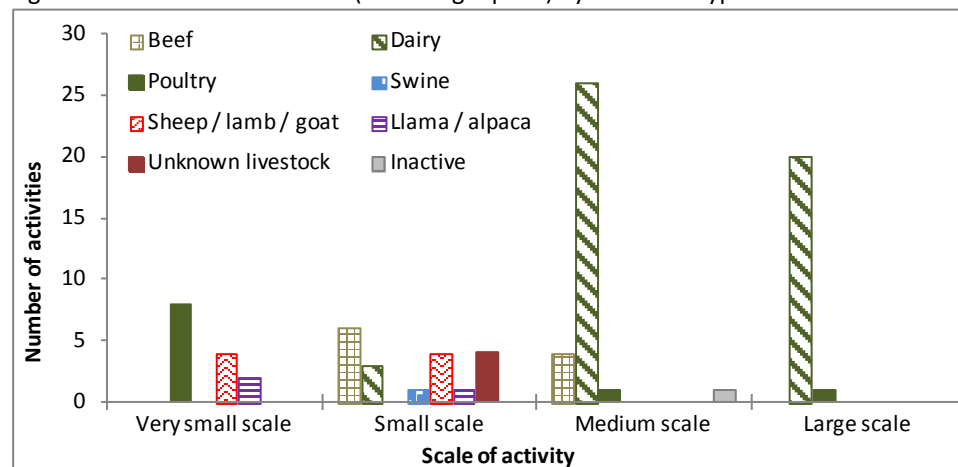


Figure 21 illustrates the scale of livestock activities (excluding equine) in Electoral Area G.

Nearly all “medium” and “large” scale activities are dairy. There are also 4 “medium” scale beef activities and one “medium” and one “large” scale poultry activity.

Refer to Tables A7, A9, A10 and A12 in Appendix A for more information.

Figure 23. Livestock and equine activities by scale

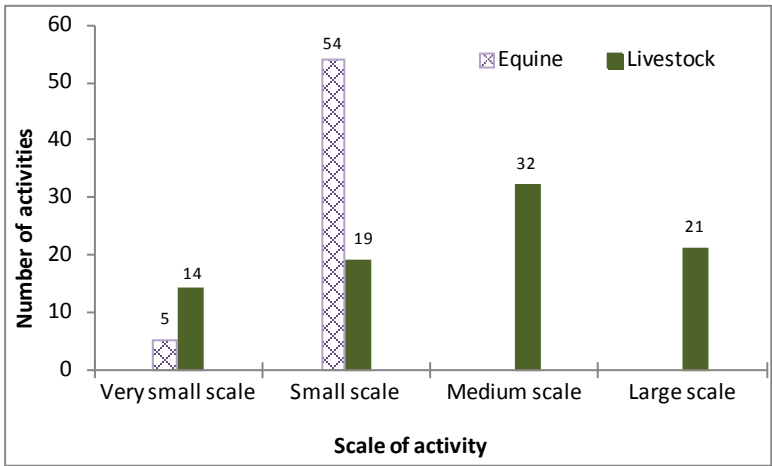


Figure 22 compares the scale of livestock activities with equine activities.

Even though 59 of the 145 livestock activities are equine, nearly all are “small” scale. There are no “medium” or “large” scale equine activities in Electoral Area G compared to 32 “medium” and 21 “large” scale livestock activities

Refer to Tables A7, A9, A10, A12 and A14 in Appendix A for more information.

Figure 24. Livestock activities (excluding equine) by parcel size and scale

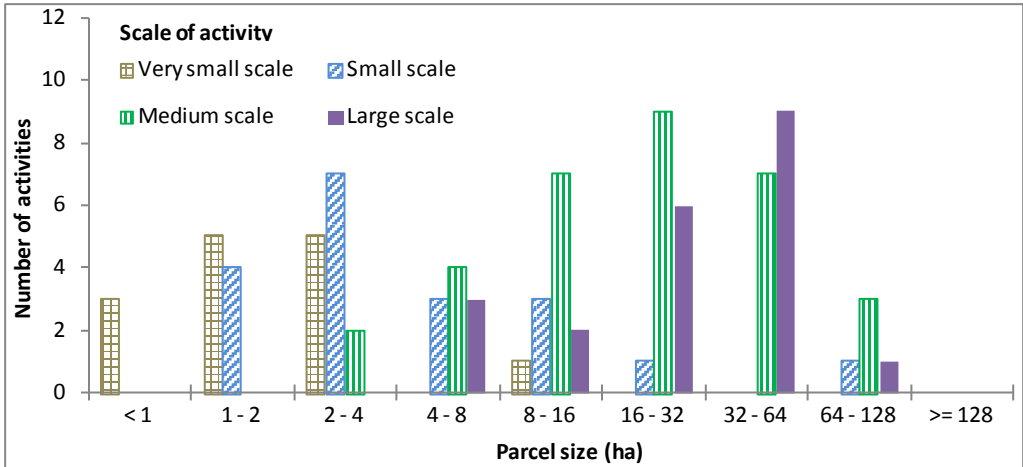


Figure 23 illustrates the distribution of livestock activities (excluding equine) by scale across parcel size categories.

Most “large” scale livestock activities are associated with larger parcels. “Small” scale activities occur on a wide range of parcel sizes including larger parcels.

Refer to Tables A7, A9, A11, A13 and Figures A1, A3, A5, and A7 in Appendix A for more information.

Figure 25. Livestock activities (excluding equines) by parcel size and type

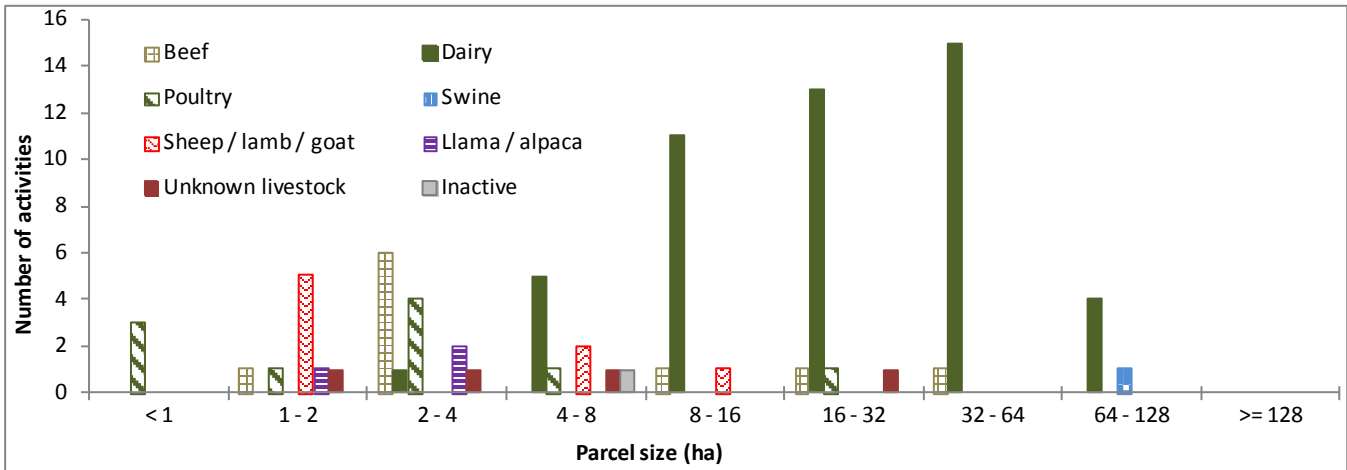


Figure 24 compares the distribution of different livestock types across parcel size categories. Dairy activities dominate all field size categories over 4 hectares. One “small” scale swine activity occurs on a parcel of 66 hectares. Refer to Table A6 in Appendix A for more information.

Figure 26. Livestock and equine activities by parcel size

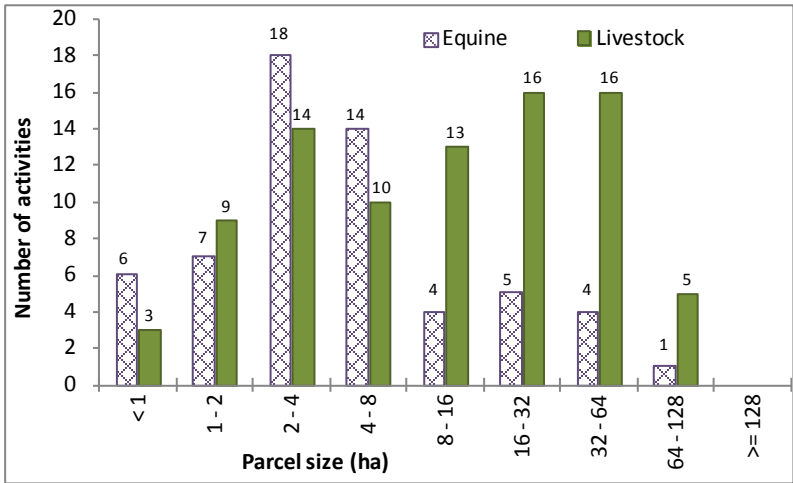


Figure 26 compares the distribution of equine and livestock activities across parcel size categories. Equine activities occur more frequently than other livestock activities on smaller parcels. Both livestock and equine activities occur on parcels < 1 hectare. Refer to Table A6 in Appendix A for more information.

Figure 27. Average area in forage, pasture and farm infrastructure on parcels with livestock activities (excluding very small scale)

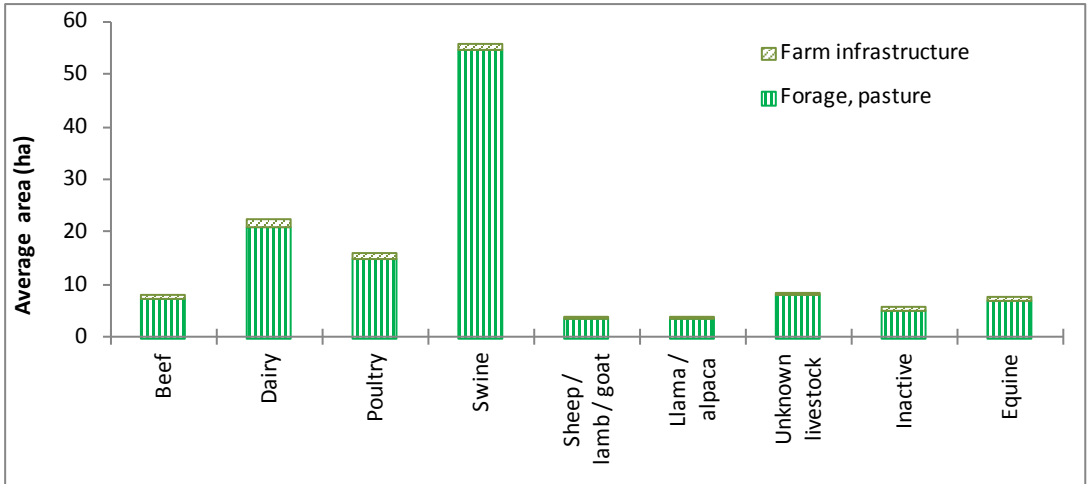


Figure 27 shows that on average, a dairy activity is associated with 21 hectares of forage and pasture land which is more than any other type of livestock activity excluding swine.

One “small” scale swine activity is associated with 55 hectares of forage or pasture. This property is associated with Nicomen Farm and also houses a “medium” scale dairy activity.

Figure 28. Total area in forage, pasture and farm infrastructure on parcels with livestock activities (excluding very small scale)

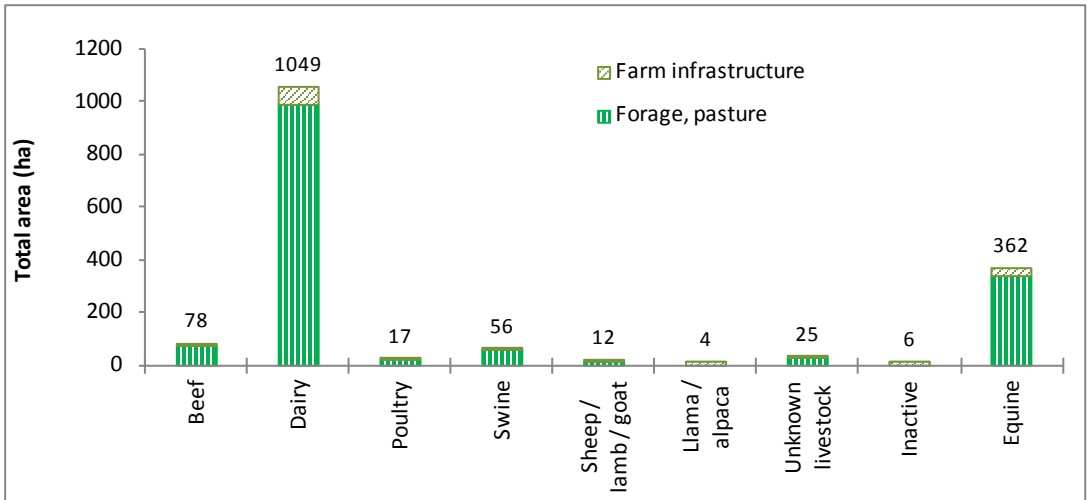


Figure 28 shows that dairy activities use a much greater total area for forage or pasture than any other livestock activity.

The actual forage area for dairy is often underestimated since not all dairy forage fields are located on the same parcel as the livestock.

Refer to Figures A2, A4, A6, A8, and A10 in Appendix A for more information.

Figure 29. Percent of parcel area utilized for forage, pasture and farm infrastructure on parcels with livestock activities (excluding very small scale)

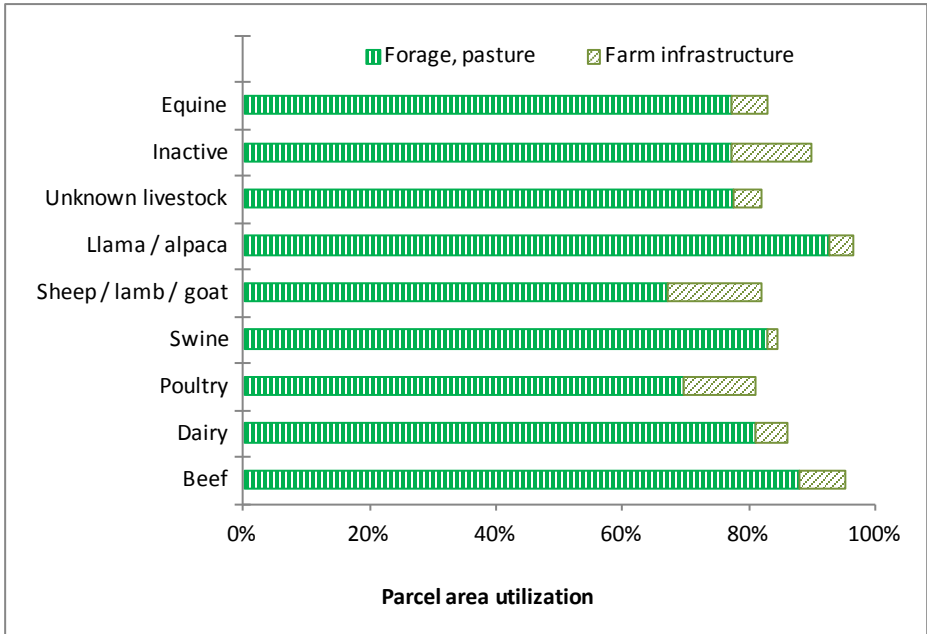


Figure 29 shows that on average, livestock and equine activities in Electoral Area G utilize between 80% and 96% of their parcel area for forage, pasture and farm infrastructure. This is very efficient use of agricultural land.

Figure 30. Land cover on parcels with equine or livestock activities (excluding very small scale)

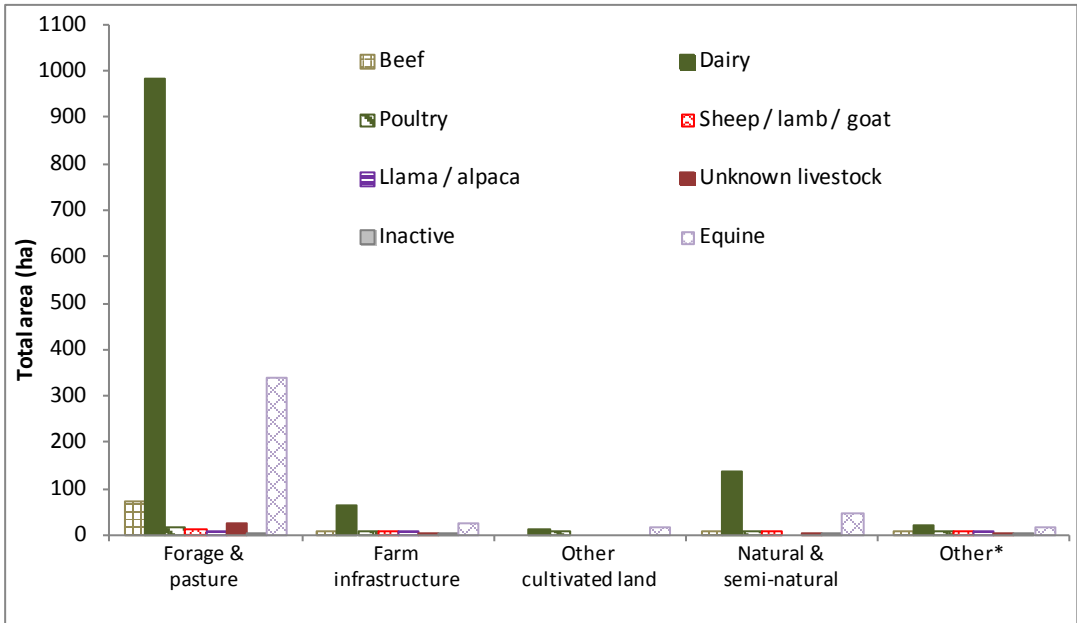


Figure 30 shows the land cover on parcels with livestock and equine activities.

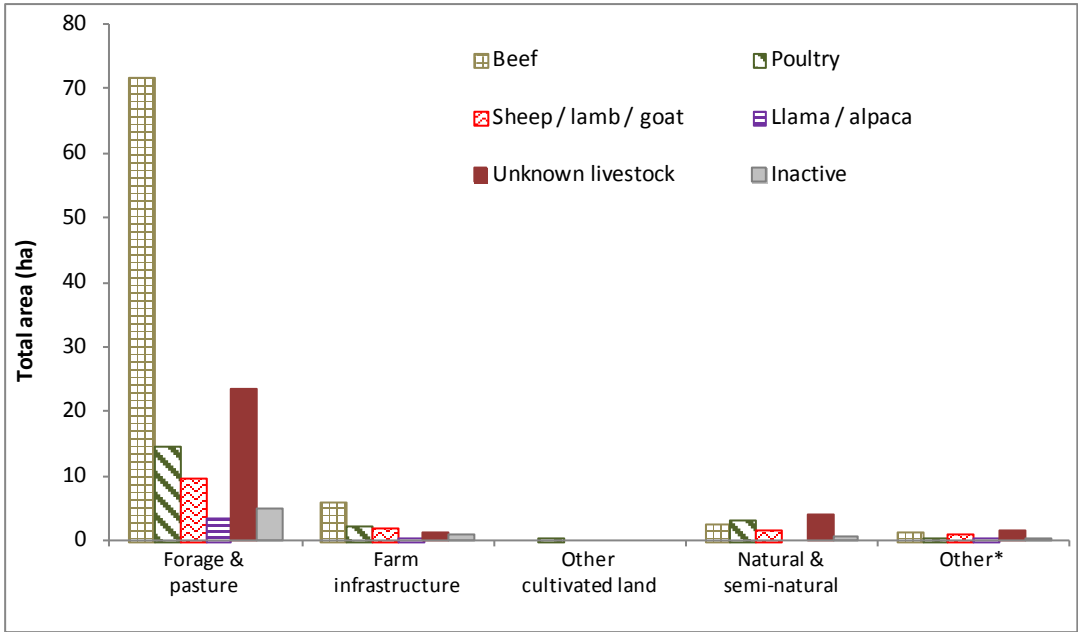
The land cover associated with dairy activities is primarily forage & pasture. These operations are growing much of their own food.

Equine activities are also associated with large amounts of forage & pasture.

Refer to Figures A2, A4, A6, A8, and A10 in Appendix A for more information.

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

Figure 31. Land cover on parcels with livestock activities (excluding dairy, equine, and very small scale activities)



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

Figure 31 shows the land cover on parcels with livestock activities (excluding dairy and equine). Beef, sheep / lamb / goat, and llama/ alpaca are all associated with parcels that are growing some amount forage or pasture.

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 4,183 hectares of ALR on 485 parcels, which is 80.9% of the ALR area within Electoral Area G. The remaining 19% of the ALR was excluded from the inventory as it is in Indian reserves, rights-of-ways, foreshore, or parcels less than 100 square metres in size.

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 Electoral Area G, 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, 469 parcels with 4,155 hectares or 80.3% of Electoral Area G's ALR land area meets the above criteria and are included in the further analysis of the ALR. This includes 1 parcel that has less than 50% of its area in the ALR but contains 14 hectares of ALR land.

Figure 32. Parcel inclusion in the ALR



Figure 32 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:

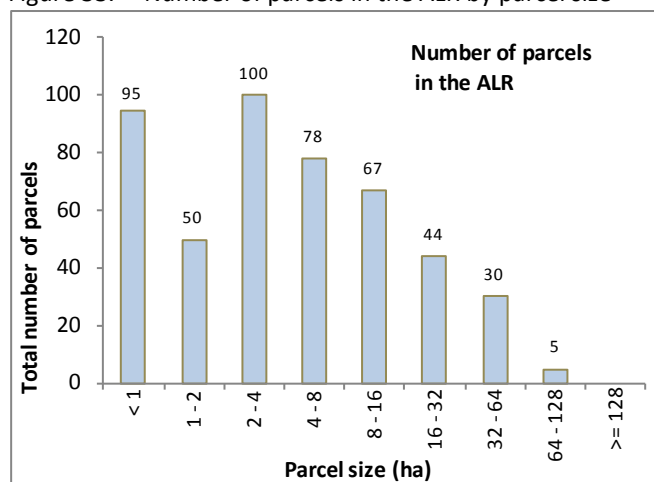
- lot C has less than 50% of its area and less than 10 hectares in the ALR
- lot D is completely outside the ALR.

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 organic 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 unit¹³, 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 33. Number of parcels in the ALR by parcel size



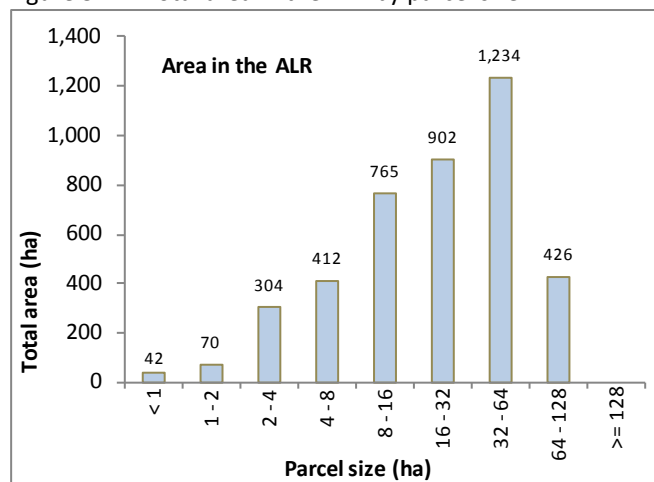
Of Electoral Area G's ALR parcels, 20% are less than one hectare. The average ALR parcel size is 9.1 hectares and the median size is 3.9 hectares.

Figure 33 illustrates that of the 469 parcels in the ALR:

- 20% (95 parcels) are less than 1 hectare.
- 52% (245 parcels) are less than 4 hectares.
- 17% (78 parcels) are between 4 and 8 hectares.
- 14% (67 parcels) are between 8 and 16 hectares.
- 17% (79 parcels) are greater than 16 hectares.

Refer to Map B15 in Appendix B for more information.

Figure 34. Total area in the ALR by parcel size



Even though Electoral Area G has a large number of small parcels, much of its ALR area is in larger parcels.

Figure 34 illustrates that of the 4,155 hectares in the ALR:

- 1% (42 hectares) is on parcels less than 1 hectare.
- 10% (416 hectares) is on parcels less than 4 hectares.
- 10% (412 hectares) is on parcels between 4 and 8 hectares.
- 18% (765 hectares) is on parcels between 8 and 16 hectares.
- 62% (2,562 hectares) is on parcels greater than 16 hectares.

¹³ 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 22. 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	318	68 %
Not used for farming	151	32 %
TOTAL	469	100 %

Table 21 demonstrates that of the 469 parcels in the ALR, 318 or 68% are "Used for farming".

Figure 35. Number of farmed and not farmed parcels in the ALR by parcel size

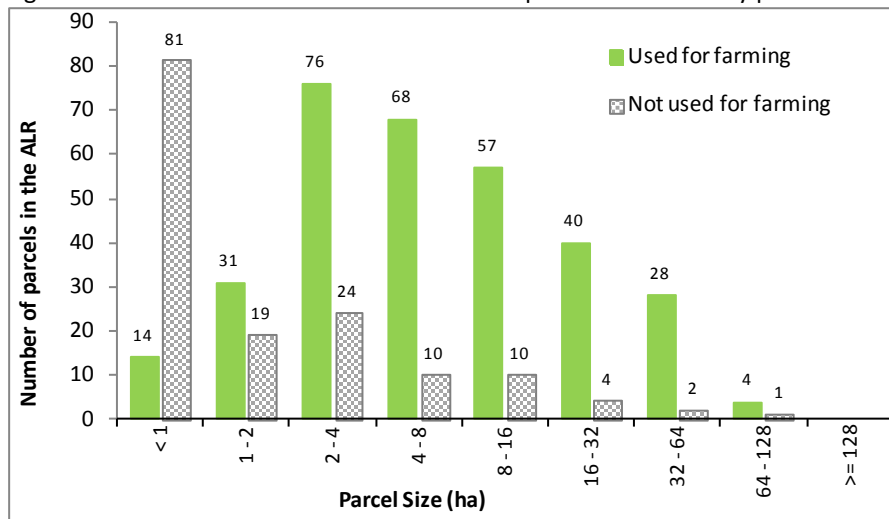


Figure 35 shows that of the 151 parcels "Not used for farming" in the ALR, 81 parcels or 54% are less than one hectare.

Figure 36. Number of farmed and not farmed parcels in the ALR by parcel size (line chart)

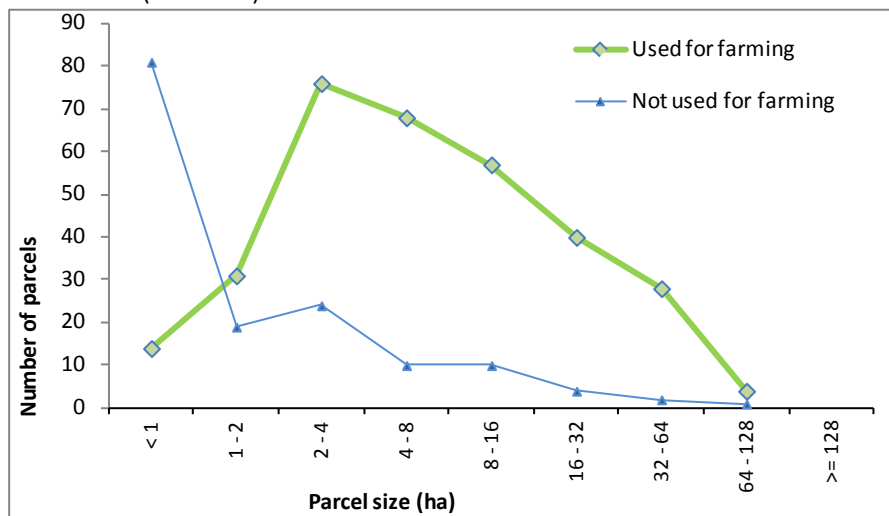


Figure 36 illustrates that although parcels of all sizes are "Used for farming", parcels less than 1 hectare are less likely to be farmed.

Figure 37. Proportion of parcels farmed and not farmed by parcel size in the ALR

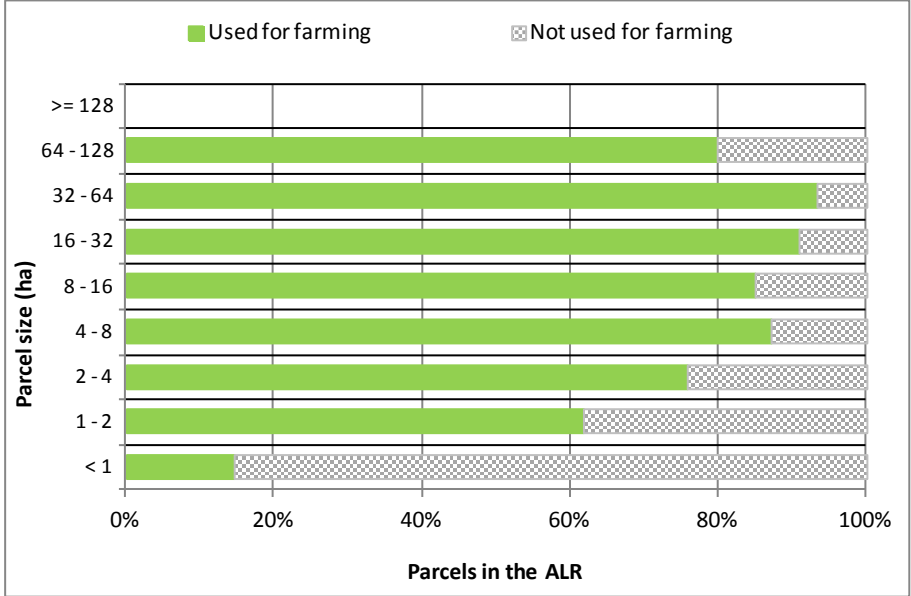


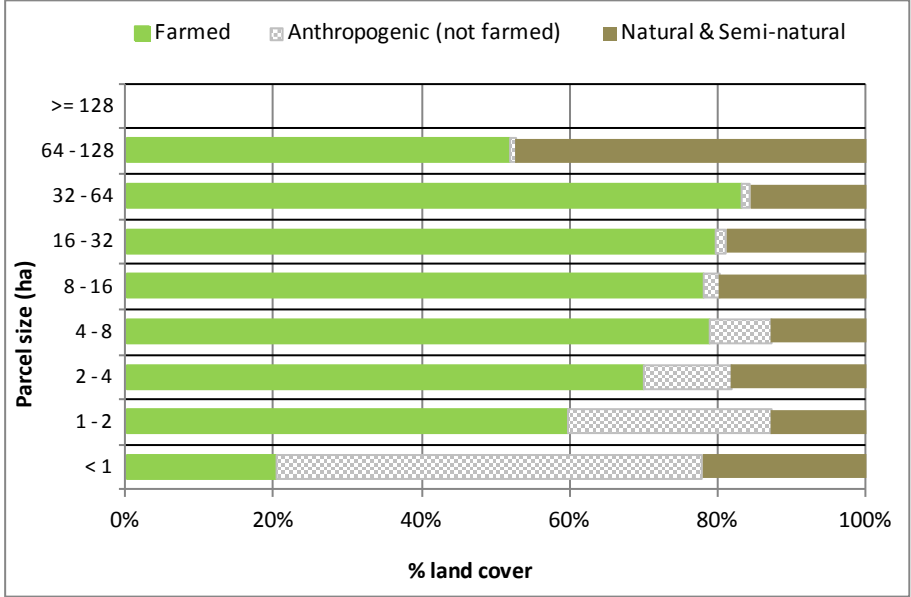
Figure 37 shows that in Electoral Area G, the proportion of parcels “Used for farming” increases as the parcel size increases.

Only 15% of parcels < 1 hectare are “Used for farming”.

There are 5 ALR parcels sized 64 – 128 hectares; 4 are “Used for farming” and are associated with dairy farms while 1 parcel of 97 hectares is “Not used for farming”. The “Not used for farming” parcel is outside the dyke system and is subject to flooding.

There are no parcels greater than 128 hectares in Electoral Area G.

Figure 38. Proportion of land cover by parcel size in the ALR



Similar to Figure 37 above, Figure 38 shows that the proportion of “Farmed” land cover on ALR land increases as parcel size increase.

On parcels < 1 hectare, anthropogenic (not farmed) land cover comprises 57% of the total land area.

RESIDENTIAL USE IN THE ALR

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

The size of the residence may be another factor to consider. Properties with larger residences tend to have higher property values and can make it more difficult for a farmer to acquire this land in the future.

Average land improvement values of Electoral Area G properties with residences in the ALR were as follows:

- estate single family house \$504,700
- large single family house \$437,740
- medium single family house \$268,215
- small single family house \$140,292
- single mobile home \$116,250

(Calculated using 2011 BC Assessment database - Last improvement value)

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

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

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

Table 23. Farming and residences in the ALR

Parcel status	With residence		Without residence		Total number of parcels
	Number of parcels	% of parcels	Number of parcels	% of parcels	
Used for farming	213	45%	105	22%	318
Not used for farming but available	75	16%	49	10%	124
Not used for farming and unavailable	10	2%	17	4%	27
TOTAL	298	64%	171	36%	469

Table 22 shows that 298 parcels or 64% of ALR parcels have residences and that 85 of these parcels are “Not used for farming”.

Table 24. Farming and residence type in the ALR

Parcel status	Residences *						Total residences	Total number of parcels
	Single mobile home	Small house	Medium house	Large house	Estate house	Other**		
Used for farming	14 (3)	89 (61)	138 (125)	22 (22)	2 (2)	-	265	213
Not used for farming but available	3 (2)	29 (27)	43 (40)	4 (4)	-	3 (2)	82	75
Not used for farming and unavailable	-	4 (4)	6 (6)	-	-	-	10	10
TOTAL RESIDENCES	17	122	187	26	2	1	357	
TOTAL PARCELS	5	92	171	26	2	1		298

* xx (yy) - xx indicates the number of residences and (yy) indicates the number of parcels where the residence type is the largest on that parcel.

** Other includes a duplex, a townhouse, and a dormitory style residence.

Table 23 demonstrates that there are 298 parcels in the ALR with 357 residences (some parcels have more than one residence). Most residences are “small” or “medium” houses.

Nearly all “large” and “estate” houses are on parcels “Used for farming” with only 4, or 14% “Not used for farming”.

Figure 39. Total area in residential footprint by parcel size

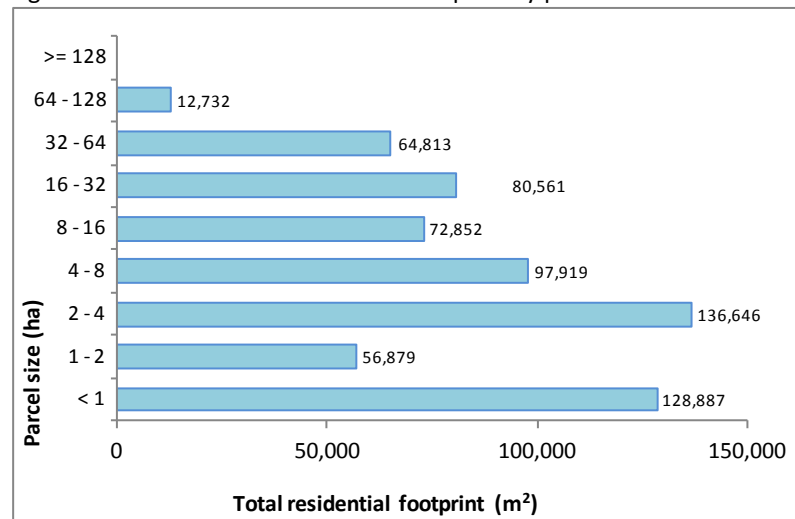


Figure 39 illustrates that there are over 65 hectares (651,289 m²) of ALR land in residential footprints distributed across all parcel sizes less than 128 hectares.

Figure 40. Proportion of parcels with residences by parcel size

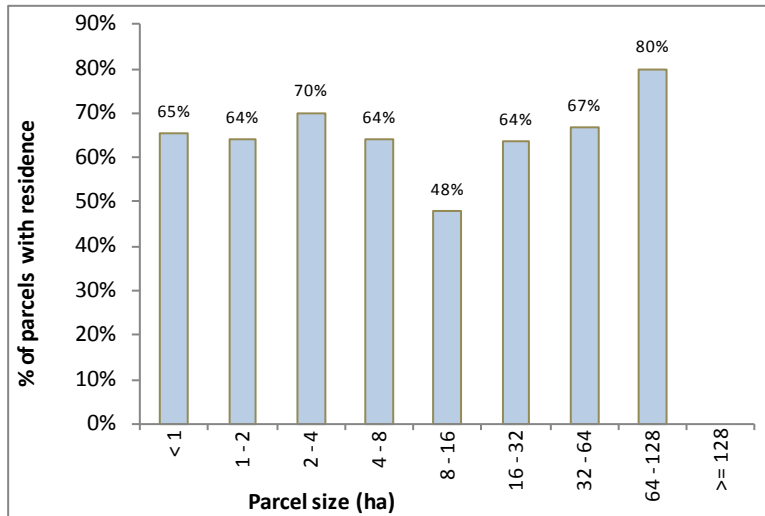


Figure 40 shows that there is a high proportion of parcels with residences across most parcel sizes in the ALR.

There are no parcels ≥ 128 hectares.

Figure 41. Average percent of parcel area in residential footprint by parcel size

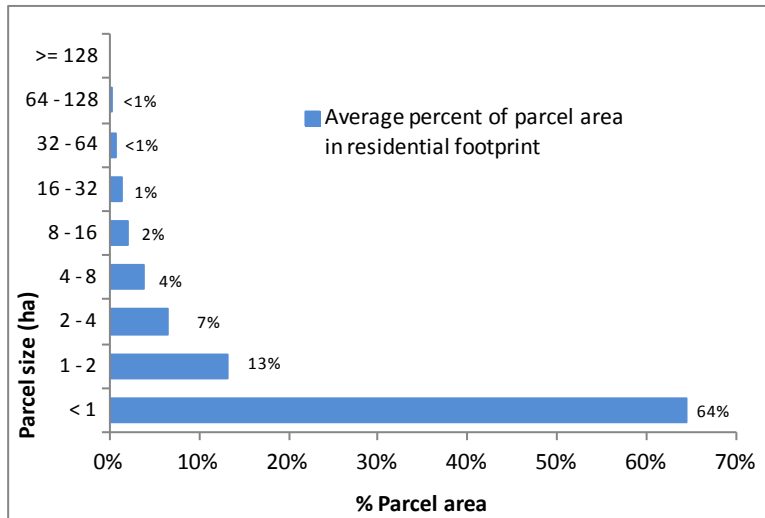


Figure 41 demonstrates that residential footprints on smaller parcels use a much greater proportion of the parcel area than those on larger parcels.

Figure 42. Average total area in residential footprint by parcel size

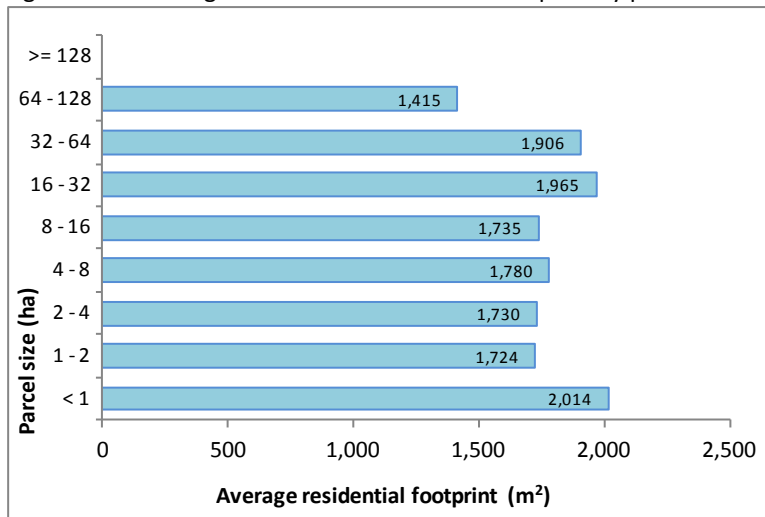
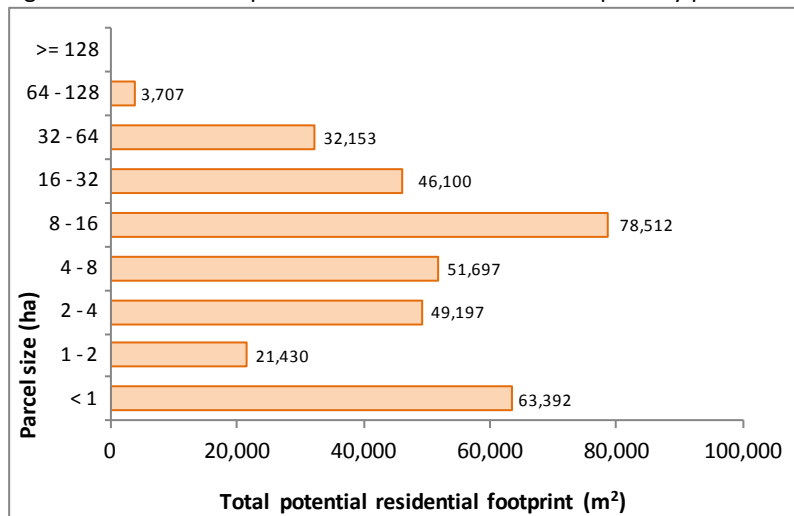


Figure 42 illustrates that even though residential footprints on small parcels use a greater proportion of the parcel area, the average size of the footprint is similar compared to the footprint on larger parcels.

Figure 43. Total and potential area in residential footprint by parcel size



There are 154 parcels in the ALR that are "Used for farming" or "Not used for farming but available" that do not yet have a residence (refer to Table 22).

If all 154 parcels built a residence using the average percent of parcel area in residential footprint presented above, Figure 43 shows that an additional 35 hectares (346,187 m²) of ALR land would be permanently removed from potential production.

Table 25. Main agricultural activity and largest residence on parcels "Used for farming" in the ALR

Main agricultural activity	Largest residence on the parcel					Number of parcels
	Single mobile home	Small house	Medium house	Large house	Estate house	
Forage & pasture	1	26	45	4	1	77
Livestock	1	17	42	7	-	67
Berries	-	8	18	5	-	31
Equine	-	8	15	5	1	29
Nursery & tree plantations	-	2	3	1	-	6
Turf	1	-	2	-	-	3
TOTAL PARCELS	3	61	125	22	2	213

*There are 213 parcels "Used for farming" with residences

There are 213 parcels with residences that are "Used for farming" in the ALR (refer to Table 23).

Table 24 shows that 77 of these parcels have forage & pasture as the main agricultural activity.

Table 26. Main agricultural activity on "Used for farming" parcels with large or estate residences in the ALR

Main agricultural activity	Parcels with "Large" or "Estate" residences			
	Number of parcels	Crop area utilized (ha)	Average % of parcel area in crop	Average parcel area (ha)
Livestock	7	134	74 %	24
Equine	6	35	88 %	7
Forage & pasture	5	58	91 %	13
Berries	5	22	93 %	5
Nursery & tree plantations	1	5	95 %	5
TOTAL	24	254		

There are 24 parcels with "large" or "estate" residences in the ALR that are "Used for farming" (see Table 24 above).

Table 25 illustrates the type of farming activities associated with these "large" and "estate" residences. There are 13 parcels using a combined area of 169 hectares to support livestock and equine activities.

Appendix A

CULTIVATED FIELD CROPS

Table A1. Distribution of crop field sizes for all cultivated land¹

Crop area (ha)	Number of crop fields										Total number
	Forage & pasture	Berries	Turf	Nursery & tree plantations	Specialty	Other*	Vegetables	Tree fruits	Vines	Nut trees	
< 1	44	4	-	12	2	1	3	1	3	1	71
1 - 2	47	5	-	2	-	-	-	1	-	-	55
2 - 4	66	14	-	2	-	1	-	-	-	-	83
4 - 8	45	17	-	-	1	-	-	-	-	-	63
8 - 16	50	4	2	1	-	-	-	-	-	-	57
16 - 32	31	2	2	-	-	-	-	-	-	-	35
32 - 64	19	1	2	1	-	-	-	-	-	-	23
64 - 128	1	-	-	-	-	-	-	-	-	-	1
>= 128	-	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF FIELDS	303	47	6	18	3	2	3	2	3	1	388
AVERAGE CROP AREA (ha)	9 ha	6 ha	24 ha	4 ha	3 ha	2 ha	< 1 ha	< 1 ha	< 1 ha	< 1 ha	8 ha
MEDIAN CROP AREA (ha)	4 ha	4 ha	19 ha	< 1 ha	< 1 ha	2 ha	< 1 ha	< 1 ha	< 1 ha	< 1 ha	4 ha
AVERAGE PARCEL SIZE (ha)	11 ha	10 ha	24 ha	14 ha	4 ha	6 ha	4 ha	2 ha	17 ha	4 ha	11 ha

* Other includes fallow land (cultivated land that has not been seeded or planted for one or more growing season) and land in crop transition.

Table A2. Distribution of forage & pasture fields

Field size (ha)	Number of forage & pasture fields				Total number
	Forage	Pasture	Forage & pasture	Unused*	
< 1	31	34	2	-	67
1 - 2	29	21	3	-	53
2 - 4	50	24	4	-	78
4 - 8	51	8	1	1	61
8 - 16	59	4	1	-	64
16 - 32	32	1	1	-	34
32 - 64	10	1	-	-	11
64 - 128	-	-	-	-	-
>= 128	-	-	-	-	-
TOTAL NUMBER OF FIELDS	262	93	12	1	368
AVERAGE CROP AREA (ha)	9 ha	3 ha	5 ha	6 ha	7 ha
MEDIAN CROP AREA (ha)	5 ha	2 ha	3 ha	6 ha	4 ha
AVERAGE PARCEL SIZE (ha)	15 ha	11 ha	14 ha	10 ha	11 ha

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

¹ 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 A3. Distribution of forage fields by crop type (pasture crops excluded)

Field size (ha)	Number of forage fields			Total number
	Grass	Mixed grass / legume	Forage corn	
< 1	24	-	9	33
1 - 2	28	1	3	32
2 - 4	42	2	10	54
4 - 8	28	3	21	52
8 - 16	34	6	20	60
16 - 32	27	-	6	33
32 - 64	9	-	1	10
64 - 128	-	-	-	-
>= 128	-	-	-	-
TOTAL NUMBER OF FIELDS	192	12	70	274
AVERAGE CROP AREA (ha)	9 ha	8 ha	8 ha	8 ha
MEDIAN CROP AREA (ha)	4 ha	8 ha	6 ha	5 ha
AVERAGE PARCEL SIZE (ha)	14 ha	14 ha	17 ha	13 ha

* Forage includes "forage" as well as "forage & pasture".

Table A4. Distribution of berry fields

Field size (ha)	Number of berry fields		Total number
	Blueberries	Strawberries	
< 1	5	2	7
1 - 2	4	-	4
2 - 4	14	-	14
4 - 8	17	-	17
8 - 16	4	-	4
16 - 32	2	-	2
32 - 64	1	-	1
64 - 128	-	-	-
>128	-	-	-
TOTAL FIELD COUNT	47	2	49
AVERAGE CROP AREA (ha)	6 ha	< 1 ha	6 ha
MEDIAN CROP AREA (ha)	4 ha	< 1 ha	4 ha
AVERAGE PARCEL SIZE (ha)	10 ha	5 ha	10 ha

Table A5. Distribution of nursery & tree plantation fields

Field size (ha)	Number of nursery activities				Number of tree plantation			Nursery or tree plantation - unknown	Total number
	Ornamentals and shrubs	Nursery - mixed	Cedar hedging	Nursery total	Tree plantation	Christmas trees	Plantation total		
< 1	2	3	1	6	5	-	5	1	12
1 - 2	-	1	-	1	-	1	1	-	2
2 - 4	-	2	-	2	-	-	-	-	2
4 - 8	-	-	-	-	-	-	-	-	-
8 - 16	-	1	-	1	-	-	-	-	1
16 - 32	-	-	-	-	-	-	-	-	-
32 - 64	1	-	-	1	-	-	-	-	1
64 - 128	-	-	-	-	-	-	-	-	-
>=128	-	-	-	-	-	-	-	-	-
TOTAL ACTIVITY COUNT	3	7	1	11	5	1	6	1	18
AVERAGE CROP AREA (ha)	13 ha	3 ha	< 1 ha	6 ha	< 1 ha	2 ha	< 1 ha	< 1 ha	4 ha
MEDIAN AREA (ha)	< 1 ha	2 ha	< 1 ha	< 1 ha	< 1 ha	2 ha	< 1 ha	< 1 ha	< 1 ha
AVERAGE PARCEL SIZE (ha)	22 ha	15 ha	2 ha	16 ha	15 ha	2 ha	13 ha	2 ha	14 ha

LIVESTOCK

Table A6. Distribution of livestock operations by type

Parcel size (ha)	Type of activity									Total number of activities
	Beef	Dairy	Poultry	Swine	Sheep / lamb / goat	Llama / alpaca	Unknown livestock *	Inactive	Equine	
< 1	-	-	3	-	-	-	-	-	6	9
1 - 2	1	-	1	-	5	1	1	-	7	16
2 - 4	6	1	4	-	-	2	1	-	18	32
4 - 8	-	5	1	-	2	-	1	1	14	24
8 - 16	1	11	-	-	1	-	-	-	4	17
16 - 32	1	13	1	-	-	-	1	-	5	21
32 - 64	1	15	-	-	-	-	-	-	4	20
64 - 128	-	4	-	1	-	-	-	-	1	6
>= 128	-	-	-	-	-	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	10	49	10	1	8	3	4	1	59	145
MEDIAN PARCEL SIZE (ha)	4 ha	24 ha	3 ha	66 ha	2 ha	3 ha	4 ha	7 ha	4 ha	6 ha
AVERAGE PARCEL SIZE (ha)	8 ha	28 ha	4 ha	66 ha	4 ha	3 ha	8 ha	7 ha	9 ha	15 ha

* Unknown livestock is where livestock structures were present but the specific type of livestock could not be determined.

Table A7. Beef activities

Scale of Beef Activity	By parcel		Total number of activities	By activity type	
	Main type	Secondary type		Intensive	Non Intensive
Small scale (2-25 cattle)	5	-	5	-	5
Small scale - cow/calf - (2-25 cattle)	1	-	1	-	1
Medium scale (25-100 cattle)	4	-	4	2	2
TOTAL	10	-	10	2	8

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

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

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

Table A8. Distribution of beef activities by parcel size and scale

Parcel size (ha)	Scale of beef activities				Total number of activities
	Very small (1 cow)	Small (2-25 cattle)	Medium (25-100 cattle)	Large (> 100 cattle)	
< 1	-	-	-	-	-
1 - 2	-	1	-	-	1
2 - 4	-	5	1	-	6
4 - 8	-	-	-	-	-
8 - 16	-	-	1	-	1
16 - 32	-	-	1	-	1
32 - 64	-	-	1	-	1
64 - 128	-	-	-	-	-
>= 128	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	-	6	4	-	10
AVERAGE PARCEL SIZE (ha)	-	3 ha	16 ha	-	8 ha

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

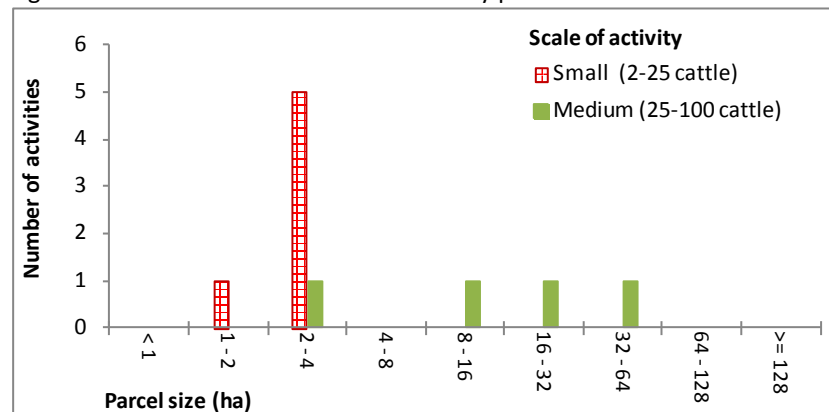
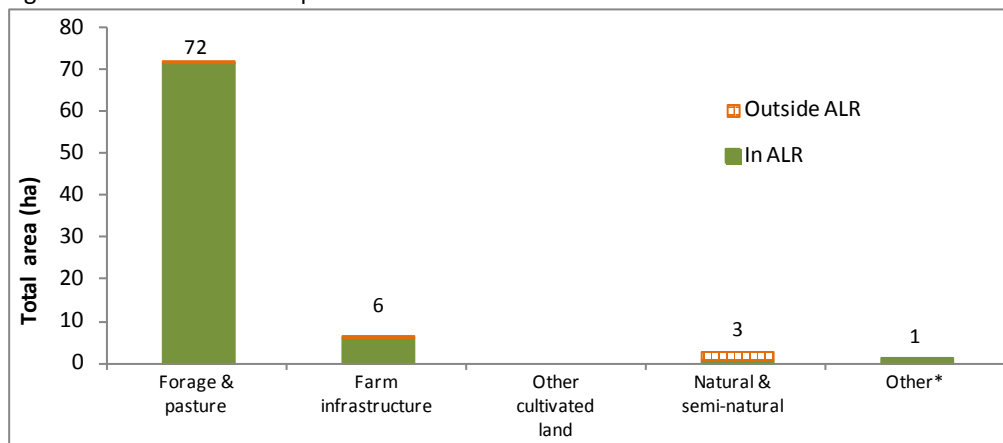


Figure A2. Land cover on parcels with beef activities



* 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 A9. Distribution of dairy activities by parcel size and scale

Parcel Size (ha)	Scale of dairy activities				Total number of activities
	Very small (1 cow)	Small (2-25 cattle)	Medium (25-100 cattle)	Large (>100 cattle)	
< 1	-	-	-	-	-
1 - 2	-	-	-	-	-
2 - 4	-	-	1	-	1
4 - 8	-	-	2	3	5
8 - 16	-	3	6	2	11
16 - 32	-	-	8	5	13
32 - 64	-	-	6	9	15
64 - 128	-	-	3	1	4
>= 128	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	-	3	26	20	49
AVERAGE PARCEL SIZE (ha)	-	13 ha	29 ha	30 ha	28 ha

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

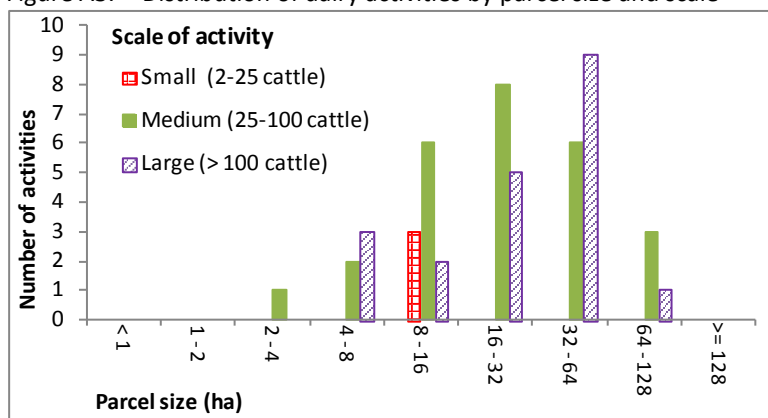
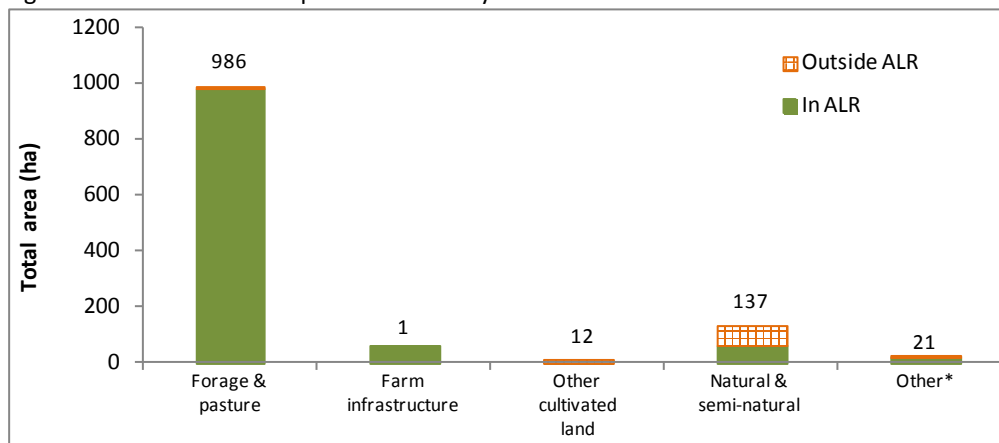


Figure A4. Land cover on parcels with dairy activities



* 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 A10. Poultry activities

Poultry activity	Scale	By parcel		Total number of activities	By activity type	
		Main type	Secondary type		Intensive	Non intensive
Chicken	Very small scale (< 100 birds)	4	2	6	-	6
Chicken (broiler)	Medium scale (2,500 - 10,000 birds)	1	-	1	1	-
Chicken	Large scale (>10,000 birds)	1	-	1	1	-
Goose	Very small scale (< 50 birds)	-	1	1	-	1
Turkey	Very small scale (< 50 birds)	-	1	1	-	1
TOTAL	TOTAL	6	4	10	2	8

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

"Intensive" livestock activities utilize specialized structures at high stocking densities.

"Non Intensive" livestock activities allow animals to graze on a pasture and often utilize non intensive barns.

Table A11. Distribution of poultry activities by parcel size and scale

Parcel size (ha)	Scale of poultry activities				Total number of activities
	Very small (< 100 birds)	Small (100 - 2,500 birds)	Medium (2,500 - 10,000 birds)	Large (> 10,000 birds)	
< 1	3	-	-	-	3
1 - 2	1	-	-	-	1
2 - 4	4	-	-	-	4
4 - 8	-	-	1	-	1
8 - 16	-	-	-	-	-
16 - 32	-	-	-	1	1
32 - 64	-	-	-	-	-
64 - 128	-	-	-	-	-
>= 128	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	8	-	1	1	10
AVERAGE PARCEL SIZE (ha)	2 ha	-	4 ha	17 ha	4 ha

Figure A5. Distribution of poultry activities by parcel size and scale

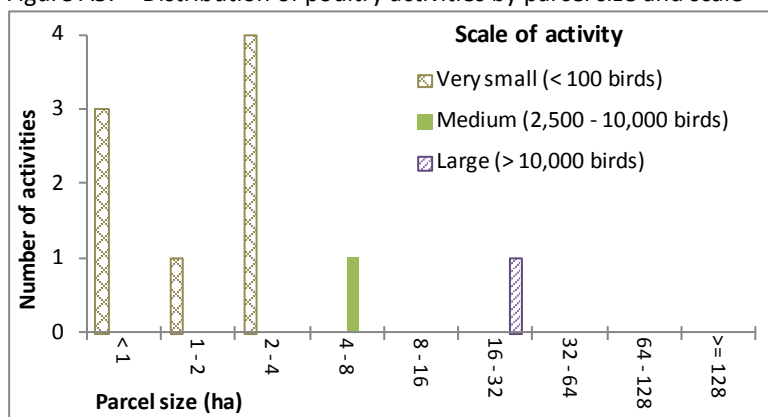
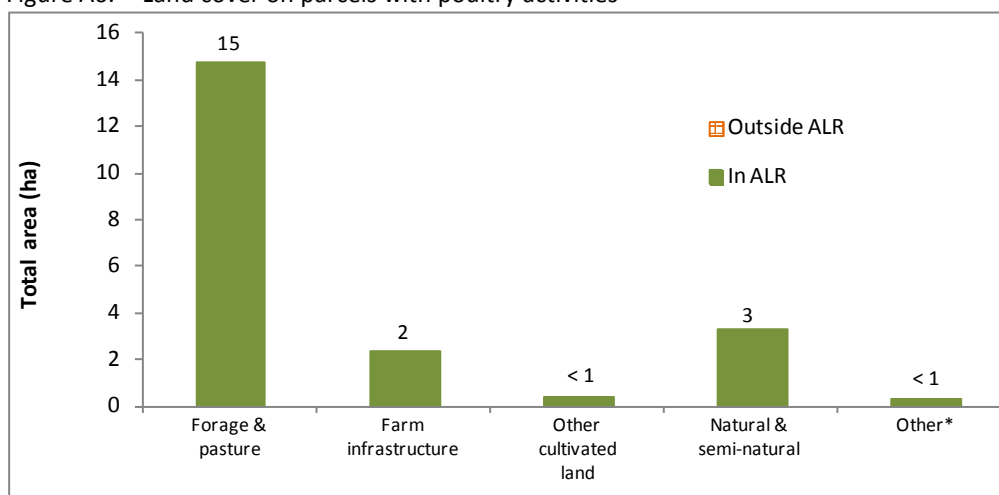


Figure A6. Land cover on parcels with poultry activities



* 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 A12. Sheep / lamb / goat activities

Activity	Scale	By parcel		Total number of activities	By activity type	
		Main type	Secondary type		Intensive	Non intensive
Goat	Very small scale (< 5 goats)	1	2	3	-	3
	Small scale (5 - 125 goats)	1	-	1	-	1
Sheep / lamb	Very small scale (< 10 sheep)	1	-	1	-	1
	Small scale (10 - 250 sheep)	2	1	3	-	3
TOTAL	TOTAL	5	3	8	-	8

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

"Intensive" livestock activities utilize specialized structures at high stocking densities.

"Non Intensive" livestock activities allow animals to graze on a pasture and often utilize non intensive barns.

Table A13. Distribution of sheep / lamb / goat activities by parcel size and scale

Parcel size (ha)	Scale of sheep/ lamb/ goat activities				Total number of activities
	Very small (5 goats or 10 sheep)	Small (5-125 goats or 10-250 sheep)	Medium (125-500 goats or 250- 1000 sheep)	Large (>500 goats or >1000 sheep)	
< 1	-	-	-	-	-
1 - 2	3	2	-	-	5
2 - 4	-	-	-	-	-
4 - 8	-	2	-	-	2
8 - 16	1	-	-	-	1
16 - 32	-	-	-	-	-
32 - 64	-	-	-	-	-
64 - 128	-	-	-	-	-
>= 128	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	4	4	-	-	8
AVERAGE PARCEL SIZE (ha)	4 ha	4 ha	-	-	4 ha

Figure A7. Distribution of sheep / lamb / goat activities by parcel size and scale

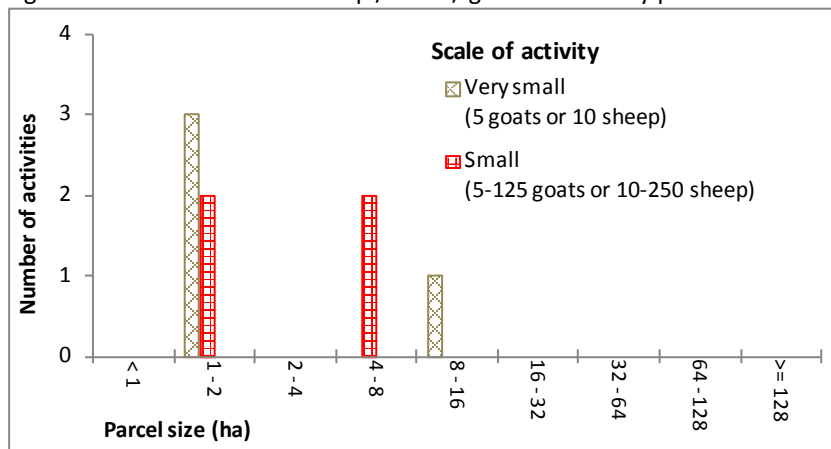
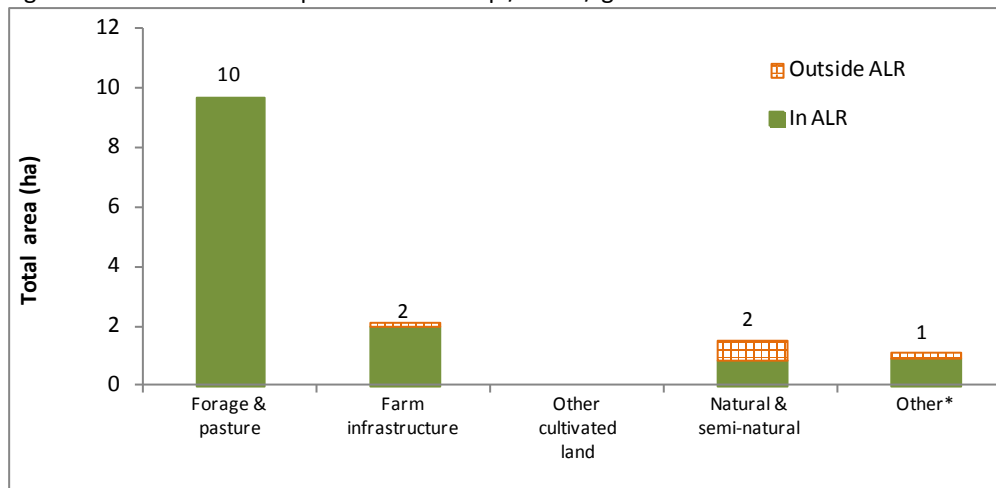


Figure A8. Land cover on parcels with sheep / lamb / goat activities



* 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 A14. Distribution of equine activities by parcel size and scale

Parcel size (ha)	Scale of equine activities				Total number of activities
	Very small (1 - 2 equine)	Small (2 - 25 equine)	Medium (25 - 100 equine)	Large (> 100 equine)	
< 1	2	4	-	-	6
1 - 2	-	7	-	-	7
2 - 4	2	16	-	-	18
4 - 8	1	13	-	-	14
8 - 16	-	4	-	-	4
16 - 32	-	5	-	-	5
32 - 64	-	4	-	-	4
64 - 128	-	1	-	-	1
>= 128	-	-	-	-	-
TOTAL NUMBER OF ACTIVITIES	5	54	-	-	59
AVERAGE PARCEL SIZE (ha)	2 ha	9 ha	-	-	8 ha

Figure A9. Distribution of equine activities by parcel size and scale

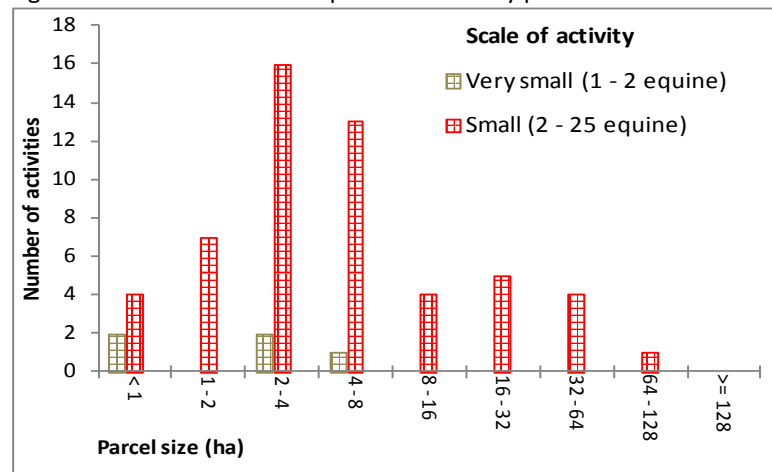
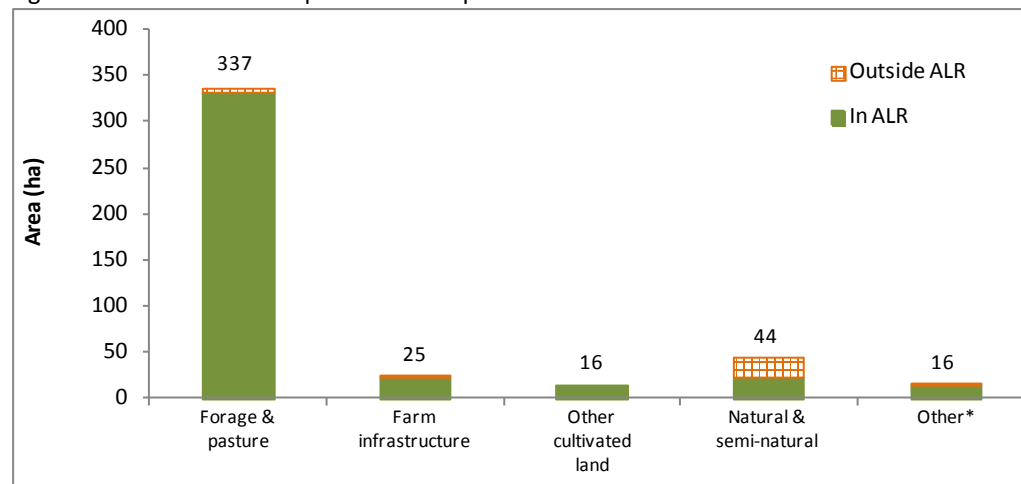


Figure A10. Land cover on parcels with equine activities



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

Appendix B - Maps