

Growing Knowledge



Ministry of
Agriculture

Agricultural Land Use Inventory

Reference Number: 800.510-39.2012

Regional District of Nanaimo **Summer 2012**



Photo credit: Springford Farm. <http://www.springfordfarm.com>

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Disclaimer:

Agriculture and Agri-Food Canada and the Investment Agriculture Foundation of BC are pleased to participate in the delivery of this project. We are committed to working with our industry partners to address issues of importance to the agriculture and agri-food industry in British Columbia. Opinions expressed in this report are those of the authors and not necessarily those of the Investment Agriculture Foundation or Agriculture and Agri-Food Canada.

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Acronyms

AGRI	BC Ministry of Agriculture
ALR	Agricultural Land Reserve
ALUI	Agricultural Land Use Inventory
RDN	Regional District of Nanaimo
GIS	Geographic Information Systems

Executive Summary

In the summer of 2012, the BC Ministry of Agriculture conducted an Agricultural Land Use Inventory (ALUI) in the Regional District of Nanaimo. The ALUI was made possible by a partnership between the Regional District of Nanaimo (RDN) and the BC Ministry of Agriculture. The project was funded by the RDN, the BC Ministry of Agriculture, and the Investment Agriculture Foundation of BC.

ALUIs provide information on the type and extent of agricultural activities in the inventory area and provide a baseline which can be used to measure land use change over time. The data can be used to determine the capacity for agricultural expansion, as well as to quantify the amount of land within the Agricultural Land Reserve (ALR) that is unavailable for agriculture. The data can also be used to estimate agricultural water demand with the use of an irrigation water demand model.

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

Parcels within RDN’s electoral areas and RDN’s member municipalities were inventoried. Included in the inventory were all parcels:

- Completely or partially within the ALR; or
- Classified by BC Assessment as having “Farm” status for tax assessment; or
- zoned by local government bylaws to permit agriculture and greater than 1 acre, and showing signs of agriculture on aerial photography.

The ALR in RDN consists of 18,729 ha. Of this area, 17,723 ha (95%) met one of the above criteria and was included in the inventory. In total, 885 ha (5% of the ALR) was not inventoried as it was outside of legally surveyed parcels in rights-of-ways, foreshore, and ALR slivers. Another 121 ha of ALR on Nanaimo River 2 and Nanaimo River 3 Indian reserves were surveyed and the findings are presented in Appendix B.

An additional 10,298 ha of non-ALR land was surveyed, bringing the total inventory area to 28,021 ha on 3,046 parcels.

In the ALR by land cover, 3,936 ha (21%) was farmed, 1,434 ha (8%) was anthropogenically modified (not farmed), and 12,353 ha (66%) was in a natural or semi-natural state. The remaining 5% of the ALR was not inventoried as it was outside of legally surveyed parcels in rights-of-ways, foreshore and ALR slivers. An additional 743 ha outside of the ALR was farmed. See Table 1 and Map 1 for more details.

For land use, the entire parcel was examined and a “Used for farming” definition was applied based on the percentage of the parcel in cultivated crops, farm infrastructure, and/or the scale of livestock production. In the ALR by land use, a total of 5,300 ha (28% of the ALR) was on parcels “Used for farming”, and 12,423 ha was on parcels “Not used for farming”. Refer to the glossary for the “Used for farming” criteria. See Table 2 and Map 2 for more 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 18,729 ha of ALR in RDN, 3,834 ha (21%) were actively farmed and another 155 ha (1%) supported farming (e.g. houses, farm roads, etc.). There were 1,559 ha (8%) unavailable for farming due to existing land use or land cover and 442 ha (2%) with

limited potential for farming due to physical site limitation (drainage, topography, small size, etc.) That leaves 11,733 ha (63% of the ALR) that is available for farming. The majority of the land available for farming is currently in “natural or semi-natural” vegetation.

There are 4,441 ha of cultivated field crops in the RDN inventory area (3,777 ha in the ALR and 663 ha outside the ALR). Forage & pasture was the main crop recorded accounting for 4,087 ha, or 92% of all cultivated crops. In the ALR there were 1,544 ha in forage, 729 ha in pasture and 1,161 ha in both forage & pasture. The next top crop types were berries with 103 ha (100 ha in the ALR and 3 ha outside), tree plantations with 82 ha (24 ha in the ALR and 58 ha outside), and vegetables with 45 ha (31 ha in the ALR and 15 ha outside). Also recorded were 124 ha in other crop types and 12 ha in greenhouses. See Tables 7 - 12 and Map 4 for details.

Irrigation use was captured by crop type and irrigation system type to aid in developing an Agricultural Water Demand Model. There is little irrigation use in the RDN with only 21% of all cultivated crops being irrigated (948 ha). Sprinkler systems were the most commonly used and were found on 660 ha. Giant gun systems were the next most common (175 ha) and were used primarily on forage & pasture crops. Trickle (93 ha) and subsurface systems (20 ha) were also used. See Table 13 and Map 5 for details.

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

The most common type of livestock in RDN is equine with most equines being kept as part of a rural residential or farming lifestyle. There were 473 equine homesites recorded, of which 34 were very small scale (1 equine), 432 were small scale (2 - 25 equine), and 7 were medium scale (25 - 100 equine). Of these operations, 36 were recorded as commercial boarding facilities (6 were medium scale and 30 were small scale). Although equine activities are numerous, all are considered “non-intensive” activities.

RDN has numerous farms dedicated to producing meat, eggs, and dairy products. Poultry, beef, and dairy are the only types of “intensive” livestock activities in RDN and are the only livestock types to occur on a “large scale”. There were 170 poultry activities, of which 14 were defined as “intensive”. While most poultry activities were very small scale, or back yard flocks (142), there were also 7 large scale chicken operations (>10,000 birds), 1 large scale turkey operation (>5,000 birds), and 5 medium scale chicken activities (2,500 - 10,000 birds). There were 86 beef homesite activities, of which 6 were large (>100 cattle), 26 were medium (25 - 100 cattle), and 79 were small (2 - 25 cattle) scale. There were 9 dairy homesite activities, of which 3 were large (>100 cattle), 1 was medium (25 - 100 cattle), and 5 were small (2 - 25 cattle) scale.

Also recorded were 90 sheep / lamb/ goat, 22 llama/ alpaca, 8 swine, and 7 specialty (gamebird, ratite, and fur bearing) homesite activities. See Tables 15 - 21 for more information.

Further analysis of ALR lands was conducted on 2,234 parcels with 17,406 ha of ALR or 93% of RDN’s ALR. Of the 2,234 parcels considered to be in the ALR, 568 parcels (25%) were “Used for farming” and 1,666 parcels (75%) were “Not used for farming”. Of all parcels less than 4 ha in size, 80% are “Not used for farming”. The largest proportion of ALR parcels that are unavailable for farming occur on parcels less than 1 ha. Residential use is the most common land use restricting the potential for

farming on small parcels. Although parcels of all sizes are “Used for farming”, small parcels are less likely to be farmed than larger parcels. See Figures 32 - 35 for more information.

This report provides some insight into the current status of agriculture in RDN. This baseline information can be used to inform decisions on how to best manage the agricultural land base in order to support and strengthen farming in the future.

Agrologist Comments

Nanaimo is an adaptation of the Coast Salish Snuneymux (Snuh-Nay-moo), meaning "gathering place". The Snuneymux prospered by managing both the land and water for food and fibre production. The Hudson's Bay Company (HBC) established a fortified post in 1849 in Nanaimo Harbour, and the discovery of coal in 1852 led to permanent immigrant settlement. Coal was the driving force for development of the region into the early 20th century.

Early agricultural development supported the mining sector and population growth. With strong demand for food, agricultural development ensued. The first immigrants to the Cedar and Cranberry areas arrived in the early 1860s from the British Isles and Northern Europe (Johnson-Cull, 1980). Nanaimo was an attractive destination due to jobs associated with the coal mines, and the fertile soil south of Nanaimo was abundant in game, fish, wild fruit, and the possibility of crop cultivation for homesteading. The first farmers in the area were multiskilled and acted as their own veterinarians, mechanics, butchers, and builders. Many farm supplies were shipped from Nanaimo to Cedar via Nanaimo River on rafts operated by First Nations.

In the late 1800s and early 1900s all farmers were involved in "mixed" farming to some degree (RDN Agricultural Area Plan, 2012), producing fruits, vegetables, meat, milk, eggs and butter. Much of the land was being cleared for livestock and most farmers worked outside the farm for extra income.

The average farm revenue per hectare in the Nanaimo Region has increased during each census period since 2001 (2001, 2006, 2011 census years). In 2011, the revenue generated per farmed hectare was approximately \$3,390.

While it would be expected that the maritime influenced climate of the Nanaimo Region would provide a moist growing environment, this is not often the case during the growing season. The rainfall amounts for May to September are only 17 cm. There is also a lack of infrastructure to supply and move water around the region. Without irrigation the productivity of many crops and parcels of land is limited. Few irrigation options are available as there is limited surface or ground water available and competing environmental, residential and other interests often control the limited water resources.

Water supply is one of several factors limiting agricultural productivity in RDN. Other factors include transportation costs, labour shortages, and lack of processing opportunities.

The region has 18,729 ha in the Agricultural Land Reserve, while only 3,834 ha or 21% of the ALR is actively farmed; 8% is unavailable for farming due to existing land use or land cover; 2% has limited potential for farming, and 57% is available and has potential for cultivation. These available ALR lands provide a great opportunity for future expansion of agricultural production.

The Region's Agricultural Advisory Committee, Agricultural Area Plan, Regional Growth Strategy, two Farmers Institutes (Nanaimo/Cedar and Coombs) are all supportive of agriculture.

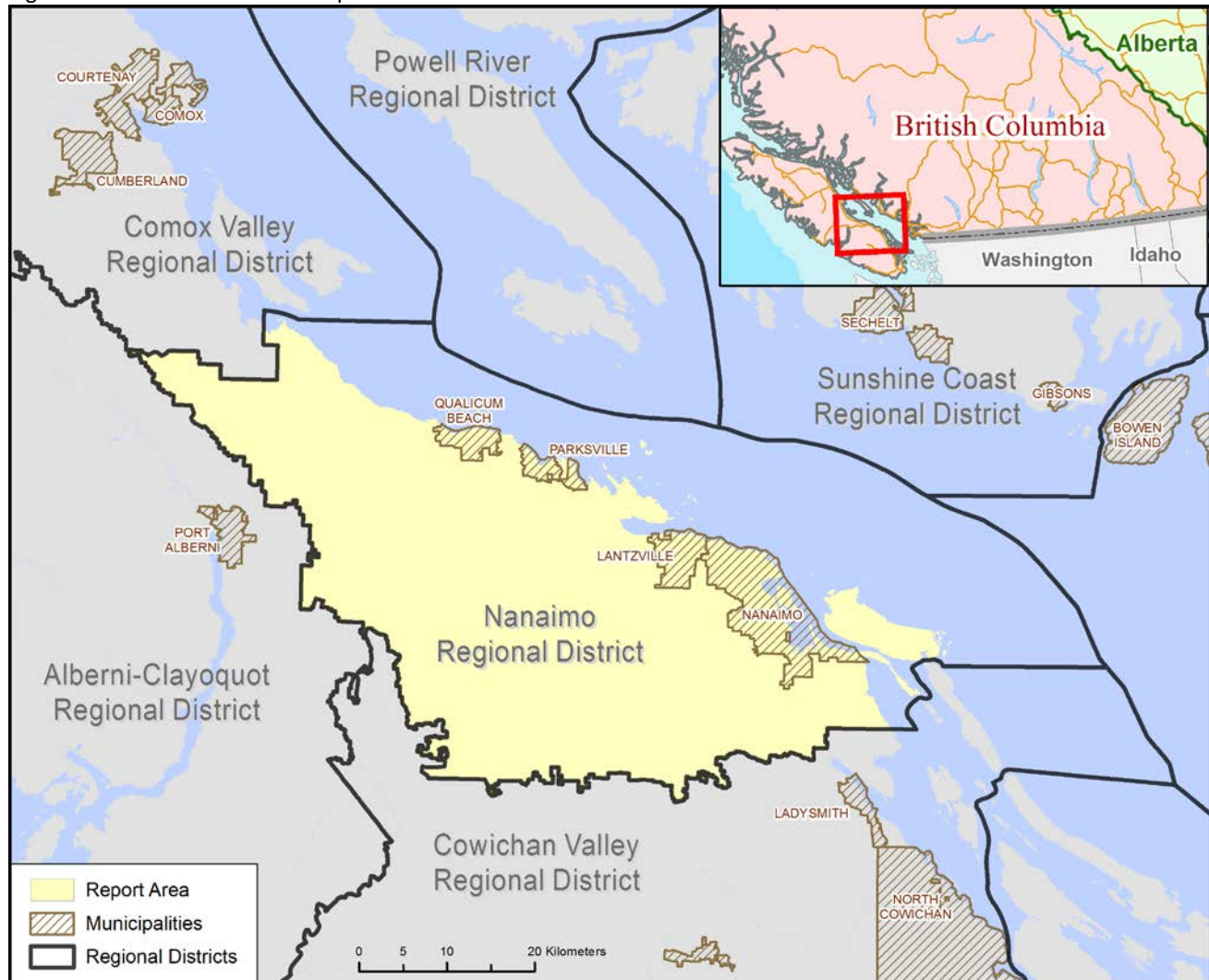
1. General Information

Regional District of Nanaimo (RDN) is a regional government located on the central east coast of Vancouver Island. RDN contains the municipalities of Nanaimo, Lantzville, Parksville, and Qualicum Beach, as well as seven unincorporated electoral areas. The Regional District is bordered by Comox Valley Regional District to the North, Cowichan Valley Regional District to the south, and Alberni-Clayoquot Regional District to the west.

RDN is responsible for providing current planning and long range planning services to the electoral areas¹. Planning services include the regulation of land use and subdivision through zoning, and the development of Regional Growth Strategies and Official Community Plans. The Agricultural Land Use Inventory (ALUI) data can be informative to these planning processes.

RDN has a total area of 319,881² ha, with 203,571 ha in land and 116,310 ha in ocean, waterbodies, and watercourses. In 2011, RDN had a population of 146,574³. The region experienced a population growth rate of 5.7% between the 2006 and 2011 Census years.

Figure 1. General location map



¹ RDN is not responsible for current or long range planning on Gabriola Island. The Islands Trust provides this function for Gabriola Island.

² Calculated in GIS.

³ Statistics Canada, 2011 Census; <http://www12.statcan.gc.ca/census-recensement/index-eng.cfm>

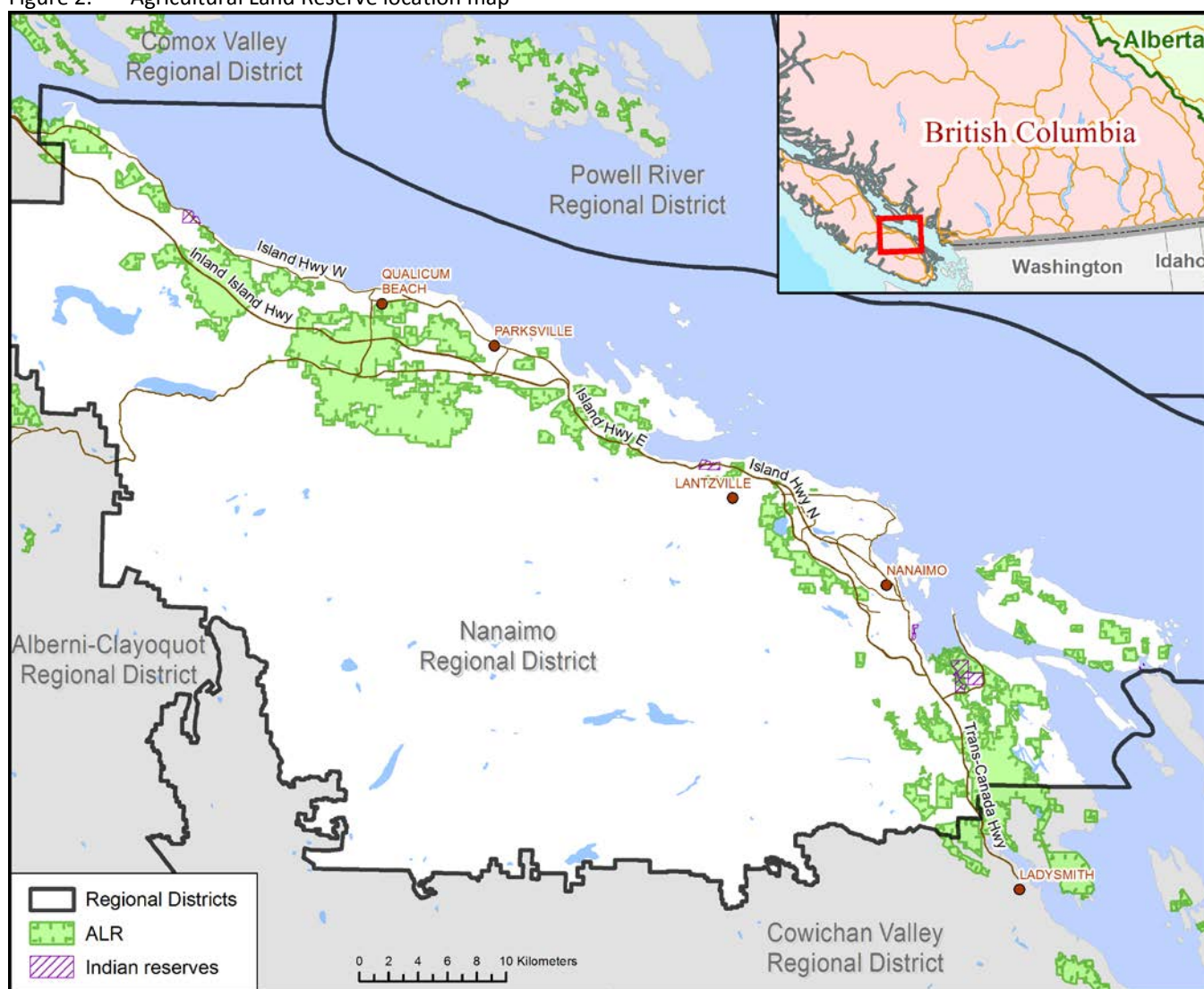
AGRICULTURAL LAND RESERVE

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.

In 2012, there were 18,729 ha⁴ of ALR land within the Regional District of Nanaimo (see Figure 2). The land area of RDN is 203,571 ha. With 18,729 ha in the ALR, 9% of the Regional District's total land area is in the ALR. The ALR area includes:

- 17,723 ha in inventoried parcels
- 885 ha outside of legally surveyed parcels (in rights-of-way, foreshore, and ALR slivers)
- 121 ha on Snuneymuxw First Nation Indian reserves (findings are presented in Appendix B)

Figure 2. Agricultural Land Reserve location map



⁴ Provincial Agricultural Land Commission (ALC) Annual Report 2011/12 Pg 99. <http://www.alc.gov.bc.ca>

INVENTORY AREA

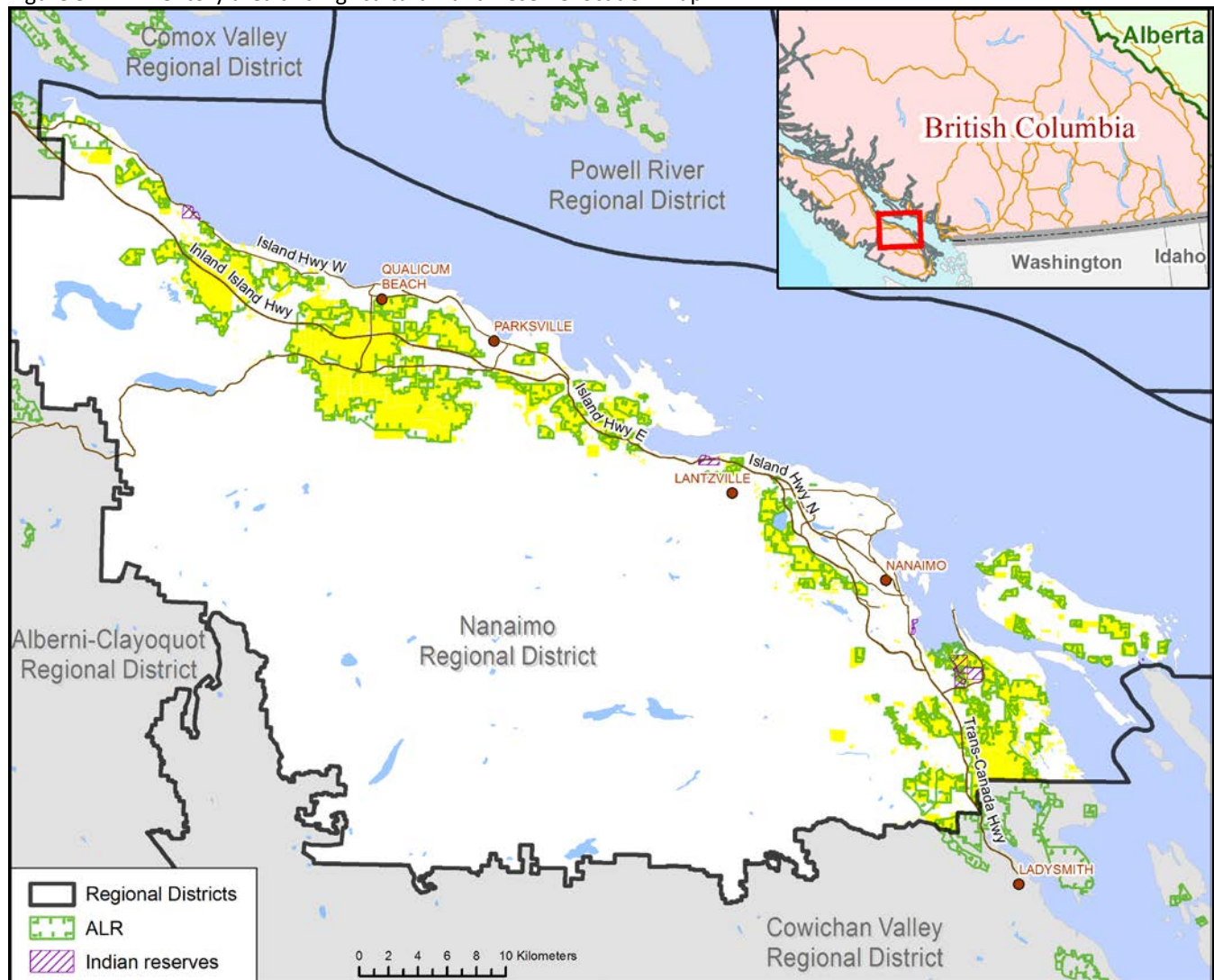
The total inventory area encompassed 3,046 parcels with a combined area of 28,021 ha, or 14% of Regional District of Nanaimo's land area. Land was inventoried within each of RDN's seven electoral areas and four member municipalities. Included are all parcels:

- completely or partially within the Agricultural Land Reserve
- classified by BC Assessment as having "Farm" status for property tax assessment
- zoned by local government bylaws to permit agriculture and greater than one acre⁵ and exhibiting signs of agriculture on aerial photography

The amount of ALR land included in the inventory area is 17,723 ha located on 2,409 parcels. This area is 95% of the ALR within RDN. The remaining ALR land (5%) was not inventoried as it was outside of legally surveyed parcels in rights-of-ways and foreshore.

Also surveyed was 121 ha of land on Nanaimo River 2 and Nanaimo River 3 Indian reserves associated with the Snuneymuxw First Nation. ALUI findings for these areas are presented in Appendix B due to differences in levels of governance, planning, and decision making processes.

Figure 3. Inventory area and Agricultural Land Reserve location map



⁵ One acre is approximately 0.4 hectares.

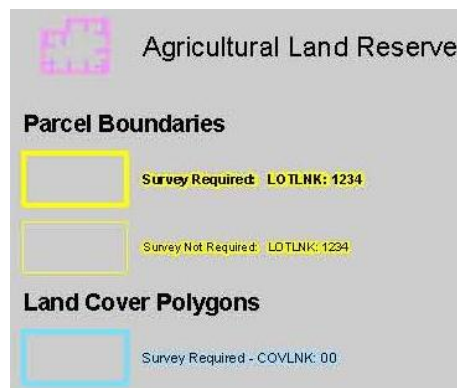
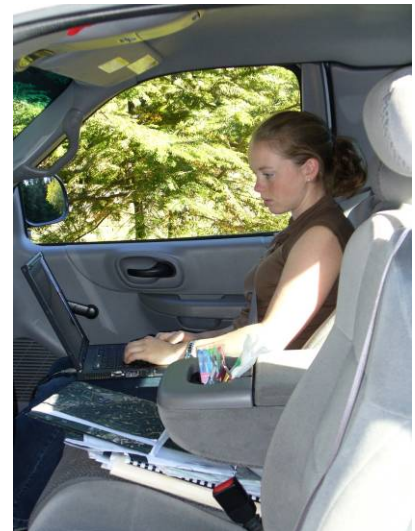
2. Methodology

INVENTORY METHODOLOGY

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

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

The Regional District of Nanaimo Agricultural Land Use Inventory was conducted in the summer of 2012 by a professional agrologist with the assistance of a GIS technician and 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 GIS technician funded by Regional District of Nanaimo.

⁷ Cadastre mapping (2012) sourced from the Integrated Cadastral Fabric.

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:

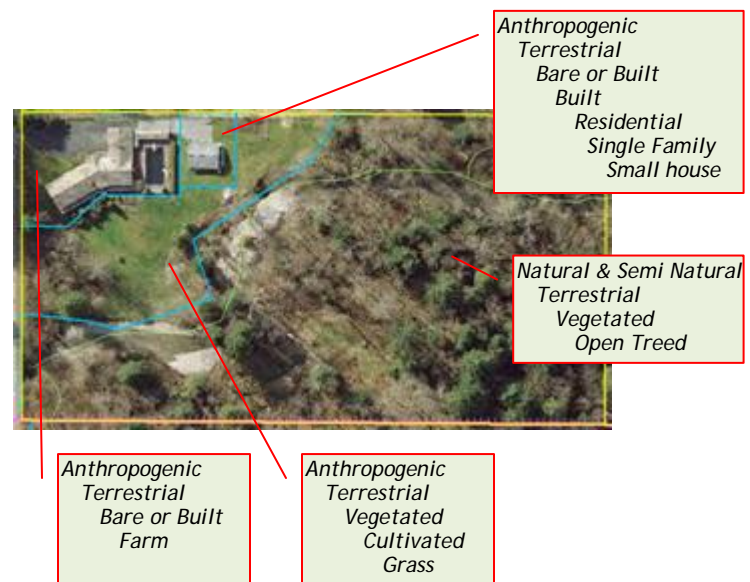
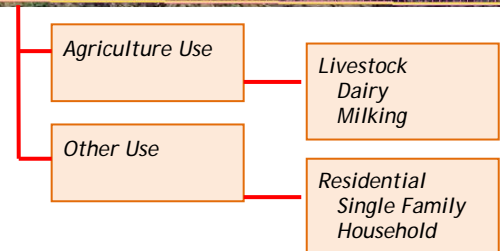
- The actual human use of land and related structures and modifications to the landscape
- Use-related land cover (where land cover implies a use or is important to interpreting patterns of use)
- Declared interests in the land (which may limit use) such as parks

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

Land cover:

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

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



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

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

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

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

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

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

PRESENTATION OF THE DATA

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

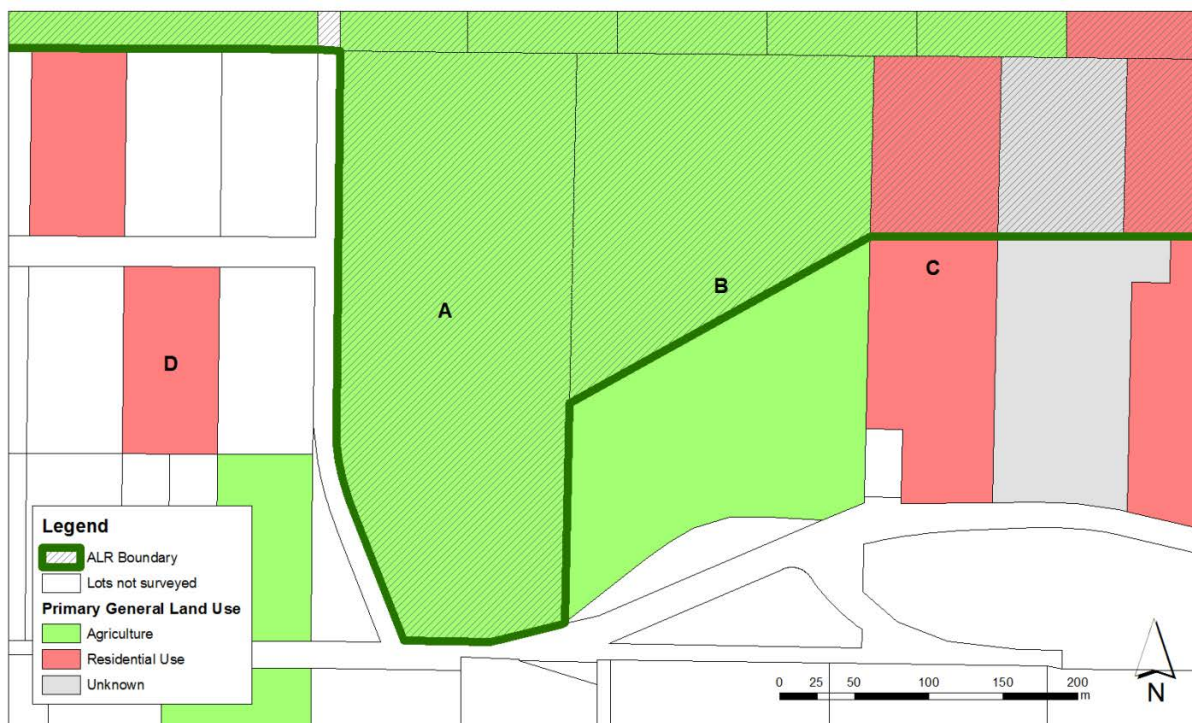
DETERMINATION OF PARCELS WITHIN THE ALR

Since much of the following analysis is parcel based, it is important to note that the ALR boundaries do not always align 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



3. 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 4 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, natural waterbody, 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 or rangeland are fenced areas with uncultivated (not sown) natural or semi-natural vegetation used for grazing domestic livestock. These areas are considered “Grazed” rather than “Farmed” although these areas are usually extensions of more intensive farming areas.

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

Land cover on Indian reserves in the ALR is presented in Appendix B.

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	3,675	20%	610	4,284	15%
	Farm infrastructure	152	1%	74	227	< 1%
	Greenhouses	7	< 1%	4	11	< 1%
Inactively farmed	Unmaintained field crops	99	< 1%	52	152	< 1%
	Unused forage or pasture	3	< 1%	1	5	< 1%
	Unmaintained greenhouses	<1	< 1%	<1	<1	< 1%
FARMED SUBTOTAL		3,936	21%	743	4,679	17%
Anthropogenic (not farmed)	Managed vegetation	737	4%	185	921	3%
	Residential footprint	305	2%	158	463	2%
	Transportation	177	1%	117	294	1%
	Non Built or Bare	91	< 1%	56	147	< 1%
	Waterbodies	57	< 1%	13	69	< 1%
	Settlement	37	< 1%	22	58	< 1%
	Utilities	22	< 1%	<1	22	< 1%
	Built up - Other	9	< 1%	5	15	< 1%
ANTHROPOGENIC (NOT FARMED) SUBTOTAL		1,434	8%	557	1,990	7%
Natural and Semi-natural	Vegetated	11,439	61%	3,353	14,792	53%
	Natural pasture	383	2%	90	473	2%
	Wetlands	343	2%	41	384	1%
	Waterbodies	188	1%	199	387	1%
NATURAL & SEMI-NATURAL SUBTOTAL		12,353	66%	3,683	16,036	57%
Unknown	Not surveyed	-	-	5,315	5,315	19%
TOTAL		17,723	95%	10,298	28,021	100%
Surveyed	Indian reserves	121	< 1%			
Not surveyed	Rights-of-way, foreshore, slivers	885	5%			
SUBTOTAL		1,006	5%			
TOTAL		18,729	100%			

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

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

In RDN's ALR, there are 3,936 ha of "Farmed" land cover. Of this area, 102 ha are "Inactively farmed" in unmaintained or unused crops and unmaintained greenhouses.

ALR land outside of legally surveyed parcels in rights-of-ways or foreshore was not surveyed, and was not considered to have agricultural activities.

Land cover on inventoried Indian reserves is presented in Appendix B.

Refer to Map 1 for more information.

Figure 5. Land cover and farmed area in the ALR

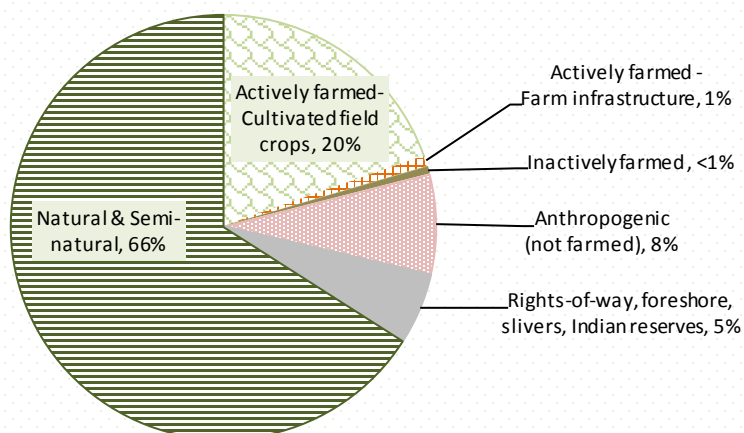


Figure 5 shows the proportion of different land cover types across the ALR in RDN.

Of the ALR land, 66% is in "Natural & Semi-natural" land cover, while 20% is in actively farmed cultivated field crops.

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

4. Land Use and Farm Use

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

Up to two general land uses (e.g. residential, commercial, protected area) are recorded for each parcel. Evaluation of land uses are based on 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 glossary.

Parcels that do not meet the “**Used for farming**” criteria, but have a significant portion of their area in natural pasture or rangeland and have evidence of active domestic livestock grazing are considered “**Used for grazing**”.

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

Land use is not assessed for land on Indian reserves.

Table 2. 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
		In ALR (ha)	% of ALR area					
Used only for farming - no other use		1,096	6 %	62	1,158	4 %	110	4 %
Used for farming - Mixed use	Residential	4,048	22 %	917	4,965	18 %	760	25 %
	Utilities	112	<1 %	6	119	<1 %	7	<1 %
	Industrial	31	<1 %	77	108	<1 %	4	<1 %
	Communications	8	<1 %	-	8	<1 %	1	<1 %
	Commercial & service	4	<1 %	-	4	<1 %	1	<1 %
	Institutional & community	-	-	3	3	<1 %	2	<1 %
USED FOR FARMING SUBTOTAL		5,300	28 %	1,065	6,364	23 %	885	29 %
Not used for farming	Residential	4,398	23 %	1,425	5,822	21 %	1,445	47 %
	No apparent use	2,779	15 %	1,378	4,157	15 %	404	13 %
	Forestry	2,621	14 %	4,424	7,045	25 %	61	2 %
	Transportation	766	4 %	593	1,359	5 %	76	2 %
	Protected area / park / reserve	398	2 %	334	732	3 %	37	1 %
	Utilities	348	2 %	626	975	3 %	35	1 %
	Recreation & leisure - golf	342	2 %	100	442	2 %	19	<1 %
	Industrial	174	1 %	76	250	<1 %	22	<1 %
	Institutional & community	159	1 %	46	204	<1 %	19	<1 %
	Transportation - airport	151	1 %	2	153	<1 %	2	<1 %
	Recreation & leisure	143	<1 %	105	248	<1 %	27	<1 %
	Military	66	<1 %	40	106	<1 %	3	<1 %
	Gravel extraction	42	<1 %	71	114	<1 %	3	<1 %
	Wildlife management	34	<1 %	< 1	34	<1 %	2	<1 %
	Land in transition	2	<1 %	< 1	2	<1 %	1	<1 %
	Dumps & deposits	1	<1 %	< 1	2	<1 %	1	<1 %
	Commercial & service	< 1	<1 %	11	12	<1 %	4	<1 %
NOT USED FOR FARMING SUBTOTAL		12,423	66 %	9,233	21,656	77 %	2,161	71 %
TOTAL		17,723	95 %	10,298	28,021	100 %	3,046	100 %
Surveyed	Indian reserves	121	<1 %					
Not surveyed	Rights-of-way, foreshore, slivers	885	5 %					
SUBTOTAL		1,006	5 %					
TOTAL		18,729	100 %					

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

Table 2 shows that 5,300 ha or 28% of RDN's ALR area is on parcels that are "Used for farming". There are 1,096 ha of ALR ha on 110 parcels that are exclusively "Used for farming" with no other uses.

Two parcels with the mixed use "Used for farming" and "Institutional & community" are associated with the Coombs Fairgrounds.

On parcels that are "Not used for farming", residential use occurs on 1,445 parcels that have 4,398 ha of ALR land (23% of RDN's ALR land area). Of all inventoried parcels:

- 47% have residential use and are "Not used for farming"
- 25% have residential use and are "Used for farming"

Refer to Map 2 for more information.

Table 3. 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		624	3 %	31	<1 %	441	2 %	1,096	6 %
Used for farming - mixed use	Residential	2,702	14 %	183	<1 %	1,164	6 %	4,048	22 %
	Utilities	77	<1 %	< 1	<1 %	35	<1 %	112	<1 %
	Industrial	24	<1 %	5	<1 %	2	<1 %	31	<1 %
	Communications	8	<1 %	< 1	<1 %	-	-	8	<1 %
	Commercial & service	3	<1 %	< 1	<1 %	< 1	<1 %	4	<1 %
SUBTOTAL		3,437	18 %	220	1 %	1,642	9 %	5,300	28 %
Not used for farming		499	3 %	1,213	6 %	10,711	57 %	12,423	66 %
SUBTOTAL		3,936	21 %	1,434	8	12,353	66 %	17,723	95 %
Surveyed	Indian reserves							121	<1 %
Not Surveyed	Rights-of-way, foreshore, slivers							885	5 %
SUBTOTAL								1,006	5 %
		TOTAL ALR						18,729	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 glossary.

Table 3 combines land use and land cover on ALR land in RDN. For example, parcels with the mixed use "Used for farming" and "Residential" have a total of 2,702 ha in "Farmed" land cover, 183 ha in "Anthropogenic" (not farmed) land cover, and 1,164 ha in "Natural & Semi-natural" land cover.

Although 5,300 ha or 28% of RDN's ALR is on parcels that are "Used for farming" (refer to Table 2), only 3,936 ha or 21% of the ALR is actually in "Farmed" land cover. Many "Used for farming" parcels have significant areas left as "Natural & Semi-natural" land cover.

5. Availability of Land for Farming

There is currently a strong demand for local agricultural products that is expected to increase with population growth⁸. This demand, along with other market demands, and farm management requirements (nutrient management, bio-security), will influence agricultural land needs in the future. Lands suitable for agricultural development may not be available and agricultural sectors that require large land bases, such as dairy or berry, may find it difficult to access sufficient land. Future agriculture growth may come from new commodity types and intensifying land use rather than finding new land for development.

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

Properties currently “Used for farming” or with some agriculture present are considered available for farm expansion. Properties currently “Not used for farming” but with an existing use compatible with agriculture, such as residential, are considered available for farming. In both cases, it is assumed that existing non-farm land uses will be maintained and will not be displaced by agriculture expansion.

Properties that are currently “Not used for farming” and with an established non-farm use that is incompatible with agriculture (e.g. a golf course, a school, or small lot residential) are considered to be unavailable for farming. These properties usually have little land available and/or tend to have very high land values. It is uneconomical for a farmer to acquire and convert these properties to farmland given the limited farming potential.

In the Regional District of Nanaimo, properties in the ALR and “Used for farming” have an average assessed land and improvement value of \$51,278 per ha.

Properties in the ALR that are considered “Unavailable for farming” have an average assessed land and improvement value of \$387,286 per ha.

(Calculated using 2012 BC Assessment)

Land is further assessed for its farming potential based on physical and environmental characteristics. It is assumed that removing built structures and fill piles, filling in water bodies or remediating slopes/soils to create land with cultivation potential would likely not occur. In addition, areas with operational constraints such as a very small size are considered not to have potential for farming. 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.

Availability of land is not assessed for land on Indian reserves.

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 4. 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	3,675	20 %	610	4,284	15 %
	Farm infrastructure	152	1 %	74	227	<1 %
	Greenhouses	7	<1 %	4	11	<1 %
ACTIVELY FARMED		3,834	21 %	688	4,522	16 %
Anthropogenic areas supporting farming	Residential footprint	82	<1 %	46	128	<1 %
	Transportation	32	<1 %	7	39	<1 %
	Artificial Waterbodies	26	<1 %	3	29	<1 %
	Built up - Other	16	<1 %	< 1	16	<1 %
SUPPORTING FARMING		155	1 %	56	212	<1 %
Unavailable for farming due to existing land use	Recreation & leisure - golf	209	1 %	55	264	<1 %
	Transportation - airport	151	1 %	2	153	<1 %
	Protected area / park / reserve	110	<1 %	123	233	<1 %
	Transportation	72	<1 %	90	162	<1 %
	Military	66	<1 %	40	106	<1 %
	Industrial	56	<1 %	26	81	<1 %
	Residential	37	<1 %	8	45	<1 %
	Recreation & leisure	33	<1 %	25	58	<1 %
	Gravel extraction	14	<1 %	51	65	<1 %
	Institutional & community	10	<1 %	1	12	<1 %
	Utilities	8	<1 %	< 1	9	<1 %
	Wildlife management	3	<1 %	< 1	3	<1 %
	Dumps & deposits	1	<1 %	< 1	2	<1 %
	Commercial & service	< 1	<1 %	-	< 1	<1 %
Unavailable for farming due to existing land cover	Wetlands & waterbodies	513	3 %	171	684	2 %
	Residential footprint	191	1 %	93	284	1 %
	Transportation	48	<1 %	42	90	<1 %
	Built up - Other	35	<1 %	25	60	<1 %
	Utilities	2	<1 %	< 1	2	<1 %
UNAVAILABLE FOR FARMING		1,559	8 %	754	2,313	8 %
Site limitations	Drainage	227	1 %	54	281	1 %
	Operational	128	<1 %	53	181	<1 %
	Topography &/or soils	86	<1 %	169	255	<1 %
LIMITED POTENTIAL FOR FARMING		442	2 %	275	717	3 %
Available & with potential for farming	Natural & Semi-natural - Vegetation	10,740	57 %	2,918	13,658	49 %
	Anthropogenic - Managed vegetation	444	2 %	141	585	2 %
	Natural pasture or rangeland	381	2 %	85	465	2 %
	Unmaintained field crops	99	<1 %	52	151	<1 %
	Anthropogenic - Non Built or Bare	66	<1 %	11	77	<1 %
	Unused forage or pasture	3	<1 %	1	5	<1 %
AVAILABLE & WITH POTENTIAL FOR FARMING		11,733	63 %	3,208	14,941	53 %
Availability & potential for farming unknown		-	-	5,315	5,315	19 %
TOTAL		17,723	95 %	10,297	28,020	100 %
Surveyed	Indian reserves	121	<1 %			
Not surveyed	Rights-of-way, foreshore, slivers	885	5 %			
SUBTOTAL		1,006	5 %			
TOTAL		18,729	100 %			

Table 4 shows that 3,834 ha or 21% of the ALR is actively used for farming; 8% is unavailable for farming due to existing land use or land cover; 2% has limited potential for farming, and 63% is not farmed, but is available and has potential for farming.

Land that is available for farming may have other factors that limit the potential for soil bound agriculture. Additional limitations such as riparian areas, protected ecosystems, parcel size, or parcel alignment may limit the availability of some areas for certain types of agricultural development. Refer to Maps 2 and 3 for more information.

Figure 6. Status of the ALR land base with respect to farming

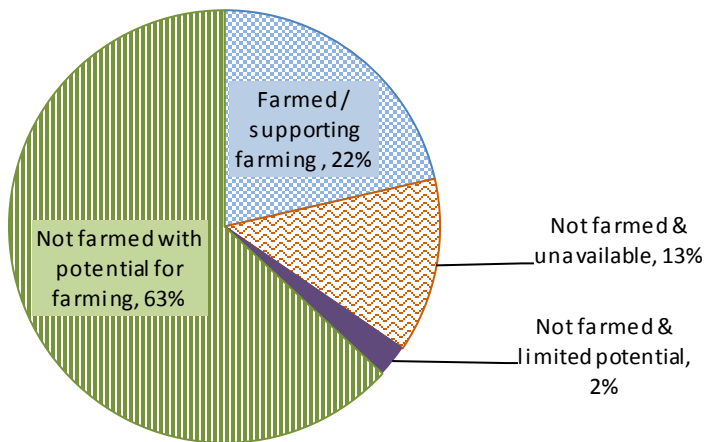


Figure 6 shows the status of the ALR in relation to farming in the Regional District of Nanaimo.

Twenty-two percent (22%) of the ALR is farmed or is supporting farming.

Thirteen percent (13%) of the ALR is unavailable for farming due to an incompatible land cover (e.g. wetland or waterbody), land use (e.g. golf course or park) or being outside of a legally surveyed parcel (e.g. rights-of-way or foreshore). Two percent (2%) of the ALR has limited potential for farming due physical site limitations (e.g. drainage or small size).

The remaining 63% is available and has potential for farming. This land may have additional factors that limit the potential for soil based agriculture (e.g. riparian areas, protected ecosystems, parcel size, ownership, etc.).

Figure 7 details the availability of ALR land for farming. Each successive bar describes the amount of ALR available for farming after removing some type of unavailable or incompatible land.

The first bar details the amount of ALR and non ALR land. The second bar shows how much ALR land was surveyed. The third and fourth bars show the amount of land with a land use or land cover that is unavailable for farming. The fifth bar removes areas with limited potential for farming. The sixth and final bar shows how much ALR land is available for farming and how much land is currently is farmed.

Figure 7. Availability of ALR lands for farming

Regional District of Nanaimo

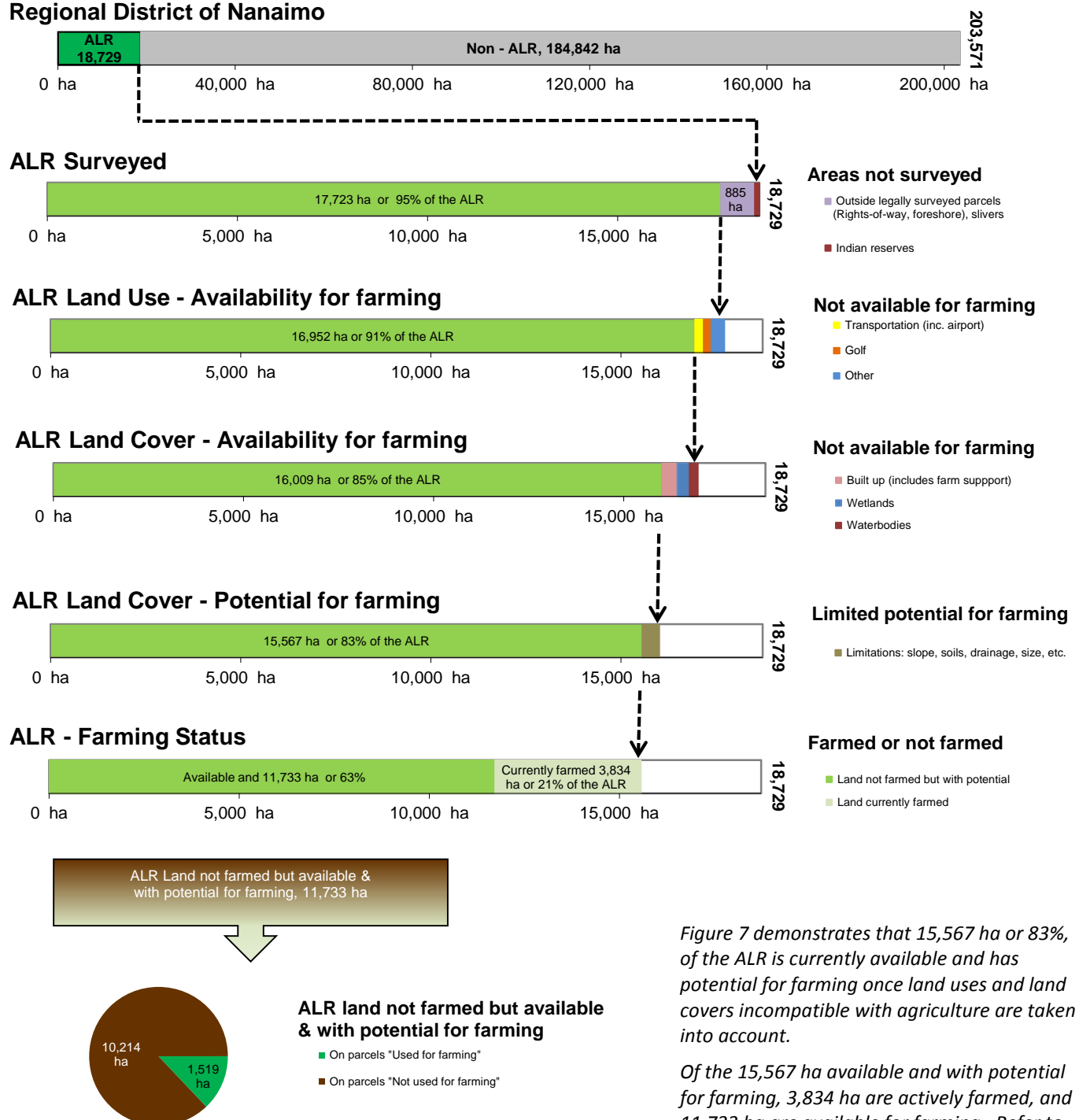


Figure 7 demonstrates that 15,567 ha or 83%, of the ALR is currently available and has potential for farming once land uses and land covers incompatible with agriculture are taken into account.

Of the 15,567 ha available and with potential for farming, 3,834 ha are actively farmed, and 11,733 ha are available for farming. Refer to page 22– 25 for more information on the

CHARACTERISTICS OF NOT FARMED BUT AVAILABLE ALR LANDS

Some of the areas that are not farmed could be available for agricultural expansion. Farms have the potential to expand by cultivating more land on a parcel. This can involve clearing, draining, or levelling the land to prepare it for cultivation. In some cases, it is important to consider the ecological services and wildlife habitat provided by naturally vegetated areas. These values may need to be weighed against the need for food production.

The size of the area available, and its proximity to and/or adjacency to a larger field can affect the potential of the area to be used for agriculture. Smaller areas are suitable for some types of intensive agricultural production such as mushrooms, floriculture, poultry, and container nurseries. Small areas are also suitable for start-up farmers, farmers testing new technologies, and established farmers wanting to expand through leases.

Despite these opportunities, small areas provide fewer farming opportunities than large lots. They generally exclude dairy, hogs, and vegetable greenhouses. Dairy operations, for example, are unsuited to small lots as a single cow produces sufficient manure per year to fertilize 0.4 ha of forage production. This means a dairy operation consisting of 50 cows would require access to 20 ha. 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. In addition, working farms require sufficient space to operate in order to avoid odour, dust, and noise conflicts with nearby non-farm land uses.

On Parcels “Used For Farming”

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

Table 5. Land use and cover on parcels “Used for farming” with ALR land available for farming

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	363	1,079	109	1,187	2,279	53	2,332	28 %
Used for farming only	59	407	11	418	529	2	531	11 %
Utilities	6	31	< 1	31	77	< 1	77	<1 %
Industrial	1	2	< 1	2	6	< 1	6	<1 %
Commercial & service	1	< 1	-	< 1	3	-	3	<1 %
TOTAL	430	1,519	120	1,639	2,895	55	2,949	40 %

Table 5 demonstrates the potential to increase the amount of cultivated land on parcels that are already “Used for farming”. This increase would come from expanding farm operations toward a more complete utilization of the available parcel area.

Only “Used for farming” parcels with land available for farming are included here. If a parcel is 100% utilized for farming, it has no land available for farming expansion, and will not be included in this analysis. For details on parcels with ALR land available for farming, but “Not used for farming”, refer to Table 6.

Figure 8. ALR land cover that is available for farming on “Used for farming” parcels

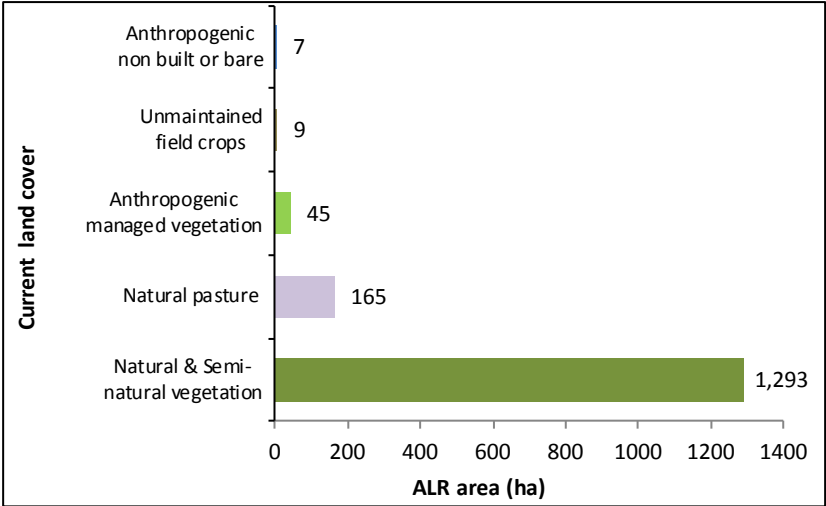


Figure 8 indicates that ALR land currently in “Natural & Semi-natural” land cover could provide the greatest gains in farming on parcels that are already “Used for farming”.

These gains in farming would have to be measured against the potential loss of other values such as wildlife habitat, natural viewscapes, and residential privacy.

Figure 9. Natural & semi-natural vegetation that is in the ALR and available for farming on parcels “Used for farming”

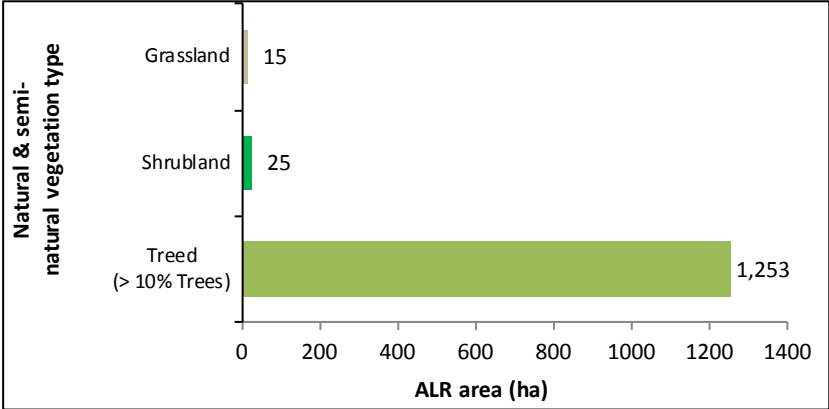


Figure 9 details the type of vegetation in “Natural & semi-natural” land cover that is in the ALR and is available and has potential for farming. This is a subset of Figure 8. ALR land cover that is available for farming on “Used for farming” parcels

The majority of the available land is in treed land cover. These areas would need to be cleared if cultivation were to occur.

On Parcels “Not Used For Farming”

Table 6. Land use and cover on parcels “Not used for farming” with ALR 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	968	3,615	343	3,958	94 %
	Forestry	60	2,526	520	3,045	66 %
	No apparent use	302	2,429	504	2,933	63 %
	Transportation	34	642	343	985	17 %
	Utilities	12	285	27	312	7 %
	Protected area / park / reserve	26	257	183	440	7 %
	Institutional & community	12	120	24	144	3 %
	Recreation & leisure - golf	5	111	33	144	3 %
	Industrial	14	91	15	107	2 %
	Recreation & leisure	12	88	69	157	2 %
	Gravel extraction	2	28	17	45	<1 %
	Wildlife management	1	20	< 1	20	<1 %
	Land in transition	1	2	< 1	2	<1 %
	TOTAL	1,449	10,214	2,078	12,292	266 %

Table 6 illustrates the potential to increase the amount of cultivated land on parcels that are “Not used for farming”. This increase would come from prioritizing agriculture over other non-farm land uses and utilizing the full area that is available for farming. It is assumed that existing non-farm land uses would be maintained.

The greatest potential to increase the area of cultivated land could come from parcels that are currently used for “residential” or “forestry” purposes or parcels that have “no apparent use”.

Land that is currently used for forestry is considered available for agriculture. If this land were to change ownership and/or be cultivated, the existing forestry use would likely diminish.

Figure 10. ALR land cover that is available for farming on “Not used for farming” parcels

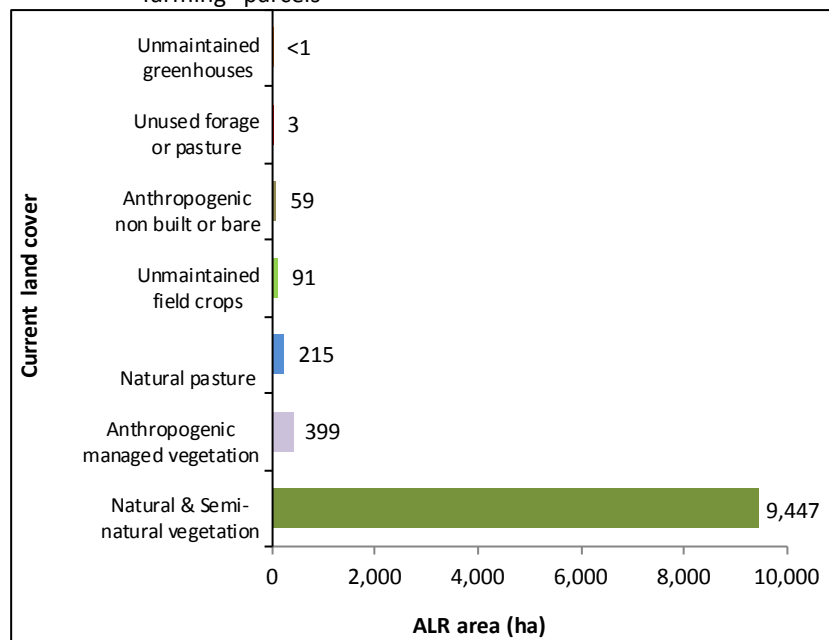


Figure 10 indicates that clearing land covered in “Natural & Semi-natural” land cover could provide to greatest gains in farming on parcels that are “Not used for farming”.

Figure 11. Natural & semi-natural vegetation that is in the ALR and available for farming on parcels “Not used for farming”

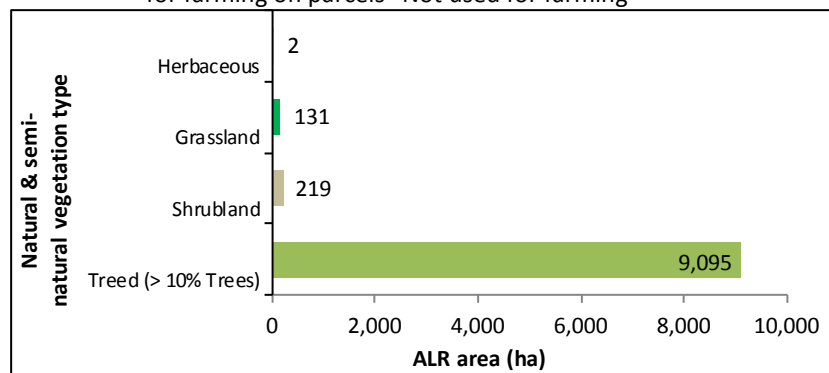


Figure 11 details the type of vegetation in “Natural & semi-natural” land cover that is in the ALR and is available and has potential for farming. This is a subset of Figure 10.

The majority of the land cover is “treed”. If this land were to be cultivated, the existing vegetation would need to be cleared.

6. 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.

Cultivated field crops in RDN are described by thirteen crop groupings:

- **Forage & pasture:** forage corn, grass
- **Berries:** blueberries, cranberries, raspberries, strawberries, blackberries, mixed berries
- **Tree plantations:** Christmas trees, fibre/ pulp/ veneer trees, holly
- **Vegetables:** mixed vegetables, potatoes, leafy vegetables, pumpkins, sweet corn, cucurbits, root vegetables
- **Cereals:** oats, wheat, rye
- **Turf:** turf grass
- **Cultivated land:** bare cultivated land (where the crop is not yet visible), fallow (cultivated land that has not been seeded or planted for one or more growing season), land in crop transition
- **Nursery:** Ornamentals and shrubs, cedar hedging
- **Tree fruits**
- **Nut trees**
- **Vines:** grapes
- **Floriculture**
- **Rhubarb**

Crops recorded on Nanaimo River 2 and Nanaimo River 3 Indian reserves are reported separately from the main inventory totals and are presented in Appendix B.

Figure 12. Main field crop types by percentage

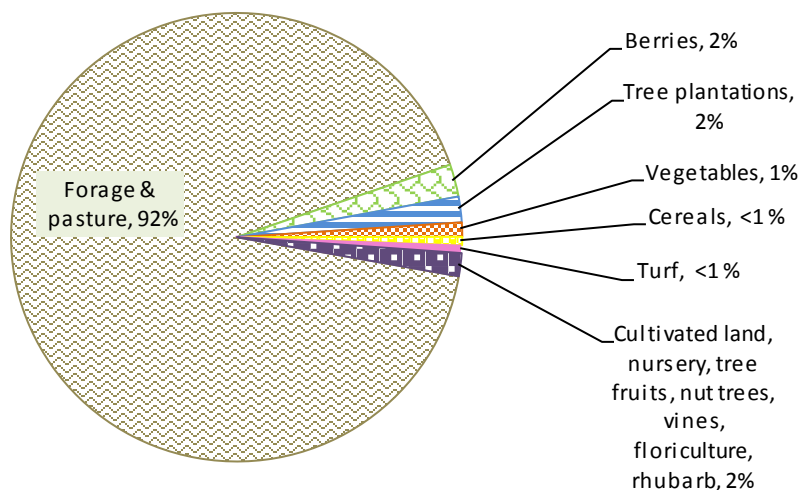


Figure 12 shows the proportion of the main field crop types across RDN's cultivated land.

Forage & pasture comprises 92% of all cultivated land.

Table 7. Main field crop types by area

Type	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Forage & pasture	3,534	19%	553	4,087	92%
Berries	100	< 1%	3	103	2%
Tree plantation	24	< 1%	58	82	2%
Vegetables	31	< 1%	15	45	1%
Cereals	26	< 1%	< 1	26	< 1%
Turf	21	< 1%	4	25	< 1%
Cultivated land*	20	< 1%	< 1	21	< 1%
Nursery	6	< 1%	15	21	< 1%
Tree fruits	10	< 1%	9	19	< 1%
Nut trees	3	< 1%	4	7	< 1%
Vines	4	< 1%	2	6	< 1%
Floriculture	< 1	< 1%	-	< 1	< 1%
Rhubarb	< 1	< 1%	-	< 1	< 1%
TOTAL	3,777	20%	663	4,441	100%

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

Table 7 details the cultivated crops in RDN.

“Forage & pasture” is the primary crop type accounting for 92% of all cultivated land, and 19% of the ALR.

Berry crops are a distant second, accounting for 103 ha, or 2% of RDN’s cultivated land.

Refer to Map 4 for more information.

Figure 13. All cultivated field crops by size⁹

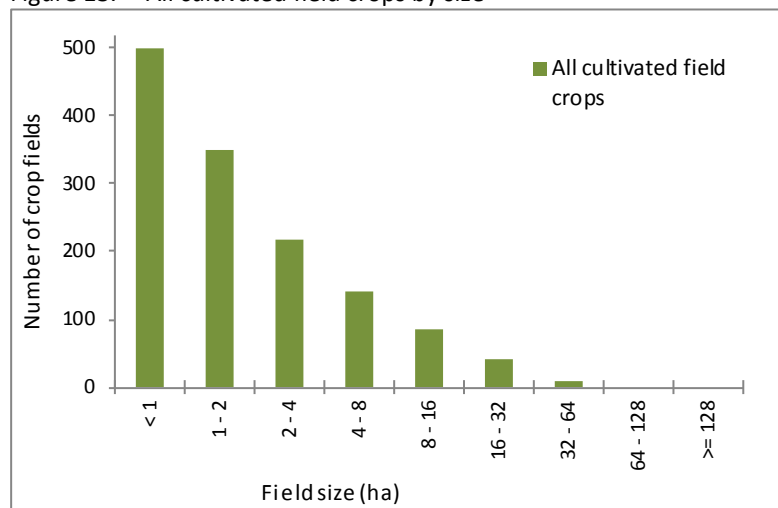


Figure 13 illustrates the number and size distribution of fields used for cultivated field crops.

In RDN, there are 1,344 individual crop fields with an average crop area of 3 ha and a median crop area of 1 ha.

The average parcel size where field crops occur is 8 ha and the median parcel size is 3 ha.

There are no crop fields larger than 64 ha in RDN.

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

⁹ 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.

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. Includes hydrophytic grass or riparian meadows.

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

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

Some areas are used for both forage & pasture:

- **Forage & pasture (managed):** Crop is cut 1 to 3 times per year and made into silage or haylage. Also used for grazing for 1 to 3 months per season. Fencing is in good condition and crop growth is reasonably even with few weeds.

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 8. Forage and pasture crops by management type

Forage and pasture crops		ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
		In ALR (ha)	% of ALR			
Forage (managed)	Grass	1,269	7%	80	1,349	30%
Forage (managed)	Forage corn	51	< 1%	< 1	51	1%
Forage (unmanaged)	Grass	223	1%	30	253	6%
Subtotal		1,544	8%	110	1,654	37%
Pasture (managed)	Grass	71	< 1%	27	98	2%
Pasture (unmanaged)	Grass	659	4%	315	973	22%
Subtotal		729	4%	342	1,071	24%
Forage & pasture (managed)	Grass	1,161	6%	67	1,228	28%
Subtotal		1,161	6%	67	1,228	28%
Unused	Grass	3	< 1%	1	5	< 1%
Unmaintained	Grass	96	< 1%	33	129	3%
Subtotal		99	< 1%	34	133	3%
TOTAL		3,534	19%	553	4,087	92%

Table 8 shows there is a total of 4,087 ha in forage & pasture crops in RDN.

There 1,654 ha in forage crops, 1,071 ha in pasture crops, and 1,228 ha in fields used for both forage & pasture.

There are 51 ha of forage corn while the remaining forage & pasture crops are grass.

Refer to Map 4 for more information.

Figure 14. Forage and pasture crop types by percentage

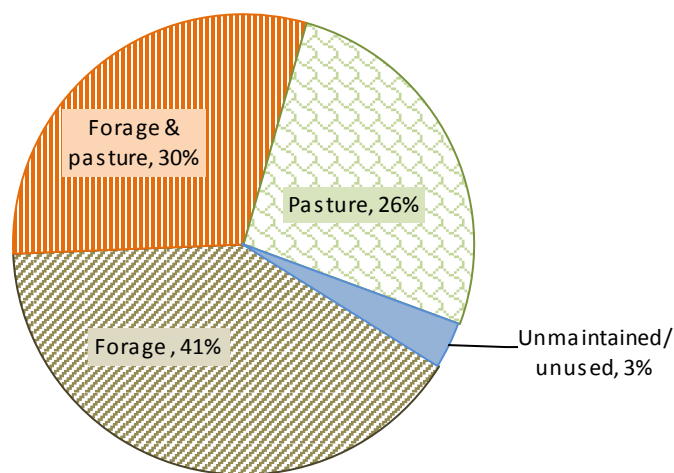


Figure 14 shows the proportion of the forage and pasture crops in RDN.

Forage fields combined with forage & pasture fields comprise 71% of all cultivated forage and pasture crops.

Figure 15. Forage and pasture fields by size and type

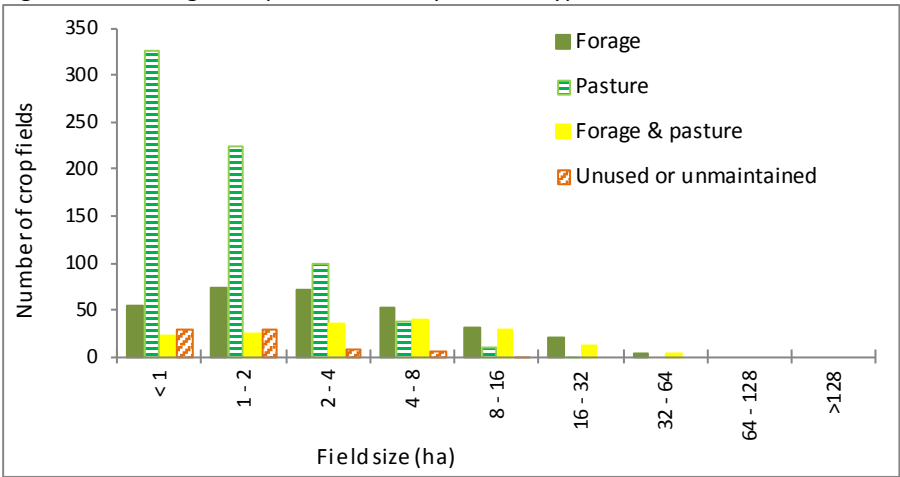


Figure 15 shows the field sizes of forage & pasture crops.

Although forage crops comprise a greater area than pasture crops (refer to Table 8), pasture fields are more numerous. Pasture fields are most likely to be < 1 ha.

There are 695 pasture fields with an average crop area of 2 ha, a median crop area of 1 ha, and an average parcel size of 13 ha.

In comparison, there are 307 forage fields with an average crop area of 5 ha, a median crop area of 3 ha, and an average parcel size of 14 ha.

Berry crops

Berries are primarily perennial crops. These crops do not change frequently as most require several years to mature and some crop types require extensive land preparation. Strawberries are a perennial plant which is usually rotated to minimize build-up of crop-specific pest and disease problems.

Table 9. Berry crops by area

Berry crops	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Blueberries	61	< 1%	2	63	1%
Cranberries	20	< 1%	< 1	20	< 1%
Mixed berries	7	< 1%	< 1	8	< 1%
Raspberries	8	< 1%	< 1	8	< 1%
Strawberries	3	< 1%	-	3	< 1%
Blackberries	< 1	< 1%	-	< 1	< 1%
TOTAL	100	< 1%	3	103	2%

Table 9 shows that RDN's ALR has 100 ha and 2% of all cultivated land in berry crops.

Blueberries are the most significant berry type with 61 ha, followed by cranberries with 20 ha.

Figure 16. Berry crop types by percentage

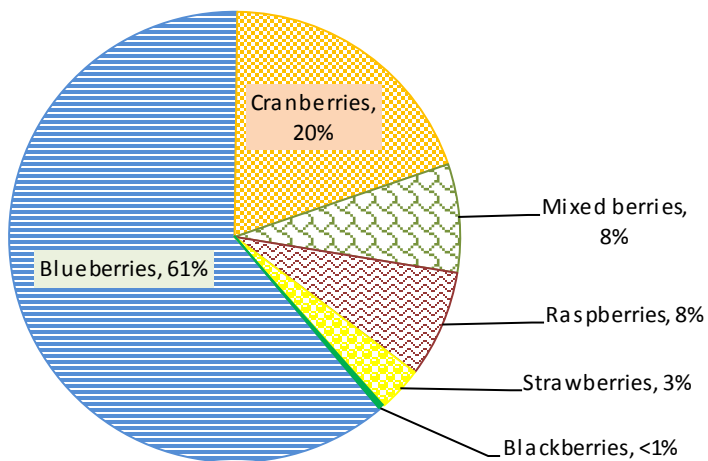


Figure 16 shows the proportion of berry crop types in RDN.

Blueberries comprise 61% of all berry crops while cranberries comprise 20% of all berry crops.

Figure 17. Berry fields by size

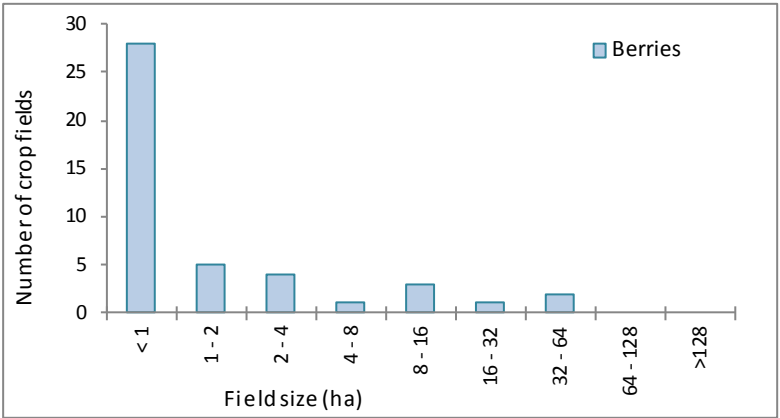


Figure 17 shows that most berry fields are less than 1 ha in size.

There are 44 individual berry fields in RDN's inventory area. These fields have an average crop area of 2 ha and a median crop area of 0.4 ha.

Berry fields occur on 33 parcels (some parcels have more than one distinct field or berry crop type). The average parcel size where berries occur is 15 ha and the median parcel size is 8 ha.

A small field crop size on a larger parcel may indicate that the crop is grown for personal use or small scale informal sales.

Small field crop sizes on larger parcels may also indicate areas that could be used for farm expansion.

Figure 18. Blueberry, cranberry, mixed berry, and raspberry fields by size

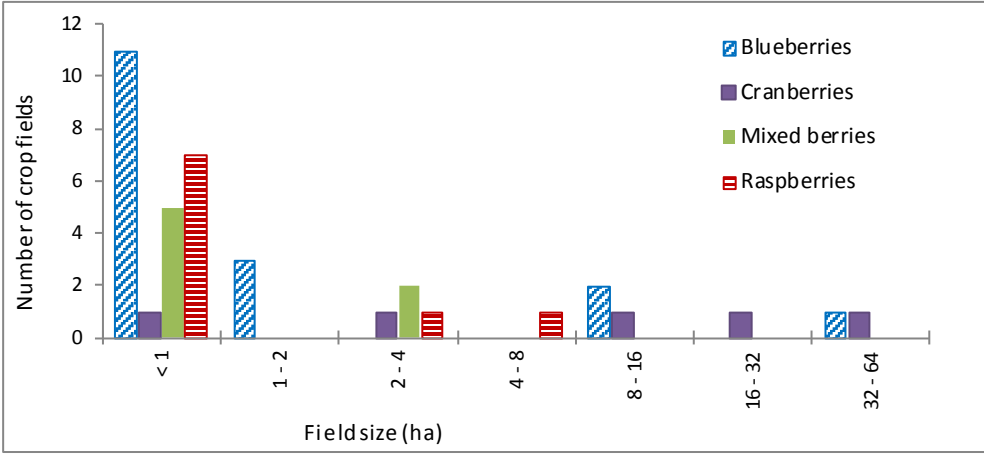


Figure 18 shows the field size distribution of the top berry crops.

Blueberries, raspberries, and mixed berry fields occur across most field sizes with berries.

There are 17 blueberry fields while there are only 5 cranberry, 7 mixed berry, and 9 raspberry fields.

Vegetable crops

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

Vegetables in RDN are described by six crop groupings:

- **Mixed vegetables:** a variety of vegetable types cultivated in a field
- **Potatoes**
- **Leafy vegetables:** Includes lettuces, spinach, Swiss chard, celery
- **Cucurbits:** Includes squash, cucumber, zucchini, pumpkin
- **Sweet corn**
- **Garlic**

Table 10. Vegetable crops by area

Vegetable crops	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of ALR			
Mixed vegetables*	12	< 1%	15	27	< 1%
Potatoes	14	< 1%	-	14	< 1%
Leafy vegetables^	2	< 1%	-	2	< 1%
Cucurbits	2	< 1%	< 1	2	< 1%
Sweet corn	< 1	< 1%	-	< 1	< 1%
Garlic	< 1	< 1%	-	< 1	< 1%
TOTAL	31	< 1%	15	45	1%

* Refers to a field of a variety of vegetable types

^ Includes lettuces, spinach, Swiss chard, celery

Table 10 presents the different vegetable crops in RDN.

Mixed vegetables are the most common vegetable crop with 27 ha, followed by potatoes with 14 ha.

Figure 19. Vegetable fields by size and type

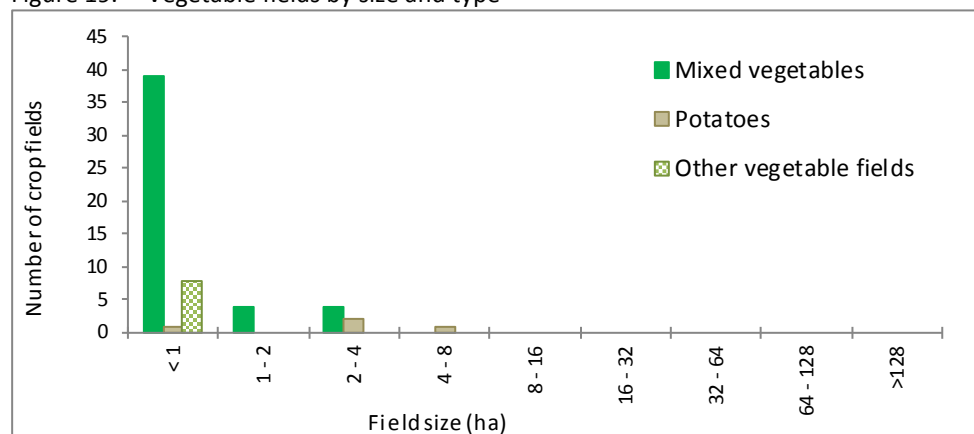


Figure 19 shows the field size distribution of vegetable fields in RDN.

Fifty-nine individual vegetable fields were recorded. These fields have an average crop area of 1 ha and a median crop area of 0.3 ha.

Vegetable fields occur on 57 parcels where the average parcel size is 7 ha and the median parcel size is 2 ha.

Many of the small mixed vegetable fields are grown for personal use.

Top 20 Individual Crops

Table 11. 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	1,544	8%	110	1,654	37%
Forage & pasture	1,161	6%	67	1,228	28%
Pasture	729	4%	342	1,071	24%
Unmaintained forage/pasture	96	< 1%	33	129	3%
Blueberries	61	< 1%	2	63	1%
Christmas trees	2	< 1%	37	39	< 1%
Mixed vegetables	10	< 1%	15	25	< 1%
Turf	21	< 1%	4	25	< 1%
Cranberries	20	< 1%	-	20	< 1%
Oats	20	< 1%	< 1	20	< 1%
Cultivated land	18	< 1%	< 1	19	< 1%
Christmas trees (Unmaintained)	-	-	19	19	< 1%
Ornamentals and shrubs	< 1	< 1%	14	14	< 1%
Potatoes	14	< 1%	-	14	< 1%
Apples	7	< 1%	7	14	< 1%
Fibre/pulp/veneer trees	13	< 1%	-	13	< 1%
Trees (plantation)	9	< 1%	< 1	9	< 1%
Mixed berries	7	< 1%	< 1	8	< 1%
Raspberries	8	< 1%	< 1	8	< 1%
Grapes	4	< 1%	2	6	< 1%
TOTAL	3,745	20%	653	4,398	99%

Table 11 shows the top 20 crops that account for 99% of the cultivated land in RDN.

Figure 20. Top 20 crop types by area

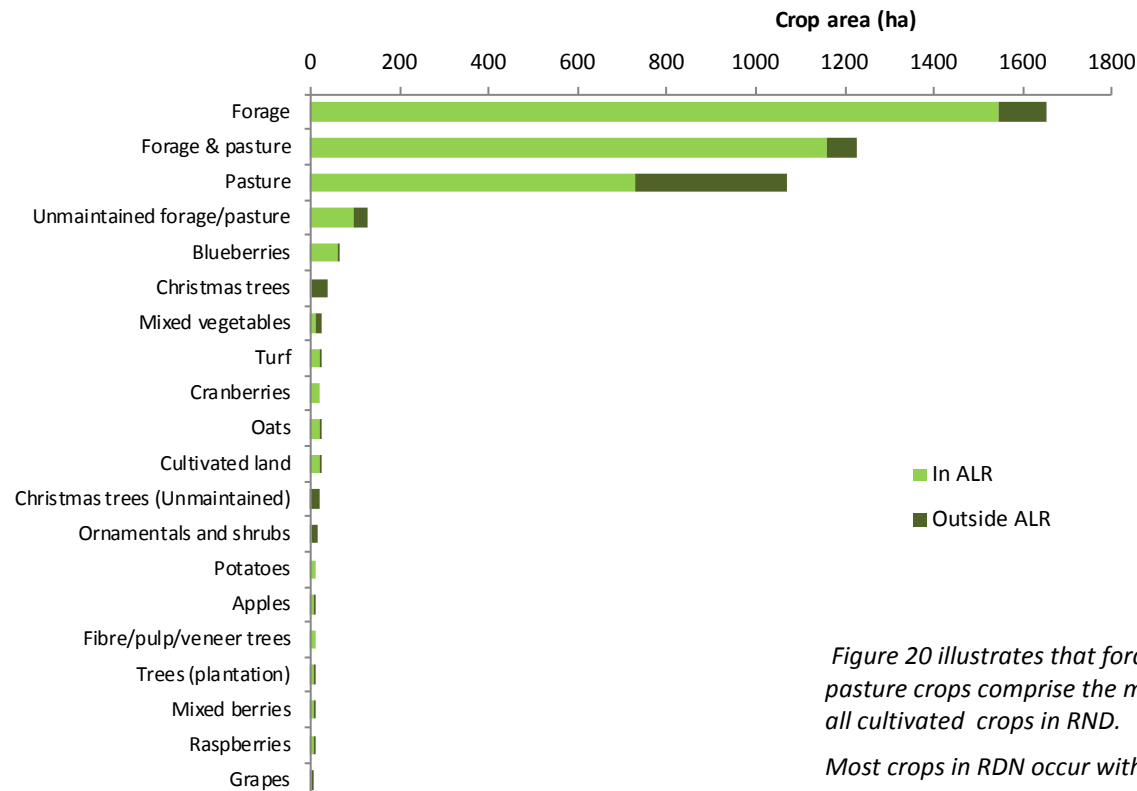


Figure 20 illustrates that forage and pasture crops comprise the majority of all cultivated crops in RDN.

Most crops in RDN occur within the ALR.

GREENHOUSES

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.

Table 12. Greenhouses by area¹¹

Greenhouses		ALR		Outside ALR (ha)	Total area (ha)	% of greenhouse area
		In ALR (ha)	% of ALR			
Glass greenhouse	Nursery	0.7	<0.1%	<0.1	0.7	6%
	Unknown	<0.1	<0.1%	-	<0.1	1%
Subtotal		0.8	<0.1%	<0.1	0.8	7%
Poly greenhouse	Nursery	1.9	<0.1%	2.6	4.6	38%
	Floriculture	1.4	<0.1%	0.3	1.6	14%
	Unknown	0.9	<0.1%	0.5	1.4	12%
	Vegetables	0.6	<0.1%	0.8	1.4	11%
	Empty	1.0	<0.1%	-	1.0	9%
	Mixed	-	-	0.1	0.1	1%
	Unmaintained	0.5	<0.1%	0.5	1.0	8%
Subtotal		6.2	<0.1%	4.9	11.1	93%
TOTAL		7.0	<0.1%	4.9	11.9	100%

Table 12 details the types of greenhouses recorded in RDN.

In total, there are 11.9 ha in greenhouse footprints, which is less than 0.1% of the ALR.

Figure 21. Distribution of greenhouse activities by parcel size and building type

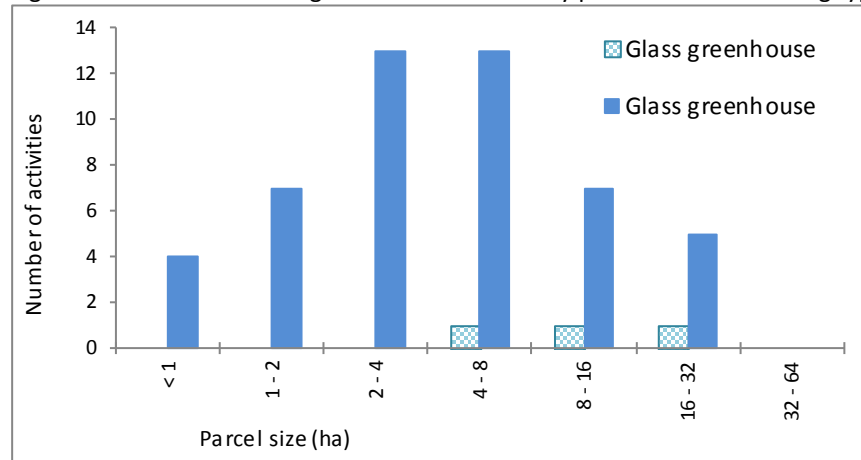


Figure 21 details the parcel size distribution of parcels with greenhouse activities.

The average parcel size where greenhouses are present is 7 ha.

The average parcel size by greenhouse building type is:

- 12.8 ha – glass greenhouses
- 7.0 ha – poly greenhouses

The size of the greenhouse footprint is presented in Figure 22.

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

¹¹ The areas reported in this table exclude external yards, parking, warehouses and other infrastructure related to the greenhouse operation. Poly refers to polyethylene.

Figure 22. Distribution of greenhouse activities by greenhouse size and building type¹²

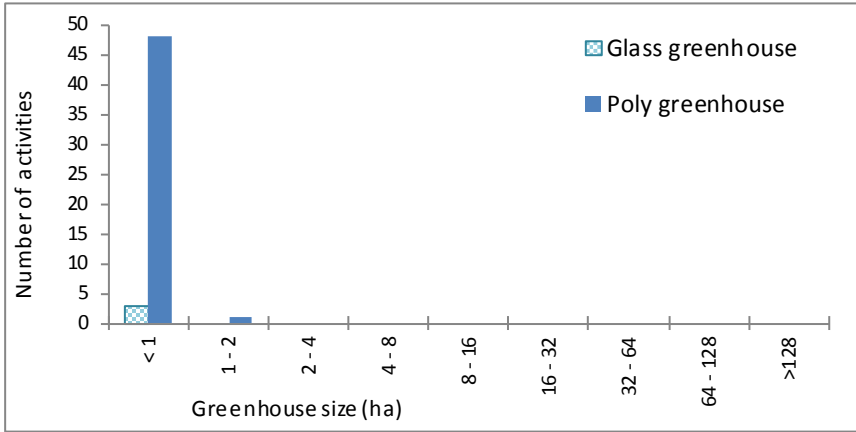


Figure 22 shows that most greenhouse building footprints are less than one ha in size.

In total, there are 49 poly greenhouse activities and 3 glass greenhouse activities.

Nearly all of the poly greenhouse activities (48 or 98%) are less than 1 ha in size. There is also one greenhouse activity of 1.6 ha.

¹² Each distinct greenhouse building type on one parcel is counted as one activity. Each activity will included 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. High salinity or microbial contamination renders water unsuitable for irrigation. Insufficient water sources or water delivery infrastructure limits the potential to increase agricultural production through irrigation.

Irrigation is captured at the field or land cover level by system type (sub-surface, sprinkler, giant gun, trickle) and then summarized by crop type to the total land area under irrigation. Irrigated land includes all irrigated field crops and may also include irrigated fallow farmland, land temporarily set aside for wildlife or other purposes, and land under preparation for planting. Also included are crops grown in greenhouses and crop barns. In addition, individual cultivated field crops are evaluated for percent of crop area under irrigation.

An Agricultural Water Demand Model (AWDM) has been run in RDN using three common climate scenarios. The AWDM is a water management planning tool that provides data on current and future agricultural water demands. The AWDM utilizes ALUI crop and irrigation data, as well soil and climate data from external sources. For more information, refer to the Regional District of Nanaimo Agricultural Water Demand Model Report.

Table 13. All crop types and irrigation

Cultivated field crop	Irrigation system in use (ha)				Total area irrigated (ha)	% of crop area irrigated
	Surface	Sprinkler	Giant gun	Trickle		
Forage & pasture	-	580	166	-	746	18%
Berries	20	9	< 1	72	101	98%
Vegetables	-	38	-	< 1	39	86%
Turf	-	18	7	-	25	100%
Nursery	-	3	-	14	18	85%
Cereals	-	6	-	-	6	22%
Vines	-	3	-	3	6	95%
Tree fruits	-	2	-	4	6	30%
Bare cultivated land*	-	< 1	2	< 1	3	12%
Floriculture	-	-	-	< 1	< 1	100%
Rhubarb	-	< 1	-	-	< 1	100%
Tree plantation	-	-	-	-	-	-
Nut trees	-	-	-	-	-	-
TOTAL FIELD CROP AREA IRRIGATED	20	660	175	93	948	21%
Greenhouses (maintained)	Flood and trickle irrigation				11	100%

* Bare cultivated land is land that is tilled or plowed land where the crop is not yet visible.

Table 13 outlines the type of irrigation systems used on the cultivated field crops in RDN.

A total of 948 ha of cultivated crops were irrigated: 20 ha used surface irrigation, 660 ha were irrigated using sprinkler systems, 175 ha used giant gun systems, and 93 ha used trickle systems.

Surface irrigation occurs exclusively on berry crops (cranberries), while giant gun systems occur primarily on forage & pasture crops, and sprinkler systems occur across a wide variety crop types.

Some crops require irrigation to thrive. The inventory found that nearly all berry, vegetable, vine and all turf crops utilized some type of irrigation system. In total, only 21% of RDN's cultivated area is irrigated (948 ha out of 4,441 ha of cultivated field crops).

Refer to Map 5 for more information.

Figure 23. Irrigation systems by percentage of cultivated land

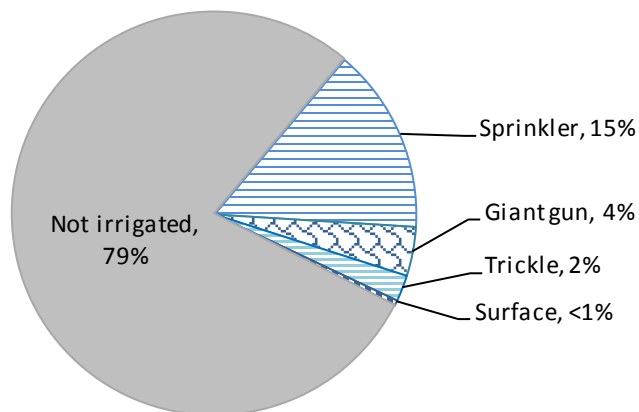


Figure 23 shows that only 21% of the cultivated land in RDN is irrigated.

Sprinkle irrigation systems are found on 15% of all cultivated land, followed by giant gun systems on 4% and trickle systems on 2% of all cultivated land.

Table 14. Top 20 crop types and irrigation

Cultivated field crop	Irrigation system in use (ha)				Total area irrigated (ha)	% crop area irrigated
	Surface	Sprinkler	Giant gun	Trickle		
Forage	-	411	27	-	438	26%
Forage & pasture	-	153	136	-	288	23%
Blueberries	-	2	-	59	61	97%
Mixed vegetables	-	24	-	< 1	25	100%
Turf	-	18	7	-	25	100%
Cranberries	20	-	-	-	20	100%
Pasture	-	14	4	-	18	2%
Ornamentals and shrubs	-	< 1	-	14	14	100%
Potatoes	-	10	-	-	10	73%
Mixed berries	-	< 1	-	7	8	100%
Raspberries	-	5	-	3	8	100%
Oats	-	6	-	-	6	29%
Grapes	-	3	-	3	6	95%
Apples	-	< 1	-	3	3	27%
Cultivated land	-	-	2	< 1	2	9%
Unmaintained forage/pasture	-	-	-	-	-	-
Christmas trees	-	-	-	-	-	-
Christmas trees (Unmaintained)	-	-	-	-	-	-
Fibre/pulp/veneer trees	-	-	-	-	-	-
Trees (plantation)	-	-	-	-	-	-
TOTAL	20	647	174	90	932	

Table 14 outlines the type of irrigation systems used on the top 20 individual field crops in RDN. Refer to Table 11 for details on the top 20 cultivated field crops.

Although 'forage' and 'forage & pasture' crops have the largest area under irrigation, only 26% and 23% of each respective crop type is irrigated.

LIVESTOCK

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

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

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

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

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

"Homesite" refers to the location of the main ranch or main barn of a livestock operation or farm unit¹³. Often, other types of farm infrastructure, such as corrals, paddocks, barns, and feeding/watering facilities, as well as the farm residence, are also at this location. This is the primary location of the farm unit where most livestock management occurs.

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

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

- **"Very Small"** Approximately 1 cow or horse or bison, 3 hogs, 5 goats or deer, 10 sheep, 50 turkeys, 100 chickens (1 animal unit equivalent)
- **"Small"** LESS THAN 25 cows or horses or bison, 75 hogs, 125 goats or deer, 250 sheep, 1250 turkeys, 2500 chickens (2 - 25 animal unit equivalents)
- **"Medium"** LESS THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5000 turkeys, 10,000 chickens (25 - 100 animal unit equivalents)
- **"Large"** MORE THAN 100 cows or horses or bison, 300 hogs, 500 goats or deer, 1000 sheep, 5000 turkeys, 10,000 chickens (over 100 animal unit equivalents).

¹³ Farm unit includes all the property belonging to a farm and may incorporate more than one parcel.

Table 15. Livestock activities

Livestock group	Livestock detail *	By parcel		Total number of activities
		Main type	Secondary type	
Equine	Horse	423	20	443
	Equine - other^	5	3	8
	Mixed equine	24	4	28
	Unidentified	31	-	31
	Equine total	483	27	510
Poultry	Chicken	79	57	136
	Chicken (Turkey)	1	1	2
	Chicken (Duck)	2	3	5
	Chicken (Goose)	-	1	1
	Chicken (Ratite)	-	1	1
	Chicken (Game bird)	1	-	1
	Turkey	3	3	6
	Duck	4	5	9
	Duck (Goose)	-	1	1
	Goose	3	4	7
	Goose (Turkey)	1	-	1
	Poultry total	94	76	170
Beef	Beef total	115	17	132
Sheep / lamb / goat	Sheep / lamb	44	21	65
	Sheep / lamb (Goat)	1	-	1
	Goat	21	9	30
	Sheep / lamb / goat total	66	30	96
Llama / alpaca	Llama / alpaca total	14	9	23
Dairy	Dairy	9	1	10
	Dairy (Beef)	2	-	2
	Dairy total	11	1	12
Swine	Swine total	3	5	8
Specialty livestock	Game bird	2	-	2
	Ratite	1	3	4
	Fur bearing	-	1	1
	Specialty livestock total	3	4	7
TOTAL		789	169	958

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

^ Equine - other includes ponies, miniature horses, donkeys, and mules.

Table 15 shows the 958 livestock activities recorded in the Regional District of Nanaimo.

Equine is the most common type of livestock activity accounting for 510 or 53% of all livestock activities.

Poultry is the second most common livestock type with 170 activities or 18% of all livestock activities. Nearly half of all poultry activities are a secondary livestock type, which means there is another livestock type of a greater scale on the same parcel.

Beef activities are the third most common with 132 activities or 14% of all livestock occurrences.

Table 16. Livestock activities by scale, intensity and location

Livestock group	Scale of activity				Total activities	By intensity		By location	
	Very small scale	Small scale	Medium scale	Large scale		Intensive	Non intensive	Homesite	Non homesite
Equine	37	466	7	-	510	-	510	473	37
Poultry	142	16	4	8	170	14	156	170	-
Beef	3	79	39	11	132	11	121	86	46
Sheep / lamb / goat	40	56	-	-	96	-	96	90	6
Llama / alpaca	5	17	1	-	23	-	23	22	1
Dairy	-	7	2	3	12	4	8	9	3
Swine	2	5	1	-	8	-	8	8	-
Specialty livestock	6	1	-	-	7	-	7	7	-
TOTAL	235	647	54	22	958	29	929	865	93

Table 16 details the 958 livestock activities recorded in the RDN inventory area by scale, intensity, and homesite location.

Although equines are the most prevalent type of livestock activity, there are few activities with greater than 25 equines (small scale). All equine activities are “non-intensive”.

There are “large” scale poultry, beef and dairy activities in RDN. Poultry, beef and dairy are the only livestock types to have “intensive” facilities.

Refer to Tables 17- 21 for more information.

Table 17. Equine activities

Scale of equine activity	Type of activity	By parcel		Total number of activities	By activity type		By location	
		Main Type	Secondary Type		Intensive	Non intensive	Homesite	Non homesite
Very small scale (1 equine)		32	5	37	-	37	34	3
Small scale (2 - 25 equine)		414	22	436	-	436	402	34
Small scale (2 - 25 equine)	Boarding	30	-	30	-	30	30	-
Medium scale (25 -100 equine)		1	-	1	-	1	1	-
Medium scale (25 -100 equine)	Boarding	6	-	6	-	6	6	-
TOTAL	TOTAL	483	27	510	-	510	473	37

Table 17 details the 510 equine activities recorded in RDN. Although equine activities are numerous, nearly all are “very small” scale (1 equine) or “small scale” scale (2 -25 equines) with only 7 “medium” scale activities. (25 -100 equines).

There are 36 equine operations identified as being associated with horse boarding. Horses in this region are generally kept as part of a rural residential lifestyle.

Table 18. Poultry activities

Poultry activity	Scale & type	By parcel		Total number of activities	By activity type	
		Main type	Secondary type		Intensive	Non intensive
Chicken	Very small scale (< 100 birds)	62	59	121	-	121
	Small scale (2,500 - 10,000 birds)	10	4	14	2	12
	Medium scale (2500 - 10,000 birds) - Broiler	4	-	4	4	-
	Large scale (> 10,000 birds) - Broiler	3	-	3	3	-
	Large scale (> 10,000 birds) - Layer	4	-	4	4	-
Duck	Very small scale (< 50 birds)	4	6	10	-	10
Goose	Very small scale (1,250 - 5,000 birds)	4	4	8	-	8
Turkey	Very small scale (< 50 birds)	-	3	3	-	3
	Small scale (50 -1,250 birds)	2	-	2	-	2
	Large scale (>5,000 birds)	1	-	1	1	-
TOTAL		94	76	170	14	156

Table 18 details the 170 poultry activities recorded in RDN. The majority of all poultry activities are “very small” scale or backyard flocks. In total, 142 “very small” scale activities were recorded (121 chicken, 10 duck, 8 goose, and 3 turkey). Of these 142 “very small” activities, 72 (51%) are “secondary” livestock activities, indicating that poultry activities frequently occur on parcels with other types of livestock.

There are 4 “medium” scale and 7 “large” scale (3 broiler and 4 layer) chicken activities. There is also 1 “large” scale turkey activity. All “medium” and “large” scale poultry activities are “intensive” operations. There are also 2 “intensive” “small” scale chicken activities.

Table 19. Beef activities

Scale of beef activity	By parcel		Total number of activities	By activity type		By location	
	Main type	Secondary type		Intensive	Non Intensive	Homesite	Non homesite
Very small scale (1 cow)	1	2	3	-	3	2	1
Small scale (2 -25 cattle)	69	10	79	-	79	52	27
Medium scale (25 -100 cattle)	36	3	39	9	30	26	13
Large scale (> 100 cattle)	9	2	11	2	9	6	5
TOTAL	115	17	132	11	121	86	46

Table 19 details the 132 beef activities recorded in the RDN inventory area. Over one-third of all activities (46 out of 132 or 35%) occur on animal “non-homesites”, which are secondary parcels to the animals main “homesite”. This indicates that some beef operations are utilizing more than parcel to support their herd.

In total, there are 86 beef “homesite” activities; 2 are “very small” scale, 52 are “small” scale, 26 are “medium” scale, and 6 are “large” scale.

There are 11 “intensive” beef activities, of which 9 are “medium” scale, and 2 are “large” scale.

Table 20. Sheep / lamb / goat activities

Activity	Scale	By parcel		Total number of activities	By activity type		By location	
		Main type	Secondary type		Intensive	Non intensive	Homesite	Non homesite
Goat	Very small scale (< 5 goats)	12	5	17	-	17	17	-
	Small scale (5 - 125 goats)	9	4	13	-	13	13	-
Sheep / lamb	Very small scale (< 10 sheep)	14	9	23	-	23	22	1
	Small scale (10 - 250 sheep)	31	12	43	-	43	38	5
TOTAL	TOTAL	66	30	96	-	96	90	6

Table 20 details the 96 sheep / lamb / goat activities recorded in RDN. In total, there are 30 goat activities and 66 sheep activities. All activities are “very small” or “small” scale.

Thirty of the 96 sheep / lamb / goat activities (31%) are “secondary” types of livestock, indicating that sheep / lamb / goat activities often occur on parcels with another type of livestock.

Table 21. Dairy activities

Scale of dairy activity	By parcel		Total number of activities	By activity type		By location	
	Main type	Secondary type		Intensive	Non intensive	Homesite	Non homesite
Small scale (2 - 25 cattle)	6	1	7	-	7	5	2
Medium scale (25 - 100 cattle)	2	-	2	1	1	1	1
Large scale (> 100 cattle)	3	-	3	3	-	3	-
TOTAL	11	1	12	4	8	9	3

Table 21 details the 12 dairy activities recorded in the RDN.

Of the dairy “homesite” activities, 5 are “small” scale, 1 is “medium” scale, and 3 are “large” scale. All animal homesite activities with more than 25 cattle (“medium” and “large” scale activities) utilize intensive facilities.

Figure 24. Livestock activities by scale and type (equine excluded)

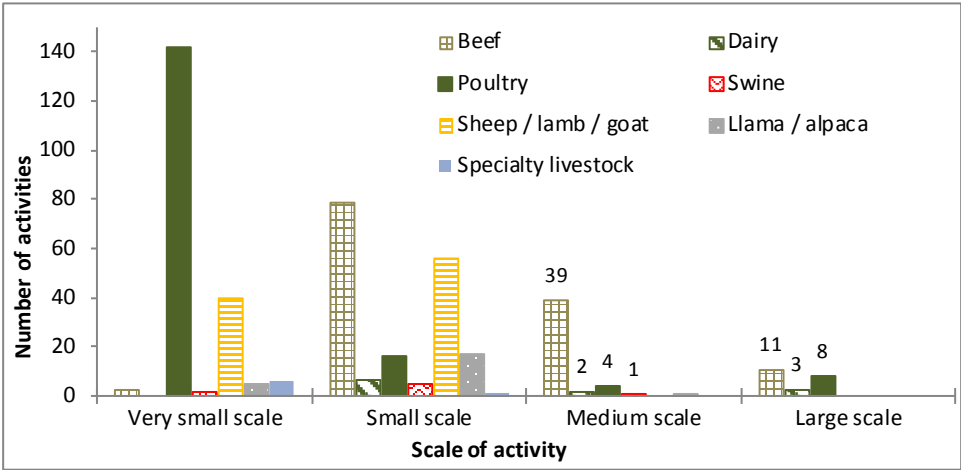


Figure 24 illustrates the scale of livestock activities in RDN (equine activities are excluded). There are “large” scale beef, dairy and poultry activities.

Figure 25. Equine compared to other livestock activities by scale

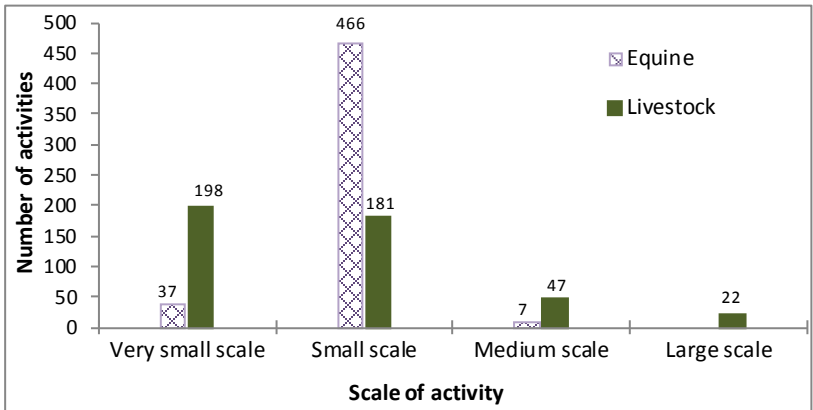


Figure 25 compares the scale of equine and other livestock activities. Although equine is the most numerous of all livestock activities, nearly all equine occurrences are “small” or “very small” scale. There are 19 “medium” or “large” livestock occurrences, while there are only 2 “medium” scale equine occurrences.

Figure 26. Livestock activities by parcel size and scale (equine excluded)

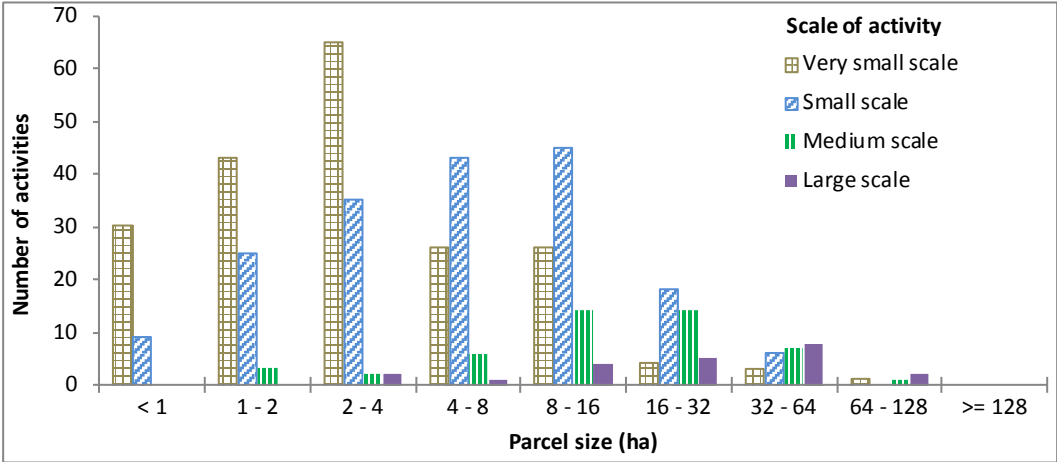


Figure 26 illustrates the distribution of livestock activities (equine excluded) by scale across parcel size categories. “Very small” and “small scale” livestock activities occurs across nearly all parcel size categories. The majority (86%) of the “large” scale livestock activities occur on parcels greater than 8 ha.

Figure 27. Livestock activities by parcel size and livestock type (equine excluded)

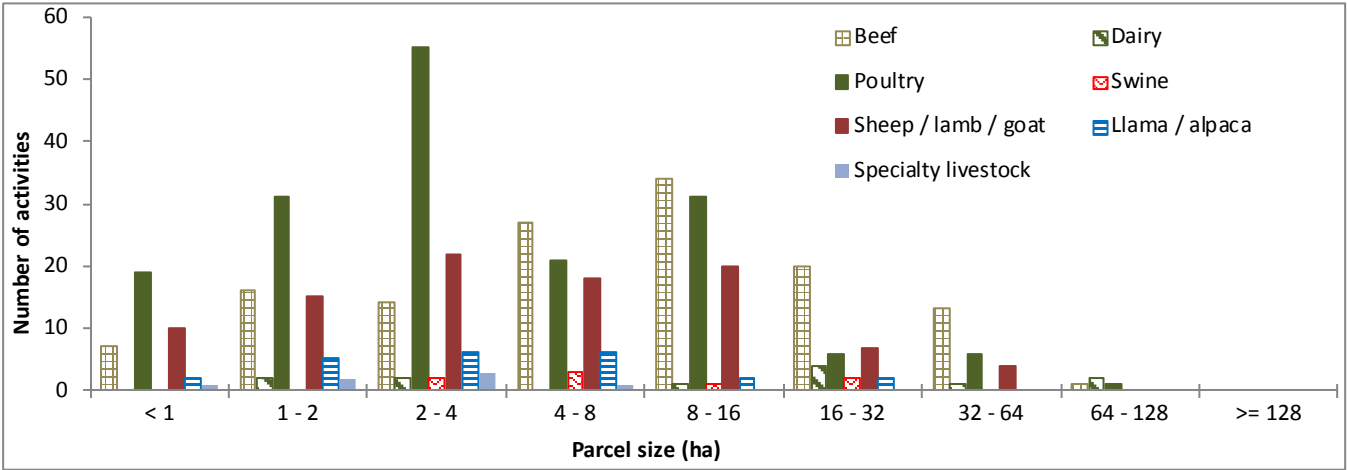


Figure 27 compares the distribution of livestock types across parcel size categories. Beef, poultry, and sheep / lamb / goat activities are numerous (refer to Table 16) and occur across the majority of all parcel size categories with livestock.

Figure 28. Equine and other livestock activities by parcel size

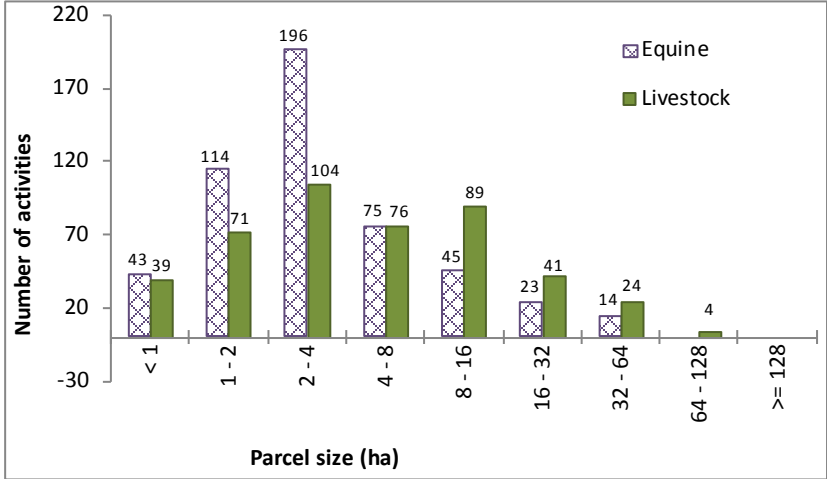


Figure 28 compares the distribution of equine and other livestock activities across parcel size categories.

Both equine and livestock activities occur on all parcel size categories less than 64 ha including on parcels < 1 ha.

Sixty-nine percent of all equine activities occur on parcels less than 4 ha while the majority of other livestock activities (52%) occur on parcels greater than 4 ha.

Equine activities are more likely than other types of livestock to occur on smaller parcels.

AQUACULTURE

Aquaculture is defined as the farming of fish, shellfish, and aquatic plants in fresh or salt water environments. In British Columbia, there are three main species groups that are currently cultured: salmon and other finfish, shellfish, and marine plants. Fish hatcheries used for conservation purposes are not considered to be aquaculture.

Aquaculture is a large scale commercial industry in British Columbia. In 2010, the BC aquaculture sector produced 90,600 tonnes of fish and shellfish generating over \$533.8 million in farmgate value¹⁴.

The scale system used to describe aquaculture activities is based on the volume of product generated and the method of distribution. The scale system includes 3 levels:

- **“Small”** scale can generate a limited amount of product or services for sale. Management requires less than one full time worker.
- **“Medium”** scale can generate product or services for sale to small local markets. Product can be distributed without utilizing a commercial distribution network.
- **“Large”** scale can generate bulk product or services for sale to a large customer base. Usually requires the utilization of a commercial distribution network.

The majority of aquaculture in Regional District of Nanaimo occurs outside of legally surveyed parcels on ocean foreshore or deep water sites. These sites are not captured as part of the Agricultural Land Use Inventory. Four land based aquaculture sites were identified in RDN.

Table 22. Land based aquaculture activities

Aquaculture type	Scale	Number of activities	Average parcel size (ha)
Finfish	Small scale	1	2
Mixed marine	Large scale	1	3
Shellfish	Medium scale	1	3
	Large scale	1	14
TOTAL NUMBER OF INLAND ACTIVITIES		4	

Table 22 details the 4 recorded land based aquaculture activities in RDN.

There were 1 finfish, 1 mixed marine, and 2 shellfish aquaculture activities.

¹⁴ Ministry of Environment, Oceans and Marine Fisheries Branch. Seafood Statistics. <http://www.env.gov.bc.ca/omfd/fishstats/aqua/index.html>

7. 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 17,723 ha of ALR on 2,409 parcels which is 95% of the ALR within the Regional District of Nanaimo. Another 121 ha of ALR was inventoried on Nanaimo River 2 and Nanaimo River 3 Indian reserves associated with the Snuneymuxw First Nation. ALR land on Indian reserves is not included in the following section as Indian reserves function differently from municipalities and electoral areas in terms of governance and decision making processes.

The remaining 5% of the ALR was excluded from the inventory as it was outside of legally surveyed parcels in rights-of-ways or foreshore (885 ha and 5% of the ALR area) or in slivers less than 500 sq m.

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

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

In total, 2,234 parcels, with 17,406 or 93% of the ALR land meet the above criteria and were included in the further analysis of the ALR. This includes 42 parcels that have less than 50% of their area in the ALR but each has greater than 10 ha of ALR land. These 42 parcels have a combined ALR area of 1,532 ha.

Figure 29. Parcel inclusion in the ALR



Figure 29 illustrates the distinction between parcels considered to be within or outside the ALR:

Considered to be within the ALR:

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

Considered to be outside the ALR:

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

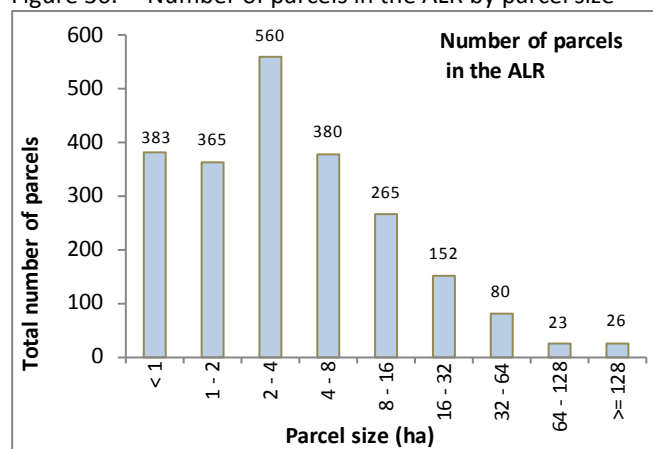
PARCEL SIZE & FARMING IN THE ALR

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

A farming operation may utilize more than one parcel as a farm unit¹⁵, 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.

The Agricultural Land Use Inventory is conducted as a ‘snapshot in time’. Potential future changes or subdivision to parcels in the ALR, are not considered in the following analysis.

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



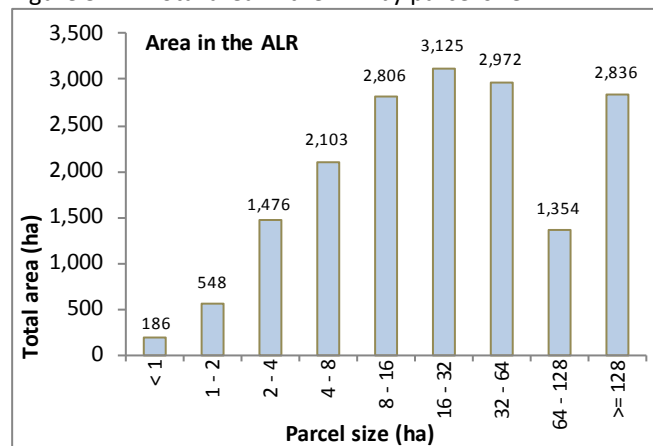
The average ALR parcel size in Regional District of Nanaimo is 10.8 ha and the median parcel size is 2.9 ha.

Figure 30 illustrates that of the 2,234 parcels in the ALR:

- 17% (383 parcels) are less than 1 ha.
- 58.5% (1,308 parcels) are less than 4 ha.
- 17% (380 parcels) are between 4 and 8 ha.
- 12% (265 parcels) are between 8 and 16 ha.
- 12.5% (281 parcels) are greater than 16 ha.

Refer to Map 6 for more information.

Figure 31. Total area in the ALR by parcel size



In Regional District of Nanaimo, the majority of the ALR area is in larger parcels.

Figure 31 illustrates that of the 17,406 ha in the ALR:

- 1% (185 ha) is on parcels less than 1 ha
- 13% (2,210 ha) is on parcels less than 4 ha.
- 12% (2,103 ha) is on parcels between 4 and 8 ha.
- 16% (2,806 ha) is on parcels between 8 and 16 ha.
- 59% (10,287 ha) is on parcels greater than 16 ha.

¹⁵ 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.

PARCEL AVAILABILITY FOR FARMING

Parcels that are “Not used for farming” can be further categorized as available for farming or unavailable for farming.

Properties “Not used for farming but available” for farming are properties that are currently “Not used for farming” with either no apparent use or an existing non-farm use that is compatible with agriculture, such as residential. These properties must have at least 0.4 ha of land cover and at least 50% of their parcel area that is available and has “potential for farming”.

Properties “Not used for farming and unavailable” are properties that are currently “Not used for farming” that have an established non-farm use that is incompatible with agriculture, or that do not have sufficient land available and with “potential for farming”.

Table 23. 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	568	25 %
Not used for farming but available	1291	58 %
Not used for farming and unavailable	375	17 %
TOTAL	2,234	100 %

Table 23 demonstrates that of the 2,234 parcels in the ALR, only 568 parcels or 26% are “Used for farming”.

There is significant potential to expand farming in the region as 58% of the ALR parcels are “not used for farming” but are available.

Figure 32. Number of farmed and not farmed parcels in the ALR by parcel size

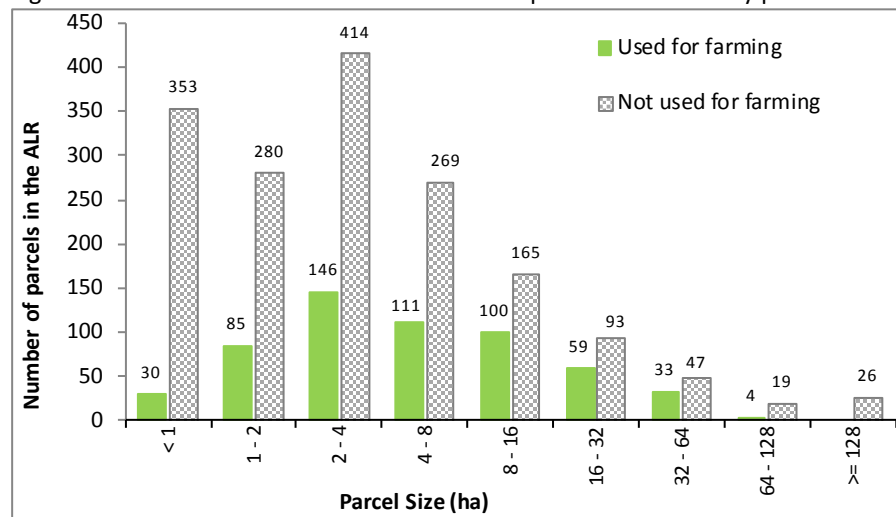


Figure 32 compares the distribution of “Used for farming” parcels with other parcels in the ALR.

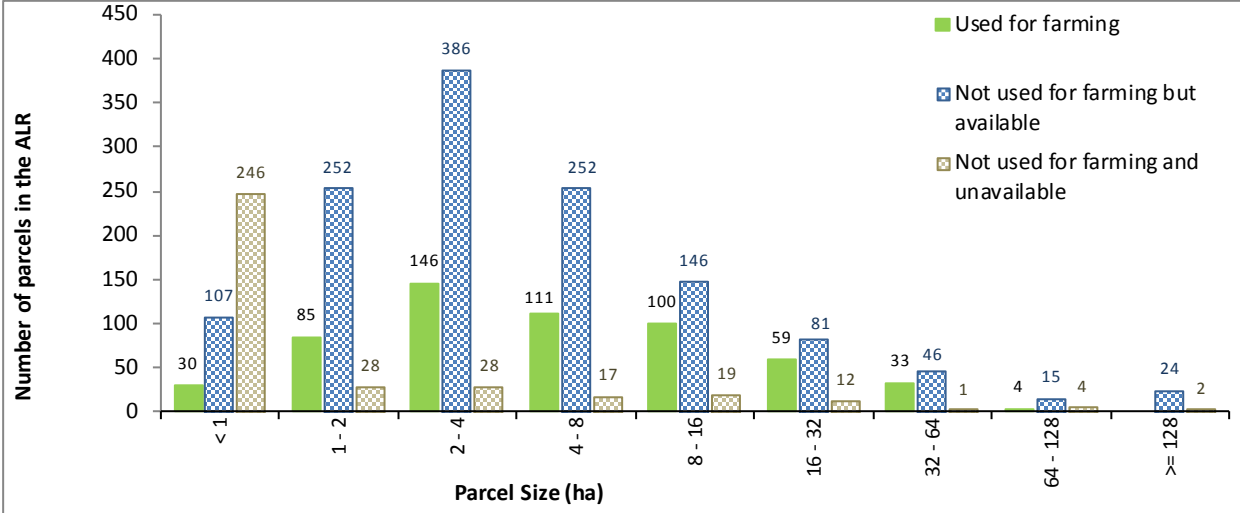
There are 1,666 parcels, or 75% of the ALR parcels, that are “Not used for farming”.

Of the ALR parcels less than 4 ha in size, 80% (1,047 parcels) are “Not used for farming”.

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

In Figure 33, the “Not used for farming” parcels are further categorized based on availability for farming.

Figure 33. Number of farmed, available for farming , and unavailable for farming parcels in the ALR by parcel size



Parcels that are “Not used for farming” can be categorized as available for farming or unavailable for farming.

Figure 33 compares the distribution of farmed, available for farming, and unavailable for farming parcels in RDN’s ALR. Of the parcels less than 1 ha, nearly two-thirds (64% or 246 parcels) are unavailable for farming. Eighty percent (80% or 198 out of 246 parcels) of the unavailable and less than 1 ha parcels are used for residential purposes.

There are 1,309 parcels considered to be available for farming in the ALR. These are parcels that may be available to expand farming in the region. There are parcels across most parcel size categories that are available for farming. Of the available parcels:

- 8% (107 parcels) are less than 1 ha.
- 57% (745 parcels) are less than 4 ha.
- 43% (564 parcels) are greater than 4 ha.

Figure 34. Number of farmed and not farmed parcels in the ALR by parcel size (line chart)

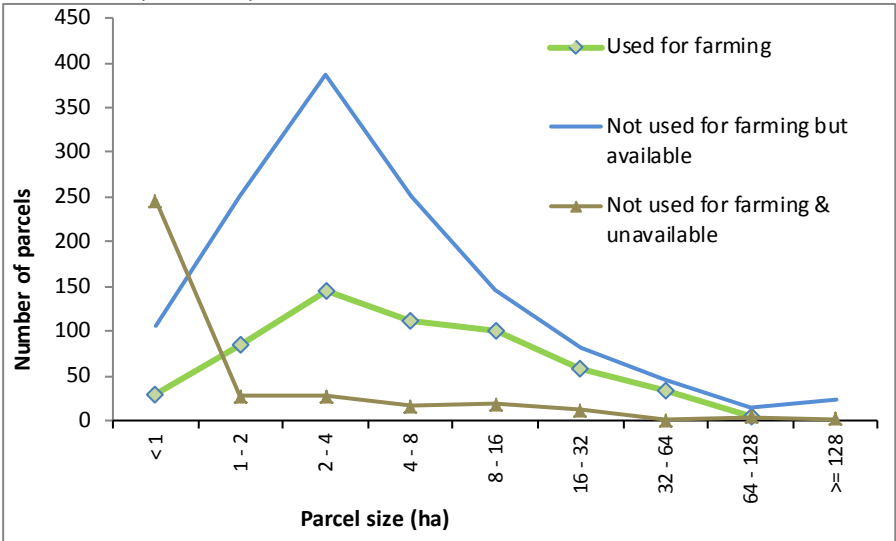


Figure 34 illustrates that parcels less than 1 ha have a high likelihood of being unavailable for farming.

Although parcels of all sizes are “Used for farming”, there are larger numbers of parcels that are available for farming, but not farmed across most parcel sizes.

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

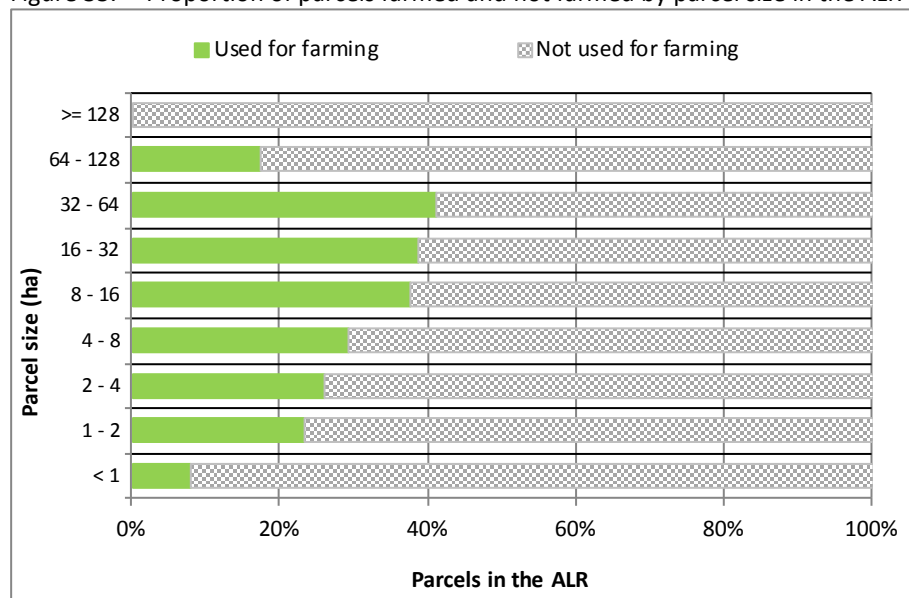


Figure 35 shows that the proportion of parcels “Used for farming” generally increases as the parcel size increases.

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

There are 26 parcels greater than 128 ha in RDN’s ALR, all of which are “Not used for farming”. Twenty-one of these parcels are associated with forestry, 2 have no apparent use, 1 is associated with Englishman River Provincial Park, 1 is associated with the Nanaimo Regional Airport, and 1 is associated with utilities.

Figure 36. Proportion of land cover by parcel size in the ALR

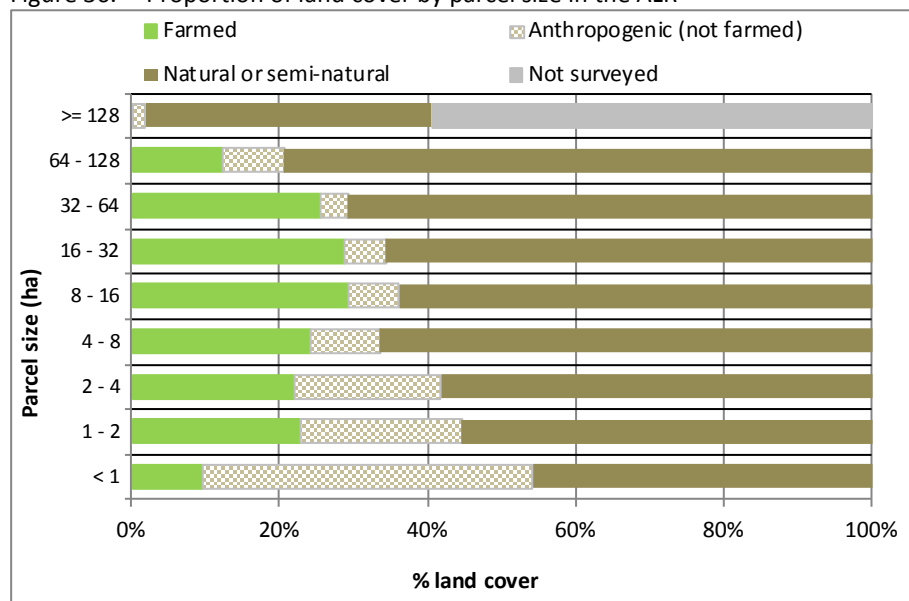


Figure 36 shows that the proportion of farmed land cover generally increases as the parcel size increases.

The largest proportions of “anthropogenic” (not farmed) land cover occurs on parcels less than 1 ha.

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 which can make it more difficult for a farmer to acquire and convert this land to farmland in the future.

In the following analysis cabins/cottages, mobile homes, single-family houses, duplexes, townhouses, apartments, motels, dormitories, and institutional living buildings are included.

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

Properties “Not farmed but available” for farming are properties that are currently “Not used for farming” with either no apparent use or an existing non-farm use that is compatible with agriculture, such as residential. These properties must have at least 0.4 ha of land cover and at least 50% of their parcel area that is available and has “potential for farming”.

Properties “Not farmed and unavailable” are properties that are currently “Not used for farming” that have an established non-farm use that is incompatible with agriculture, or that do not have sufficient land available and with “potential for farming”.

Average land improvement values of Regional District of Nanaimo properties with residences in the ALR were as follows:

- Estate single family house \$ 410,644
- Large single family house \$ 344,671
- Medium single family house \$201,589
- Small single family house \$103,055
- Single mobile home \$66,510

(Calculated using 2012 BC Assessment database - Last improvement value)

Table 24. 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	475	21%	93	4%	568
Not used for farming but available	905	41%	386	17%	1291
Not used for farming and unavailable	195	9%	180	8%	375
TOTAL	1,575	71%	659	29%	2,234

Table 24 shows that 1,575 parcels or 71% of the ALR parcels have residences.

Of the ALR parcels with residences, 1,100 or 70% are "Not used for farming" (905 parcels are available and 195 parcels are unavailable for farming).

Table 25. 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	41 (4)	89 (26)	429 (361)	69 (69)	14 (14)	3 (1)	645	475
Not used for farming but available	80 (17)	247 (100)	849 (653)	126 (115)	17 (15)	9 (5)	1328	905
Not used for farming and unavailable	5(4)	35 (28)	100 (148)	4 (9)	(2)	2 (4)	146	195
TOTAL RESIDENCES	126	371	1,378	199	31	14	2,119	
TOTAL PARCELS	25	154	1,162	193	31	10		1,575

* 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 4 mobile home parks and 2 dormitory, 6 cabin/cottage, 1 townhouse, and 1 motel style residences

Table 25 demonstrates that there are 1,575 parcels in the ALR with 2,119 residences (some parcels have more than one residence). Most residences are "medium" houses. There are 31 "estate" houses in the ALR, of which 17 or 55% are on parcels "Not used for farming".

Appendix A - Maps

See the Regional District of Nanaimo, 2012 ALUI Maps

<http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment>

Strengthening Farming → Planning for Agriculture → Agricultural Land Use Inventories → Vancouver Island

- Map 1. Land cover & farmed area
- Map 2. Land use & farmed area
- Map 3. Availability of land for farming
- Map 4. Cultivated crops
- Map 5. Irrigation on cultivated crops
- Map 6. ALR parcel size

Maps are 28 x 34 inches landscape

Appendix B – Indian reserves

Land cover on Indian reserves

Table B1. Land cover and farmed area on Nanaimo River 2 and Nanaimo River 3 Indian reserves

Land cover*		ALR		Outside ALR (ha)	Total area (ha)
		In ALR (ha)	% of ALR		
Actively farmed	Cultivated field crops	71	< 1%	<1	71
	Farm infrastructure	<1	< 1%	-	<1
FARMED SUBTOTAL		71	< 1%	<1	71
Anthropogenic (not farmed)	Managed vegetation	2	< 1%	<1	2
	Residential footprint	4	< 1%	<1	4
	Transportation	<1	< 1%	<1	<1
	Utilities	2	< 1%	-	2
	Waterbodies	<1	< 1%	-	<1
SUBTOTAL		7	< 1%	<1	7
Natural and Semi-natural	Vegetated	36	< 1%	2	39
	Wetlands	<1	< 1%	-	<1
	Natural bare areas	<1	< 1%	<1	<1
	Waterbodies	6	< 1%	<1	7
SUBTOTAL		43	< 1%	3	46
TOTAL		121	< 1%	3	124

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

Table B1 shows the extent of different land cover types across Nanaimo River 2 and Nanaimo River 3 Indian reserves.

Table B2. Forage & pasture crops on Nanaimo River 2 and Nanaimo River 3 Indian reserves

Forage and pasture crops		ALR		Outside ALR (ha)	Total area (ha)
		In ALR (ha)	% of ALR		
Forage (managed)	Grass	67	37%	-	67
Forage & pasture (managed)	Grass	3	2%	< 1	3
TOTAL		71	39%	< 1	71

Table B2 the details the cultivated crops recorded on Nanaimo River 2 and Nanaimo River 3 Indian reserves. Forage and pasture is the only crop type identified.

Of the 71 ha of forage and pasture, 8 ha occurs on Nanaimo River 2 and 63 ha occur on Nanaimo River 3 Indian reserve.

No irrigation was recorded on these cultivated crops.

Appendix C – Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Land use – Land in transition – Parcel with developed land in transition or where future change is likely to occur. Includes construction sites, tree removal, and demolished buildings.

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

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

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

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

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

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

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

Natural and Semi-natural – Grass – Land cover dominated by herbaceous plants with long, narrow leaves characterized by linear venation; including grasses, sedges, rushes, and other related species.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Used for farming – See final page of glossary.

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

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

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