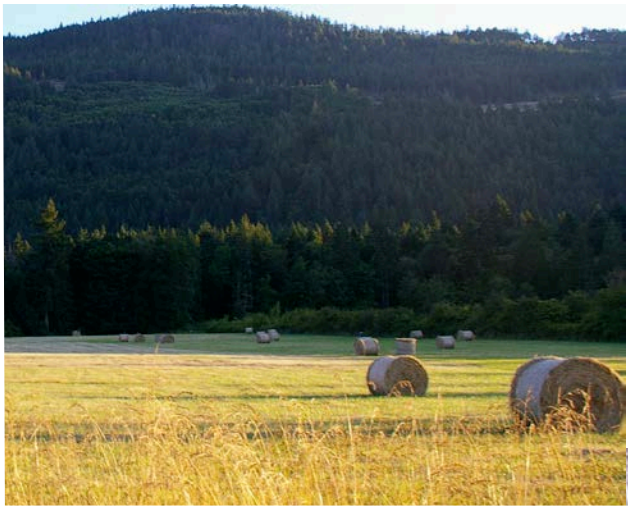
Agricultural Land Use Inventory Salt Spring Island

Summer 2017

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British Columbia Ministry of Agriculture
Strengthening Farming Program

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- BC Ministry of Agriculture,
- Islands Trust, Salt Spring Island Local Trust Committee and
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Disclaimer: The governments of Canada and British Columbia are committed to working with industry partners. Opinions expressed in this document are those of the authors and not necessarily those of the Government of Canada.

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Contact Information

For further information on the content and development of this report please contact:

Ministry of Agriculture
Innovation & Adaptation Services Branch,
Strengthening Farming Program
1767 Angus Campbell Rd, Abbotsford, BC V3G 2M3
(604) 556-3001 or 1-888-221-7141 (toll free)

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Acronyms

AGRI	BC Ministry of Agriculture
ALR	Agricultural Land Reserve
ALUI	Agricultural Land Use Inventory
AUE	Animal Unit Equivalent
GIS	Geographic Information Systems

Executive Summary

In the summer of 2017 the BC Ministry of Agriculture and its partners conducted an Agricultural Land Use Inventory (ALUI) on Salt Spring Island. The ALUI was funded by Islands Trust and *Growing Forward 2*, a federal-provincial territorial initiative.

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

Area of Interest and Methodology

Included in the inventory were all parcels:

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

There were 2,943 ha of ALR on Salt Spring Island. Of this area:

- 97% or 2,855 ha was inventoried
- 3% or 88 ha was outside of legally surveyed parcels in rights-of-ways and waterbodies.

The inventoried 2,855 ha of ALR is considered the "**effective ALR**" as it is within legally surveyed parcels.

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

Land Cover and Farming Activities

Over half of the effective ALR (60% or 1,698) was in a natural or semi-natural state. The remainder of the effective ALR was anthropogenically modified in vegetation, buildings, and roads (9% or 266 ha) or was farmed (31% or 891 ha). An additional 376 ha of land outside the ALR was farmed bringing the total farmed land cover area to 1,267 ha.

There were 1,213 ha of cultivated crops on Salt Spring (859 ha in the ALR and 354 ha outside the ALR). Forage & pasture was the most common crop accounting for 91% of all cultivated land. Pasture accounted for 381 ha, forage accounted for 356 ha, fields used for both forage and pasture accounted for 231 ha, and unused forage/pasture[1] accounted for 133 ha.

Also recorded were tree fruits (43 ha), vegetables (38 ha), vines & berries (15 ha), floriculture (6 ha), nut trees (2 ha), Christmas trees (1 ha), herbs/hops (1 ha), nursery crops (1 ha), and cereals (1 ha).

[1] Unused forage/pasture fields have not been cut or grazed this growing season, but could be brought into use at any time.

Irrigation information was captured by crop type and irrigation type to aid in developing an agricultural water demand model. Irrigation is not overly common on Salt Spring Island with only 8% of the cultivated land being irrigated.

Livestock

Livestock activities were recorded, but were difficult to measure using a windshield survey. Livestock findings are reported as a range of animal unit equivalents for each parcel.

Equines were the most abundant livestock type on Salt Spring Island and accounted for 37% of the estimated animal unit equivalents (AUEs). Sheep / goats accounted for 31% of the AUEs and beef accounted for 18%. Most livestock occurrences were "small" scale with less than 25 AUEs. There were also 6 "medium" scale activities (25 -100 AUES); 3 were beef, 2 were sheep / goat, and 1 was equine.

ALR Utilization

Parcels in the ALR were categorized as "Used for farming" or "Not used for farming" based on the proportion of the parcel in cultivated crops, farm infrastructure, and/or the scale of livestock production. "**Used for farming**" parcels have the majority of their area in agricultural use or have a significant intensity of farming activity. Refer to the glossary for the full definition.

Of all ALR parcels, 28% were "Used for farming" while 72% were "Not used for farming". The median parcel size of a "Used for farming" parcel was 4.8 ha while the median parcel size of a "Not used for farming" parcel was smaller at 2.2 ha.

ALR Availability

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

- 131 parcels (29%) were used for farming
- 221 parcels (48%) were available for farming
- 104 parcels (23%) were unavailable for farming

A parcel is considered to be "Available for farming" if it is not already "Used for farming", does not have a land use that excludes agriculture, and has at least 50% of its area and at least 0.4 ha in land with potential for farming. Available for farming parcels provide an initial selection of parcels that may be available for agricultural expansion. Land prices and ecological goods and services are not considered when assessing parcel availability. Of the **privately owned and available** ALR parcels:

- 75 parcels (34%) are less than 2 ha in size
- 130 parcels (59%) are less than 4 ha in size
- 91 parcels (41%) are greater than 4 ha in size
- 19 parcels (9%) are greater than 16 ha in size

There is evidence that small parcels are less likely than larger parcels to be utilized for farming. On Salt Spring Island there are 96 ALR parcels less than 1 ha. Of these parcels, only 7% (7 parcels) are "Used for farming" while 69% (66 parcels) are "Unavailable for farming". Residential use accounts for the majority of the small and "Unavailable for farming" parcels.

Agrologist Comments

Agricultural History[2,3]

Salt Spring Island is part of the traditional territory of a number of First Nations. Aboriginal activities on the island date back thousands of years. First Nations' relationships with the island's marine and land ecosystems evolved slowly over time resulting in a culturally modified land and seascape that satisfied most of their needs. Foods were harvested, gathered, cultivated and preserved in quantities that sustained their communities and met their spiritual, ceremonial, social and trade requirements.

During the mid to late 1800s Victoria's population was rapidly increasing which prompted Governor James Douglas to designate Salt Spring Island as a food-producing hinterland for Victoria. In 1859 the first non-native settlers arrived on Salt Spring Island to begin farming. By 1880 many of the best-located farms were established and orchards were planted. Ruckle Farm, established in 1872, is the oldest remaining example of these first farms and is the oldest family farm still in operation in BC.

Early settlers used the mountainous areas of the island to graze livestock. The introduction of grazing animals marked the beginning of a number of agriculturally induced changes to the island ecosystem including the introduction of non-native forage plants, the removal of large predators such as wolves and bears, and the clearing of large areas for forage production. By the 1890s Salt Spring Island was exporting its first specialty crop (fruit) by boat and rail to markets in Eastern Canada. Dairy farming and poultry production had also been identified as economically viable specialties. In December of 1895, the Islands Farmers' Institute was founded.

By the early 1900s Salt Spring Island was self-sufficient in forage for local livestock and started exporting feed to Victoria and other Gulf Islands.. Dairying was important and the butter produced by the Salt Spring Island Creamery was largely exported to Victoria. Poultry and sheep farming had also become important economic activities.

After World War II agricultural activities on Salt Spring steadily declined due to rising costs of feed and shipping coupled with the growth of more profitable farming locations in other areas of the Province. This decline was marked by the close of the Salt Spring Island Creamery in 1957.

A revival of agriculture on Salt Spring was recognized with the reestablishment of the Salt Spring Island Fall Fair in 1976, the acquisition of the current Salt Spring Islands Farmers Institute Fair Grounds on Rainbow Road in 1979 and the completion of the exhibition hall on the grounds in 1982. This period was also noted for the growth of small-scale, value-added (often organic) agricultural enterprises that catered to increasing numbers of tourists and seasonal residents.

Climate[4]

The climate of Salt Spring Island and the Southern Gulf Islands is similar to that of the northern Mediterranean region with its cool dry summers and humid or wet mild winters. The average annual precipitation is 910 mm and the average annual temperature is around 10°C. July, August, and September are generally the warmest and driest months. The average air temperature between July and September is 17°C with less than 8% of the annual precipitation occurring during this period. The

[2] Rautenbach, U. 2005. *1895-2005 Agriculture – Our Island Tradition.* Published by the Islands Farmers Institute. Salt Spring Island, BC.
[3] Harrington, S. and J. Stevenson (eds.) 2005. Islands in the Salish Sea: A Community Atlas. TouchWood Editions, Canada.
[4] van Vliet, L., A. Green and E. Kenney. 1987. *Soils of the Gulf Islands of British Columbia: Volume 1, Soils of Salt Spring Island.* Research Branch, Agriculture Canada. Vancouver, BC.

wettest time of the year occurs between November and January when almost 50% of the annual precipitation falls.

Soils[5]

The soils of Salt Spring Island have mainly developed from materials that have been transported and deposited by glaciers, rivers, gravity, lakes and the sea since the last ice age. Only a few soils have developed on more recent fluvial materials, shorelines and organic deposits. Soils with a capability for agriculture are generally found at elevations less than 100 m above sea level on gently sloping terrain, or in valley bottoms or topographic depressions. Approximately 17% of Salt Spring's land area is comprised of these soil types.

Soils that exhibit more severe limitations for agricultural crop production and offer fewer opportunities for improvement tend to be found at elevations higher than 100 m above sea level and generally occur on more steeply sloped terrain. Approximately 30% of Salt Spring's soils meet these criteria. Most of these soils are quite shallow and tend to be very stony. Agricultural uses on these soils tend to be restricted to natural grazing, the production of perennial forage crops or specifically adapted crops such as tree fruits and grapes.

On Salt Spring Island, agricultural capability is limited by six different factors: droughtiness caused by soil and/or climate characteristics; soils that prevent adequate root penetration and drainage; degree of stoniness; depth to bedrock; steep topography or slope pattern; and excess water.

Water

Approximately 17% or 150 mm of Salt Spring Island's annual rainfall falls during the period from May to September. In an average year, depending on soil type and crop coverage, a moisture deficit is experienced between May and August, when evapotranspiration losses exceed precipitation levels. In contrast, over 80% of the annual rainfall occurs during the period from October to April. Exceptionally dry years may provide as little as 560 mm of annual rainfall while wet years can yield over 1000 mm.

Salt Spring Island can be divided into 24 topographically separated watersheds.[6] There are nine freshwater lakes comprising a total area of 292 ha; all are currently sources for water. The largest lake, St. Mary Lake (182 ha) supplies water to residents in the North Salt Spring Water District. Cusheon Lake (27 ha) supplies water to residents in the watershed. Maxwell Lake (26 ha) and St. Mary Lake provide water to Ganges Village. Weston Lake (19 ha) supplies water to the community of Fulford. The remaining lakes Bullock, Stowell, Ford, Roberts and Blackburn - supply local residents and range from 2 – 11 ha in size.[7]

There are increasing concerns about water use, the drawing down of the aquifer and its susceptibility to saltwater intrusion – particularly near coastal areas, and phosphorus loading in a number of the Island's lake systems. Agricultural activities are affected by or implicated in each of these issues. In 2013 the Salt Spring Island Watershed Protection Alliance was established to help address these concerns by providing a coordinated approach between the agencies who have a responsibility for legislation and regulation of various aspects of Salt Spring Island's watersheds and fresh water resources.[8]

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[5] *Ibid.*

[6] Harrington, S. and J. Stevenson (eds.) 2005. *Islands in the Salish Sea: A Community Atlas.* TouchWood Editions, Canada.

[7] van Vliet, L., A. Green and E. Kenney. 1987. *Soils of the Gulf Islands of British Columbia: Volume 1, Soils of Salt Spring Island.* Research Branch, Agriculture Canada. Vancouver, BC.

[8] http://www.ssiwatersheds.ca/

With its relatively high number of lakes, Salt Spring Island is uniquely able to consider the possibility of using surface water for field irrigation purposes. However, the irrigation of large field areas is generally not practiced. Groundwater may be used for irrigation outside of areas serviced by a water supply system, and to augment supplies from other sources. The Salt Spring Island water budget study to be completed in March 2018 will provide additional information on groundwater use and stress within the island's aquifers.

There are presently 109 active licences for surface water use for agricultural purposes (irrigation, greenhouse, nursery and stock watering) and one groundwater licence application for irrigation purposes currently under review by the Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

Salt Spring Island's Current Agricultural Situation[9]

Agricultural Activities

- In 2017, 2,943 ha (17%) of Salt Spring's land base was in the Agriculture Land Reserve (ALR)

Nature of Farmers

- 196 farms were reported during the 2016 Census. Most of the land area associated with these farms was owned, rather than rented or leased from others
- In 2016, 290 farm operators were reported.
- The average age of farm operators continued to increase slightly from 57.0 in 2011 to 58.3 in 2016 – a figure slightly higher than the Canadian average of 55.0.

Economic Viability

- In 2016 gross farm receipts were $13.8 million, a fourfold increase from the $3.8 million reported in 2011.
- 64% of farms reported gross farm receipts of less than $10,000
- 4 farms reported annual gross earnings of over $250,000 with 1 farm reporting sales in excess of $2,000,000.
- Total farm expenses were $11,931,661, leaving a per farm average annual net income of approximately $9,554 for the 196 farms reporting.
- This indicates that while a few farms are doing exceptional well, profitability is a concern for the majority of the farms.

There is currently strong support for farming on Salt Spring Island from both residents and organizations. The weekly farmers market, Community Supported Agriculture offerings, and agri-tourism events are generally well received and thriving on the Island. There are also a number of organizations working to support farmers including the Salt Spring Island Farmers' Institute, Island Natural Growers (ING) and the Salt Spring Island Agricultural Alliance.

[9] Statistics Canada, 2016 Census of Agriculture http://www5.statcan.gc.ca/cansim

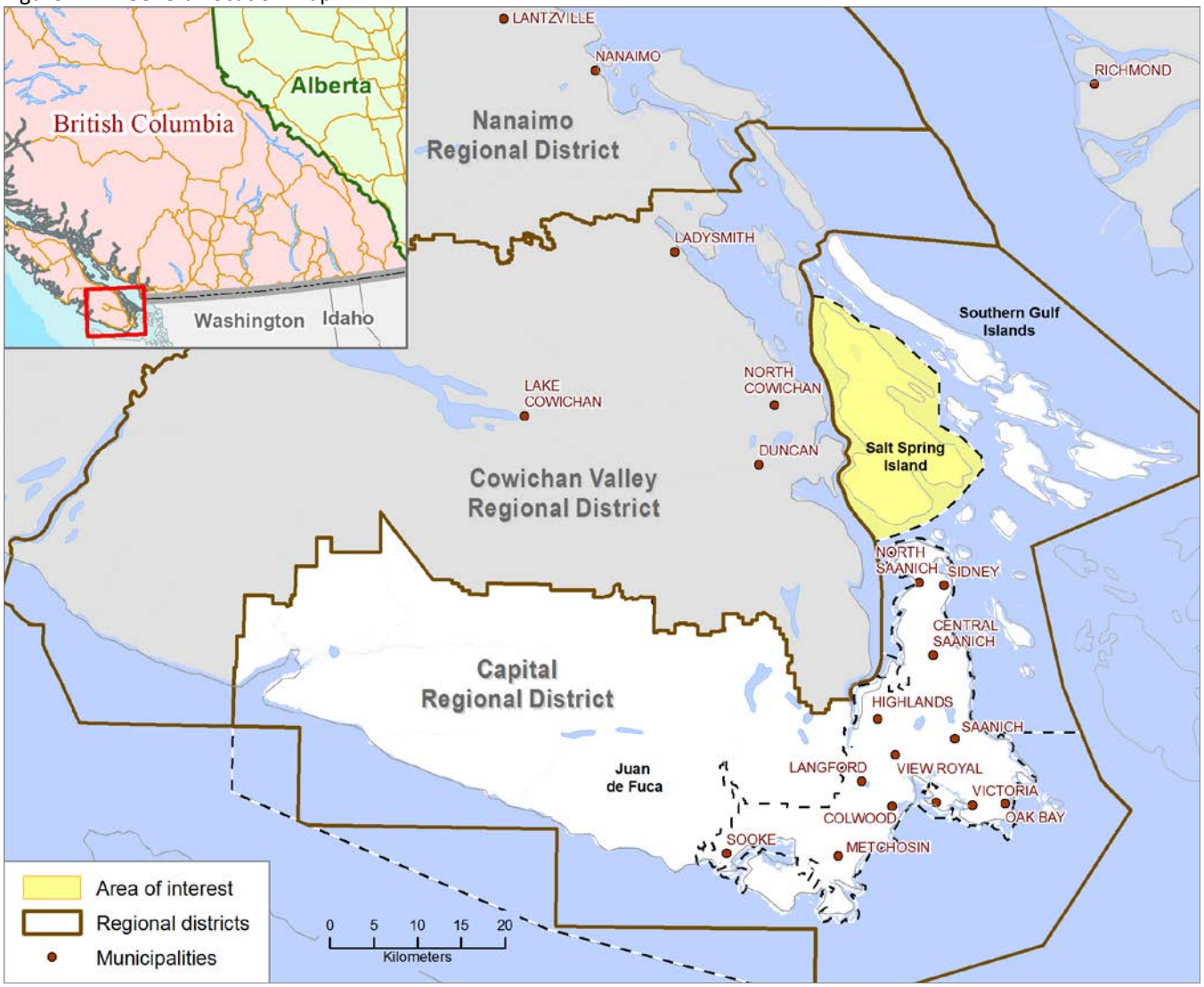
1. General Information

1.1 OVERVIEW

Salt Spring Island is located off the east coast of Vancouver Island in the Strait of Georgia, between Victoria and Vancouver, British Columbia. The Island has a total area of 18,555 hectares (45,849 acres), and a full-time residential population of approximately 10,557[10], making it the largest and most populated of the Southern Gulf Islands. Salt Spring Island is accessible by three BC Ferry routes and scheduled floatplane services from Vancouver.

Salt Spring is the most visited of the Southern Gulf Islands and has a thriving tourism industry. Other economic activities include the social services sector (health and education), construction, retail, arts and crafts, forestry, and farming.

Figure 1. General location map



[10] Statistics Canada. 2016 Census of Population, Saltspring RDA http://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E

1.2 AGRICULTURAL LAND RESERVE

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

In 2017, there were 2,943 ha[11] of ALR on Salt Spring Island (see Figure 3). This is approximately 17% of the Islands' total land area (17,553 ha[12]).

The ALR area includes:

- 2,855 ha of inventoried parcels
- 88 ha outside of legally surveyed parcels in rights-of-ways and waterbodies

The 2,855 ha of ALR on inventoried parcels is considered the **'effective ALR'** as these areas are within legally surveyed parcels and are subject to local and/or regional planning decisions.

Figure 2. Proportion of ALR by category

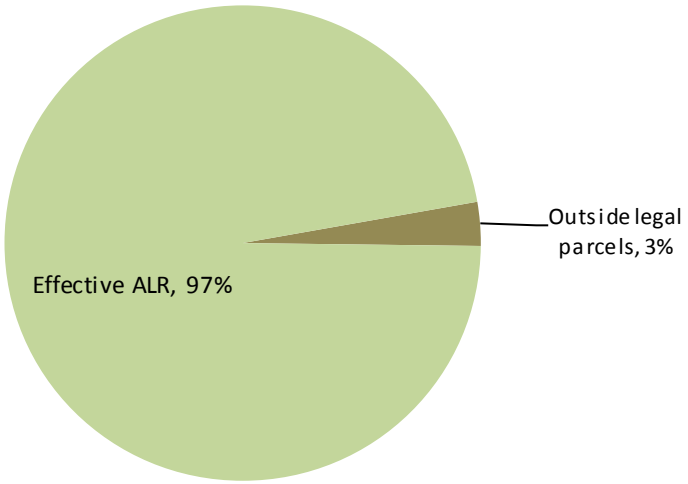


Figure 2 shows the proportion of different categories of ALR land on Salt Spring Island.

In total, 97% of the ALR is considered "effective ALR" and forms the basis of this report.

The remaining area is outside of legally surveyed parcels in unsurveyed Crown land (3%).

[11] Provincial Agricultural Land Commission (ALC) Agricultural Land Reserve Polygons. Calculated in GIS.
[12] Calculated in GIS.

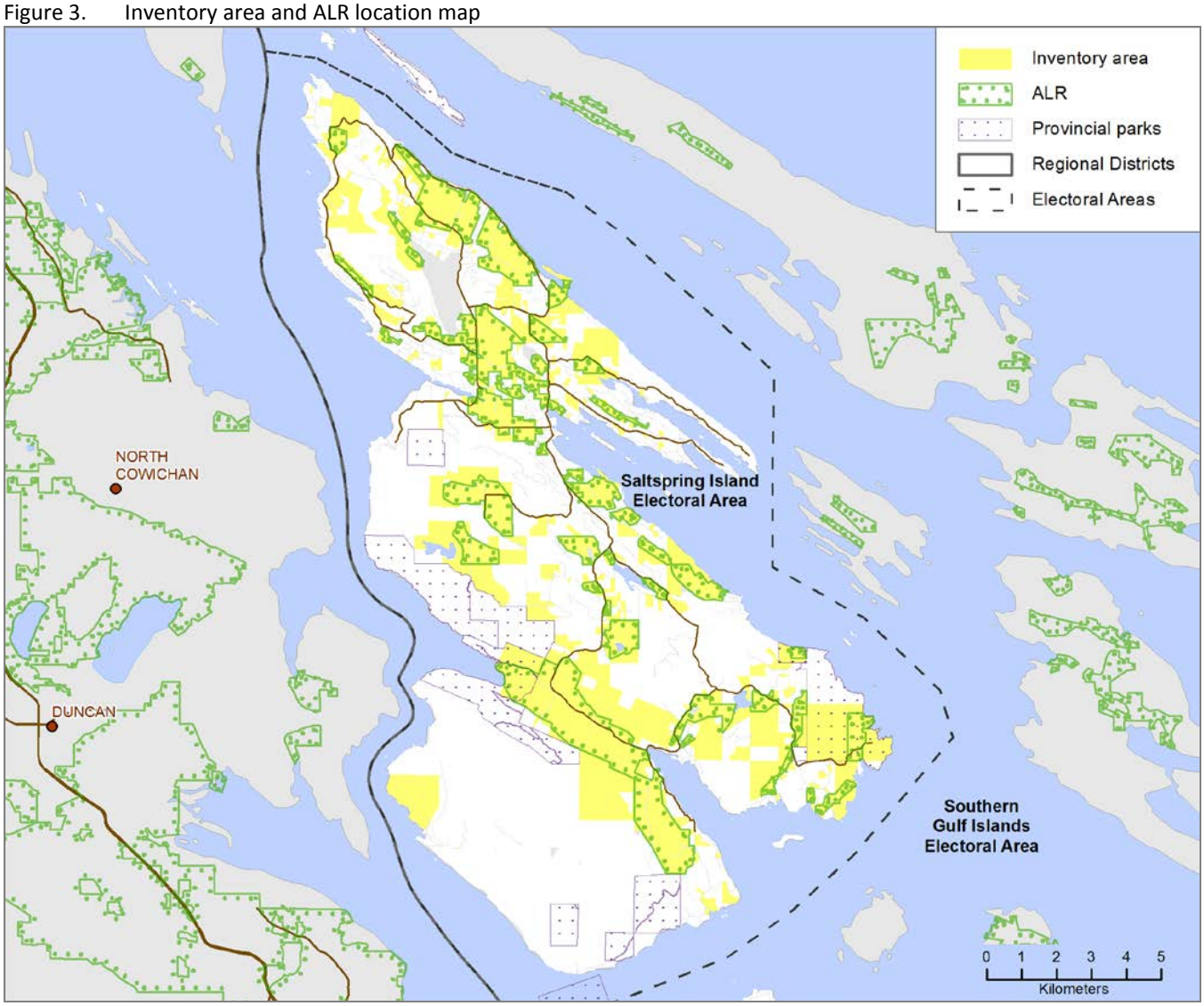
1.3 INVENTORY AREA

The total inventory area encompassed 828 parcels with a combined area of 6,214 ha. Included were all parcels:

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

The amount of ALR included in the inventory area is 2,855 ha. Another 3,359 ha of inventoried land was on parcels completely outside the ALR that met one of the other inventory criteria.

Figure 3. Inventory area and ALR location map



2. Land Cover and Farmed Area

2.1 LAND COVER AND FARMED AREA

Land cover describes the biophysical material at the surface of the earth and is distinct from land use which describes how people utilize the land. Refer to Section 4 for information on land use.

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

Four land cover types are considered "**Farmed**":

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

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

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

Table 1. Land cover and farmed area

Land cover*		In ALR (ha)	% of effective ALR*	Outside ALR (ha)	Total area (ha)
Actively farmed	Cultivated field crops	769	27%	309	1,078
	Farm infrastructure	31	1%	21	52
	Greenhouses	2	< 1%	1	3
Inactively farmed	Unused/unmaintained field crops	90	3%	45	135
FARMED SUBTOTAL		**891**	**31%**	**376**	**1,267**
Anthropogenic (not farmed)	Managed vegetation	128	4%		
	Residential footprint	103	4%		
	Settlement	13	< 1%		
	Waterbodies	10	< 1%		
	Non Built or Bare	7	< 1%		
	Transportation	4	< 1%		
ANTHROPOGENIC SUBTOTAL		**266**	**9%**		
Natural & Semi-natural	Vegetated	1,653	58%		
	Wetlands & waterbodies	45	2%		
NATURAL & SEMI-NATURAL SUBTOTAL		**1,698**	**60%**		
Not surveyed	Unknown	<1	< 1%		
TOTAL ALR INVENTORIED		**2,855**	**100%**		

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

Table 1 shows the extent of different land cover types across the effective ALR on Salt Spring Island.

There were 891 ha of "Farmed" land cover within the ALR. This includes 90 ha of unused or unmaintained field crops. An additional 376 ha of "Farmed" land cover were identified outside of the ALR.

Figure 4. Land cover in the effective ALR

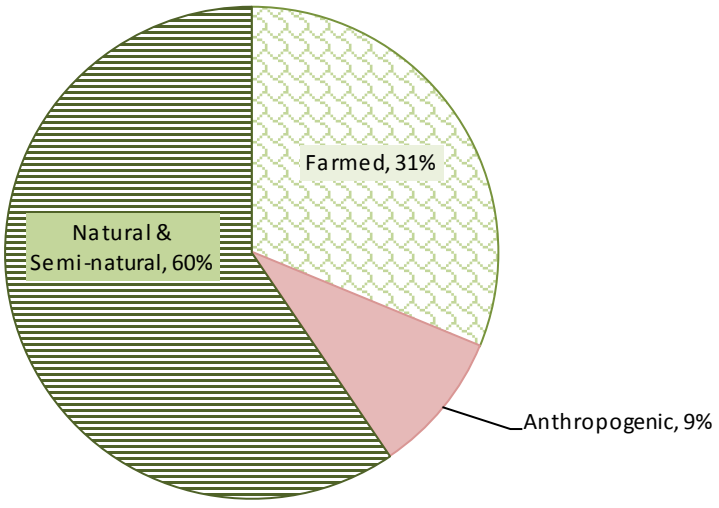


Figure 4 shows the proportion of different land cover categories across the effective ALR on Salt Spring Island.

Sixty percent (60%) is in "Natural & semi-natural" while 31% is in "Farmed" land cover.

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

3. Farming Activities

3.1 CULTIVATED FIELD CROPS

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

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

Forage & pasture is the main crop type on Salt Spring Island.

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

Other significant crop types include:

- Tree fruits
- Vegetables
- Vines & berries
- Floriculture
- Nut trees

Figure 5. Main field crop types by percentage

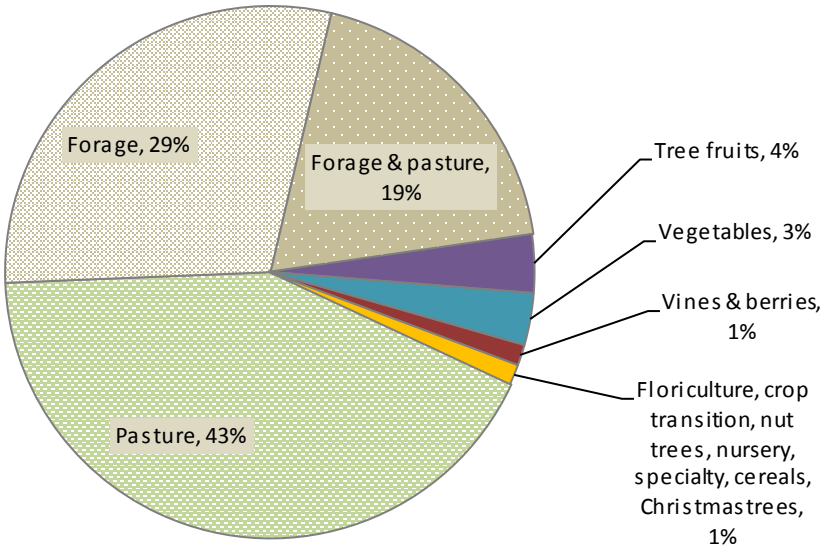


Figure 5 shows the proportion of crop types on Salt Spring Island.

Forage, pasture, and fields used for both forage & pasture account for 91% of all cultivated crops.

Table 2. Cultivated crop type by area

Crop type	ALR		Outside ALR (ha)	Total area (ha)	% of cultivated land
	In ALR (ha)	% of effective ALR			
Forage or pasture*	777	27%	324	1,101	91%
Tree fruits	30	1%	13	43	4%
Vegetables	29	1%	9	38	3%
Vines & berries	12	< 1%	4	15	1%
Floriculture	5	< 1%	2	6	< 1%
Crop transition	2	< 1%	< 1	2	< 1%
Nut trees	< 1	< 1%	1	2	< 1%
Christmas trees	1	< 1%	-	1	< 1%
Nursery	-	-	1	1	< 1%
Cereals	1	< 1%	-	1	< 1%
Specialty (herbs/ hops)	1	< 1%	< 1	1	< 1%
TOTAL	**859**	**30%**	**354**	**1,213**	**100%**

* Included is 133 ha of unused forage/pasture that has not been cut or grazed this growing season.

Table 2 shows the total area of cultivated crops produced on Salt Spring Island.

There were 1,101 ha in forage or pasture. Included in this category is 133 ha of unused forage/pasture that has not been cut or grazed this year.

An additional 112 ha of other crop types were recorded.

Figure 6. Forage and pasture fields by size and type

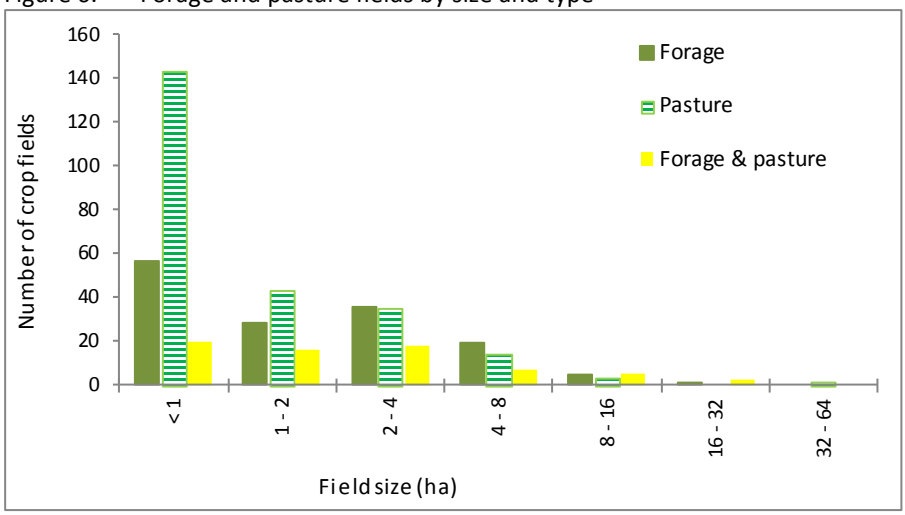


Figure 6 illustrates the size distribution of forage and pasture fields on Salt Spring Island.

Over three-quarters (78%) of all pasture fields are less than 1 ha in size.

Top Cultivated Crops

Table 3. All cultivated crops by area (including unmaintained crops)

Cultivated field crop	In ALR (ha)	% of effective ALR	Outside ALR (ha)	Total area (ha)	% of cultivated land
Pasture	209	7%	173	381	31%
Forage	269	9%	87	356	29%
Forage & pasture	211	7%	20	231	19%
Unused forage/pasture	88	3%	45	133	11%
Mixed vegetables	16	< 1%	4	19	2%
Tree fruits - unknown type	15	< 1%	3	18	1%
Apples	9	< 1%	8	17	1%
Vegetables	9	< 1%	5	15	1%
Grapes	9	< 1%	3	12	1%
Mixed tree fruits	5	< 1%	2	8	1%
Lavender	3	< 1%	1	4	< 1%
Sweet corn	3	< 1%	-	3	< 1%
Blueberries	2	< 1%	< 1	3	< 1%
Crop transition	2	< 1%	< 1	2	< 1%
Hazelnut / filbert	< 1	< 1%	1	2	< 1%
Floriculture	1	< 1%	< 1	1	< 1%
Ornamentals and shrubs	-	-	1	1	< 1%
Oats	1	< 1%	-	1	< 1%
Christmas trees (Unmaintained)	1	< 1%	-	1	< 1%
Mixed floriculture	< 1	< 1%	< 1	1	< 1%
Other crop types	4	< 1%	1	5	< 1%
TOTAL	**859**	**30%**	**354**	**1,213**	**100%**

* Unused forage/pasture has been cultivated, but not cut or grazed this year.

Table 3 details the top 20 individual crops that account for 99.5% of cultivated land on Salt Spring Island.

Figure 7. Top 10 crops by area

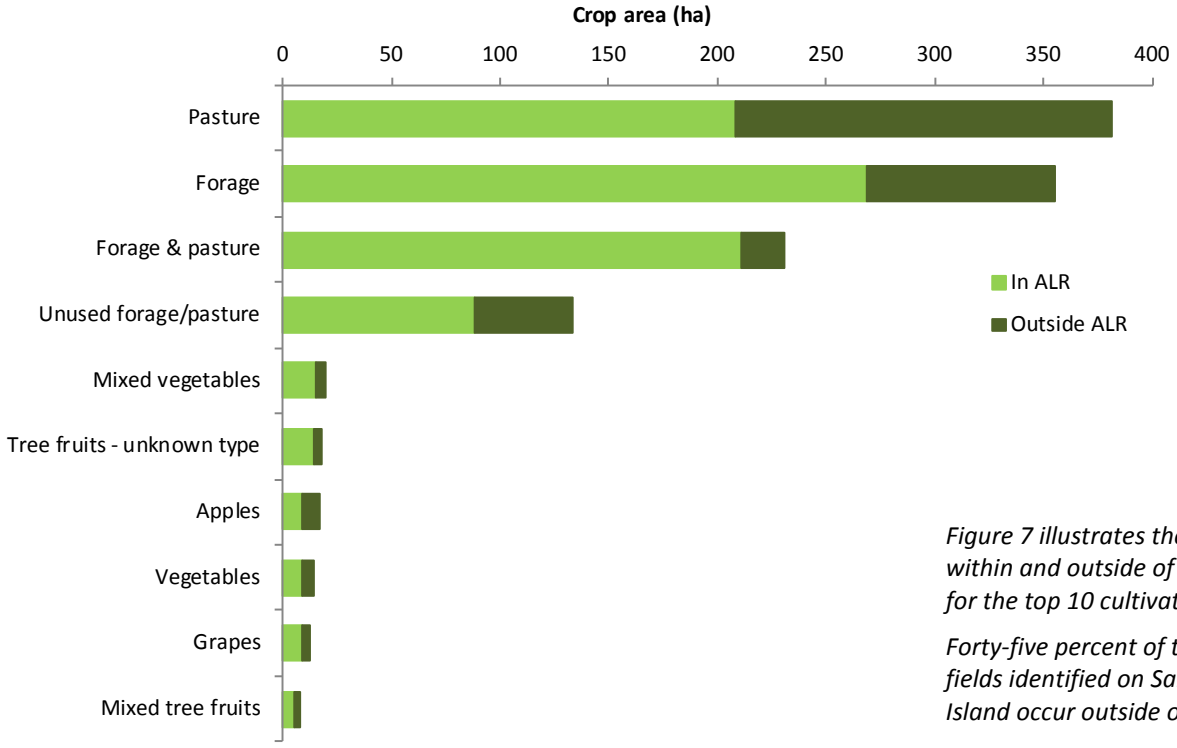


Figure 7 illustrates the area within and outside of the ALR for the top 10 cultivated crops.

Forty-five percent of the pasture fields identified on Salt Spring Island occur outside of the ALR.

3.2 IRRIGATION

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

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

Crop and irrigation data from the Agricultural Land Use Inventory are key inputs into an Agricultural Water Demand Model (AWDM). The AWDM is a water management planning tool that estimates current and future agricultural water needs based on climate change scenarios and water management practices. The AWDM Report for Salt Spring Island[13] will highlight the results from several scenarios.

Table 4. Crop type and irrigation

Cultivated field crop	Irrigation system in use (ha)				Total area irrigated (ha)	% of crop area irrigated
	Sprinkler	Trickle	Giant gun	Surface		
Vegetables	32	< 1	4	-	36	93%
Forage	3	-	18	-	21	6%
Vines & berries	2	13	-	-	15	97%
Tree fruits	< 1	7	-	< 1	8	18%
Floriculture	3	4	-	-	6	100%
Forage & pasture	3	-	1	-	4	2%
Pasture	3	-	-	-	3	< 1%
Nursery	< 1	< 1	-	-	1	100%
Cereals	-	-	1	-	1	100%
Specialty	< 1	< 1	-	-	< 1	78%
Nut trees	-	< 1	-	-	< 1	45%
TOTAL CROP AREA IRRIGATED	**46**	**26**	**24**	**< 1**	**97**	**8%**

Table 4 shows the total area of crops under irrigation by crop type. Forage and pasture crops are the predominant crop types on Salt Spring Island, (refer to Table 2), however, few of these crops utilize irrigation. Only 6% of forage crops are irrigated while only 0.5% of pasture fields are irrigated.

In total, 97 ha or 8% of the cultivated crop area was irrigated.

[13] http://www2.gov.bc.ca/gov/content/industry/agriculture-seafood/agricultural-land-and-environment/water/water-management/agriculture-water-demand-model

3.3 LIVESTOCK

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

Homesite

Homesite refers to the location of the main ranch or main barn of a livestock operation or farm unit[14]. Other types of farm infrastructure, such as corrals, paddocks, barns, and feeding/watering facilities, as well as the farm residence, are often at this location. The homesite is the primary location of the farm unit where most livestock management occurs.

Non Homesite refers to a location where livestock were observed, but do not permanently reside. Non-homesites are often used only for pasturing and are secondary to an operation's primary (or homesite) location. Non homesite locations are not included in this report.

Intensity

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

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

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

Scale

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

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

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

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

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

Table 5. Livestock activities

Livestock group	Estimated animal unit equivalents	Count of activites
Equine	670	71
Sheep / goat	560	50
Beef	320	16
Poultry	130	70
Llama / alpaca	60	10
Swine	50	6
Dairy	30	3
TOTAL	**1,820**	**226**

Table 5 details the number of estimated animal unit equivalents by livestock type. These activities occur both within and outside of the ALR.

Equine and sheep / goat activities have the highest estimated AUEs.

Beef also has a high number of AUEs, however, beef has a lower number of activities than equine or sheep / goat. This indicates beef activities tend to be larger than other types of livestock activities.

Estimated Animal Unit Equivalents (AUEs)

Figure 8. Proportion of livestock activities by estimated animal unit equivalents

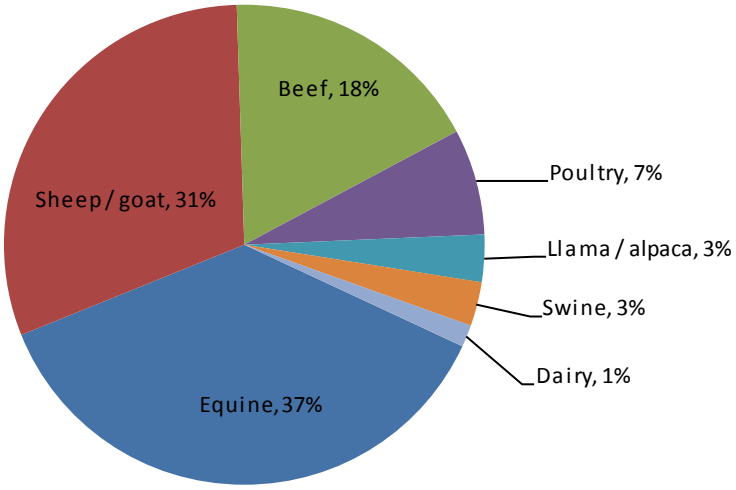


Figure 8 illustrates the proportion of livestock on Salt Spring Island by estimated animal unit equivalents.

Equine and sheep/ goat AUEs account for 68% of all livestock AUEs.

Figure 9. Estimated animal unit equivalents by livestock type and intensity

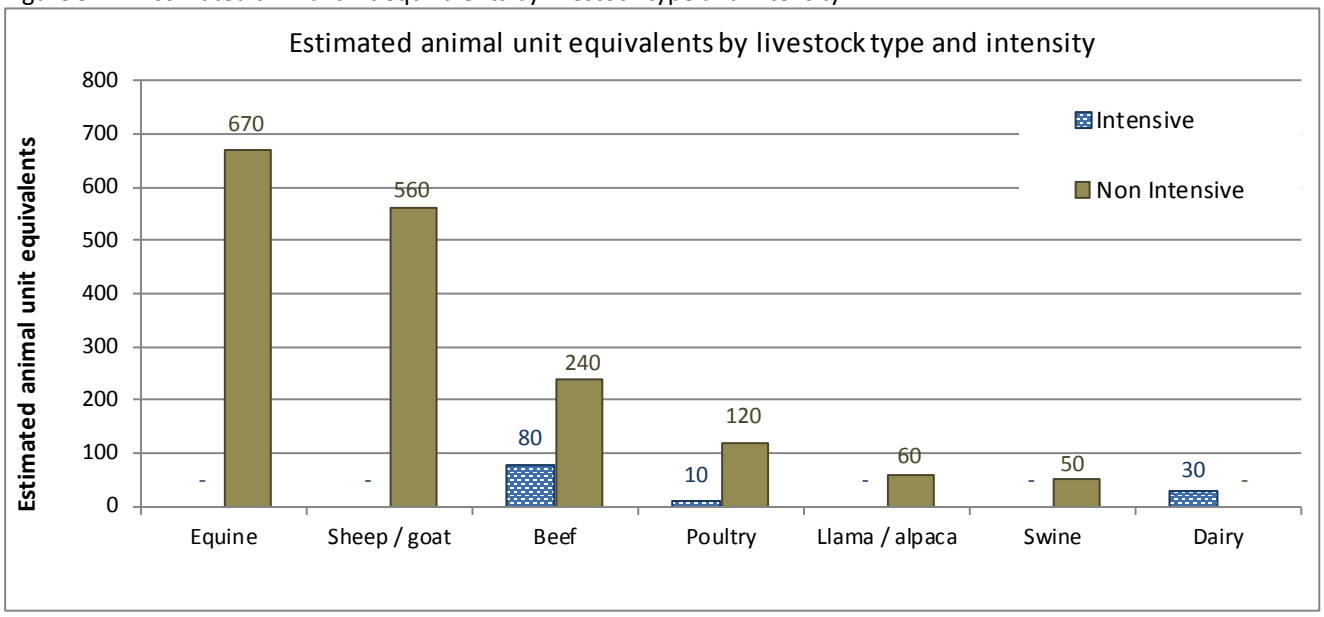


Figure 9 illustrates the number of estimated animal unit equivalents by livestock type and intensity on Salt Spring Island. Most livestock are found in "non-intensive" facilities.

Beef, dairy and poultry all had some AUEs in intensive facilities with specialized infrastructure designed for confined feeding at higher stocking densities.

Figure 10. Estimated animal unit equivalents by livestock type and scale

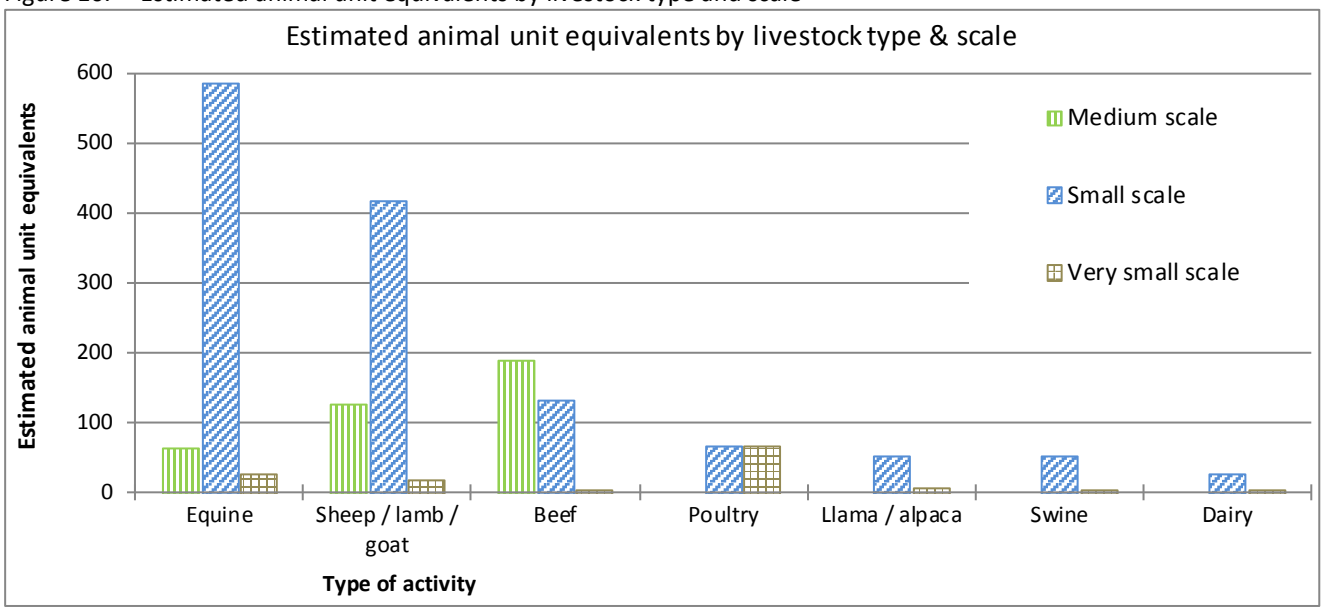


Figure 10 illustrates the number of estimated animal unit equivalents by livestock type and scale on Salt Spring Island. Although the greatest AUEs are associated with equines and sheep / goats (refer to Table 5), most animals occur on a "small" scale with less than 25 animals.

Beef, sheep / goat, and equine are the only livestock types to occur on a "medium" scale with greater than 25 animal unit equivalents. Over half of the beef AUEs are associated with "medium" scale activities.

Number of livestock activities (occurrences)

Figure 11. Number of livestock activities by livestock type and scale

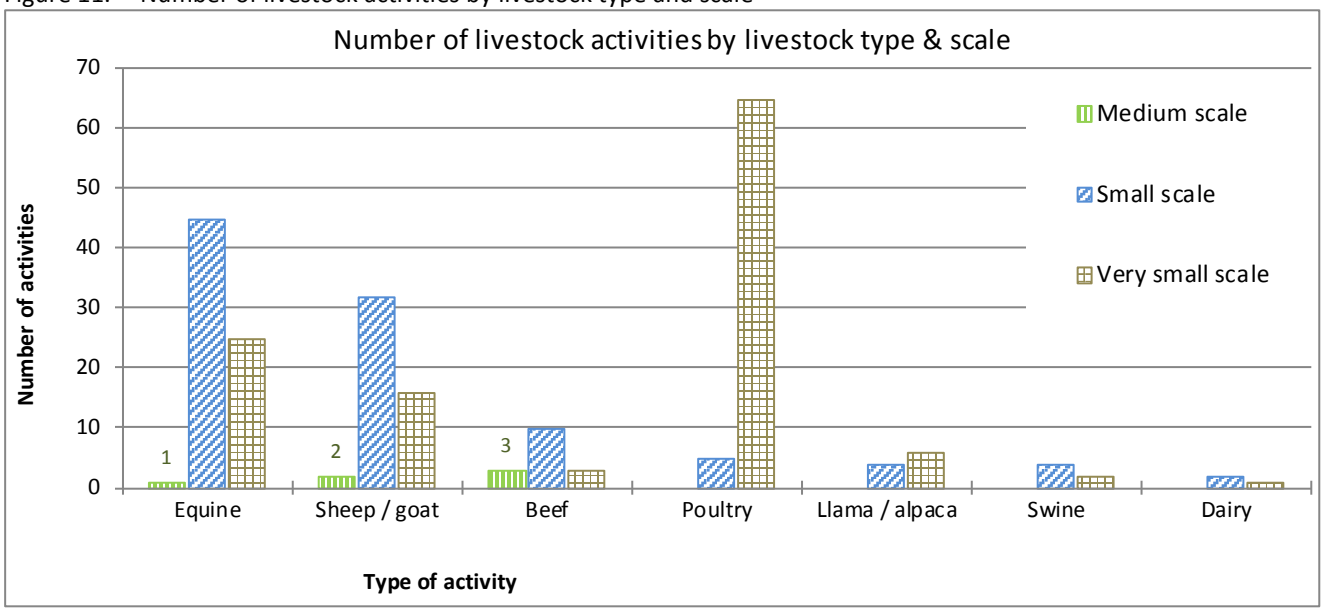


Figure 11 illustrates the number of livestock activities by livestock type and scale on Salt Spring Island. Poultry activities are the most frequently occurring, however, nearly all occurrences are "very small" scale with less than 100 birds (1 AUE).

There 3 "medium" scale beef activities, 2 "medium" scale sheep / goat activities and 1 "medium" scale equine activity.

4. ALR Utilization

4.1 PARCEL INCLUSION IN THE ALR

The following analysis is parcel based. It is important to note that the ALR boundaries do not always align with parcel boundaries and many parcels have only a portion of their area in the ALR.

Figure 12 illustrates the frequent misalignment between parcel boundaries and the ALR boundary. Given that the dark green line represents the ALR boundary, Lot A is completely in the ALR and Lots B and C have a portion of their area in the ALR. Lot D is completely outside the ALR.

To achieve an accurate picture of the ALR on Salt Spring Island, 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 (>= 50%) in the ALR, or
- parcels with at least 10 ha (>= 10 ha) of ALR land.

In total, 469 parcels, with 2,711 ha or 95% of the effective ALR met the above criteria and are included in the following section. "Effective ALR" is the total ALR area excluding land outside of legally surveyed parcels and excluding land on Indian reserves.

Figure 12. Example of parcel inclusion in the ALR

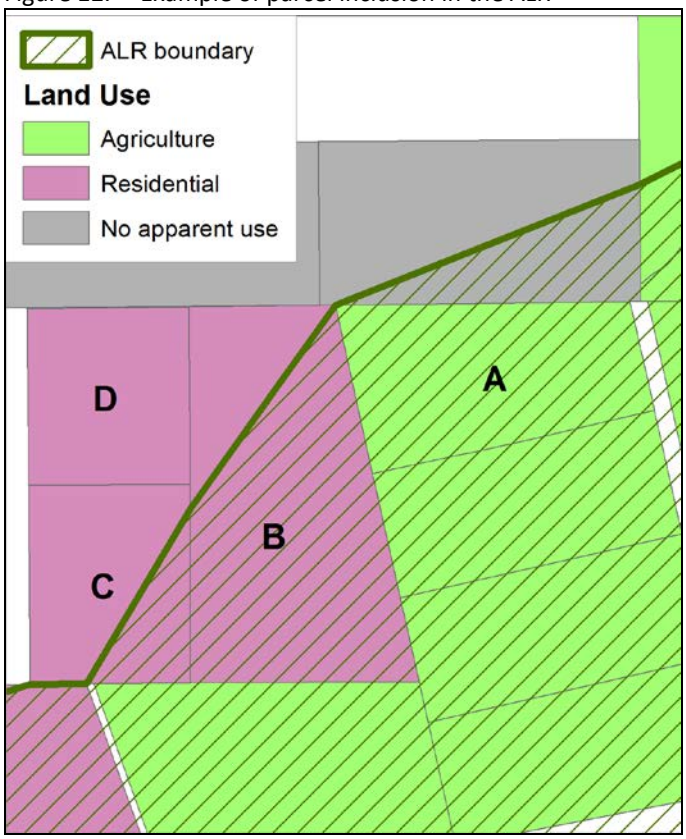


Figure 12 illustrates the distinction between parcels considered to be within or outside the ALR:

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.*

4.2 LAND USE AND FARM USE

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

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

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

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

Table 6. Land use and farming use in the ALR

Parcel land use*		Number of ALR parcels	% of ALR parcels	Average parcel size	Median parcel size (ha)
Used only for farming - no other use		25	5 %	10	6.2
Used for farming - Mixed use	Residential	101	22 %	9	4.2
	Protected area / park / reserve	4	1 %	96	56.3
	Institutional & community	1	<1 %	2	1.6
	Commercial & service	1	<1 %	8	8.1
USED FOR FARMING SUBTOTAL		132	28 %	11	4.8
Not used for farming	Residential	246	52 %	4	1.9
	No apparent use	47	10 %	10	4.1
	Protected area / park / reserve	21	4 %	24	14.8
	Institutional & community	6	1 %	2	1.9
	Recreation & leisure	5	1 %	8	7.2
	Commercial & service	4	1 %	1	1.0
	Transportation & utilities	2	<1 %	1	1.1
	Industrial	2	<1 %	11	10.8
	Forestry	2	<1 %	27	27.1
	Gravel extraction	1	<1 %	1	0.9
	Communications	1	<1 %	< 1	0.2
NOT USED FOR FARMING SUBTOTAL		337	72 %	6	2.2
TOTAL		**469**	**100 %**	**8**	**2.9**

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

Table 6 shows the number of ALR parcels that are used and not used for farming by land use on Salt Spring Island.

In total, 28% of the ALR parcels (132 parcels) are "Used for farming" and 72% (337 parcels) are "Not used for farming".

Figure 13 provides more information on "Used for farming" ALR parcels and Figure 14 provides more information on "Not used for farming" ALR parcels.

Figure 13. Land use on "Used for farming" ALR parcels

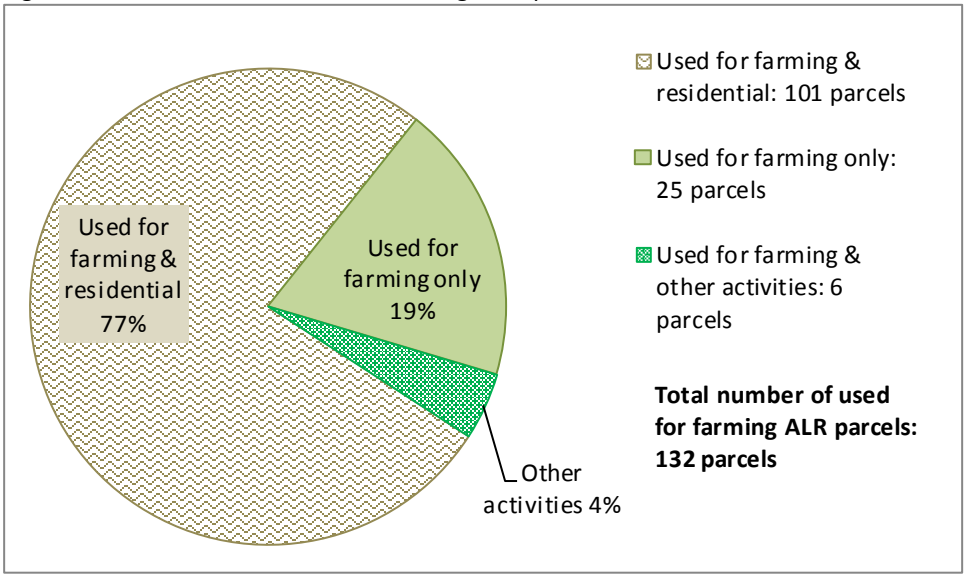


Figure 13 illustrates the proportion of "Used for farming" ALR parcels by their land use.

Over three quarters (77%) of the ALR parcels that are "Used for farming" are also used for residential purposes.

Figure 14. Land use on "Not used for farming" ALR parcels

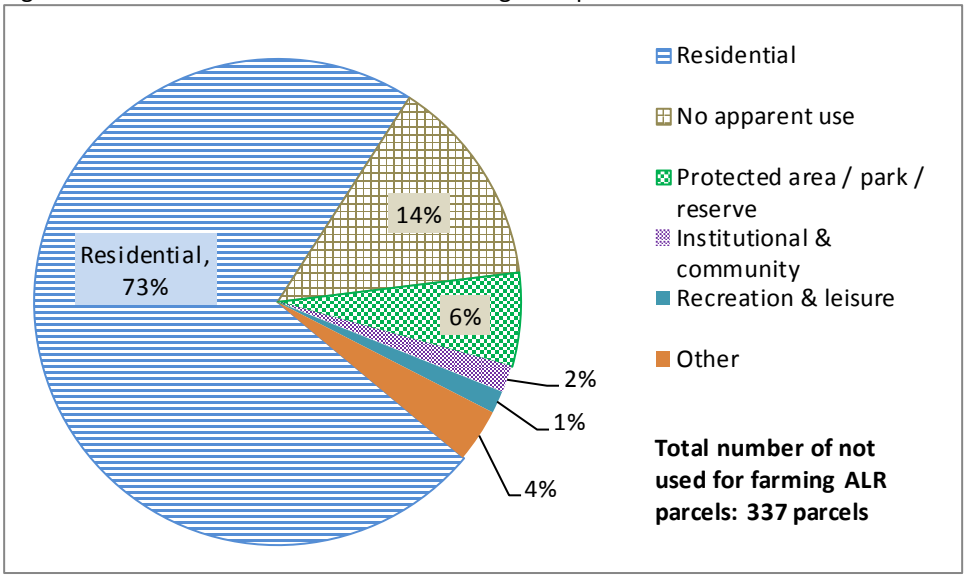


Figure 14 illustrates the proportion of "Not used for farming" ALR parcels by their land use.

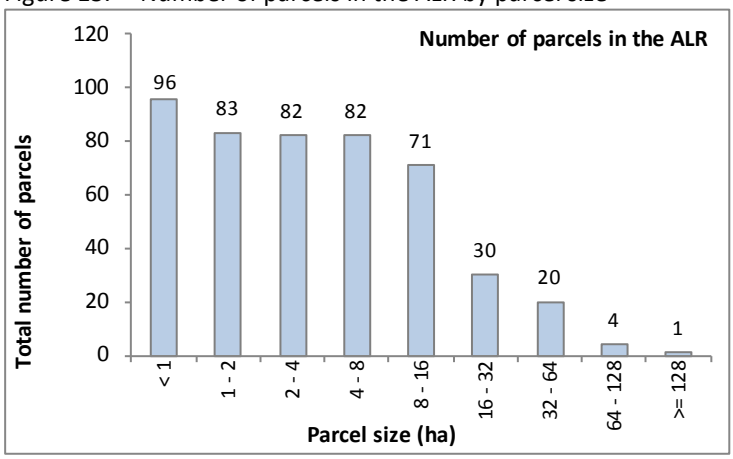
Seventy-three percent (73%) of the "Not used for farming" ALR parcels have a residential use, and 14% have no apparent use.

4.3 PARCEL SIZE AND FARM USE

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

A farming operation may utilize more than one parcel as a farm unit[15], however, it is generally more efficient to run a farm on fewer large parcels than on many small parcels. Smaller parcels generally cost more per hectare than larger parcels and can easily be disassembled from larger farm units and sold. Larger parcels accommodate equipment more efficiently and reduce the need to move farm equipment on public roads. Furthermore, smaller parcels are more impacted by bylaws designed to reduce potential land use conflicts, such as setbacks from lot lines and road allowances.

Figure 15. Number of parcels in the ALR by parcel size

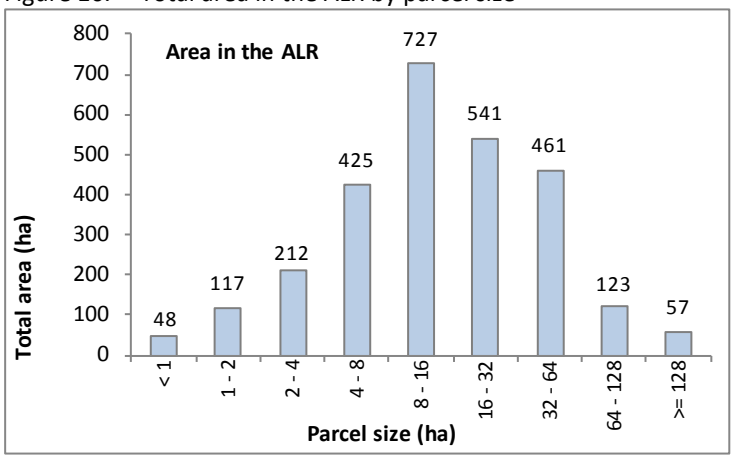


The average ALR parcel size on Salt Spring Island is 7.8 ha and the median parcel size is 2.9 ha.

Figure 15 illustrates that of the 469 parcels in the ALR:

- *20% (96 parcels) are less than 1 ha*
- *56% (261 parcels) are less than 4 ha.*
- *17% (82 parcels) are between 4 and 8 ha.*
- *15% (71 parcels) are between 8 and 16 ha.*
- *12% (55 parcels) are greater than 16 ha.*

Figure 16. Total area in the ALR by parcel size



Although there are a large number of small parcels on Salt Spring Island, the majority of the ALR area occurs on larger parcels.

Figure 16 illustrates that of the 2,711 ha in the ALR:

- *2% (48 ha) is on parcels less than 1 ha.*
- *14% (377 ha) is on parcels less than 4 ha.*
- *16% (425 ha) is on parcels between 4 and 8 ha.*
- *27% (727 ha) is on parcels between 8 and 16 ha.*
- *44% (1,182 ha) is on parcels greater than 16 ha.*

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

Table 7. Number of parcels in the ALR by farming status

Parcel status with respect to farming	Number of parcels	% of parcels in the ALR
Used for farming	132	28 %
Not used for farming	337	72 %
TOTAL	**469**	**100 %**

Table 7 demonstrates that of the 469 parcels in the ALR, only 28% are considered "Used for farming".

Figure 17. Number of parcels in the ALR by farming status and parcel size

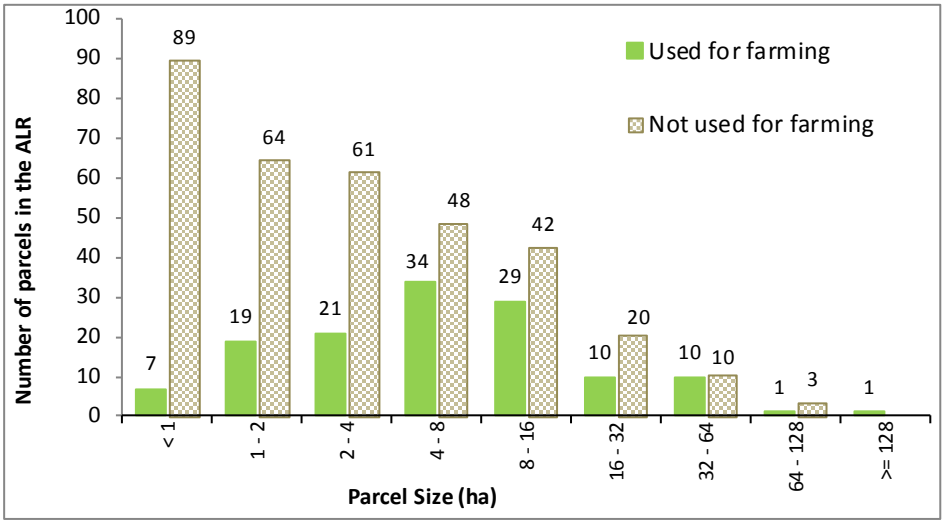


Figure 17 compares the size distribution of ALR parcels by their farming status.

High proportions of "Not used for farming" parcels are found across most parcel size categories.

On parcels less than 1 ha, 93% of the parcels are "Not used for farming".

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

Figure 18. Proportion of parcels in the ALR by farming status and parcel size

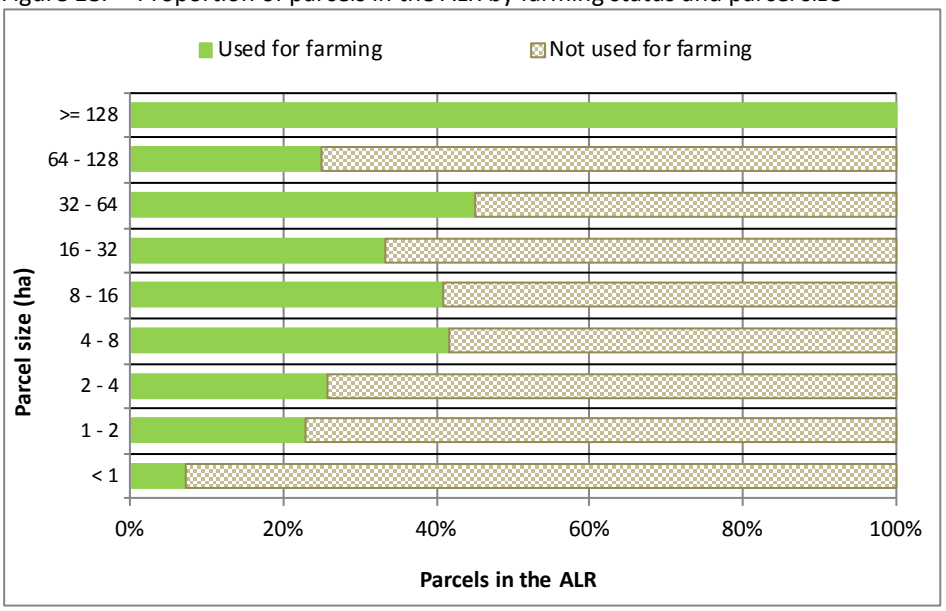


Figure 18 shows the proportion of parcels used and not used for farming by parcel size.

There is one parcel >=128 ha (256 ha) that is "Used for farming" and is associated with Ruckle Provincial Park. Less than one quarter of the total parcel area is in the ALR, however, the majority of the ALR area is cultivated.

5. ALR Availability for Farming

5.1 PARCEL AVAILABILITY OVERVIEW

There is a strong demand for agricultural goods produced in British Columbia that is expected to increase with population growth. An available agricultural land base will be important to meet future agricultural needs. This section presents analysis on **privately owned ALR** parcels that are available and unavailable for farming. Crown lands are not considered in this section as they offer little opportunity for capital investment and intensive agricultural development.

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

Not used for farming – Parcels that do not meet the "Used for farming" definition. Includes parcels that are *available* and *unavailabl*e for farming.

Unavailable for farming – "Not used for farming" parcels where future agricultural development is improbable due to a conflicting land use or due to limited land with potential for farming. Land uses such as golf courses, parks, schools, and small residential lots that utilize the majority of the parcel are considered incompatible with agriculture. These properties are serving an established purpose, may be altered in a way that is incompatible with agriculture, or may have very high land values from the built infrastructure. Parcels with little to no land available for farming are also considered "Unavailable for farming". E.g. A parcel completely covered by trees and a steep slope is considered "Unavailable for farming" due to the limited farming potential on the slope. It is usually uneconomical for a farmer to acquire and convert these properties to farmland.

Available for farming – "Not used for farming" parcels where agricultural activity may be possible. These parcel have no apparent land use, or have an existing land use that is considered compatible with agriculture. Available for farming parcels have at least 50% of their parcel area and least 0.4 ha in land cover that has potential for farming. Areas considered to have **potential for farming** include:

- Natural and semi-natural vegetation that is free from physical limitations such as steep slopes, rocky soils and riparian areas. Although some crops can thrive in areas with physical limitations (e.g. grapes on steep slopes), it is assumed these areas will not be utilized for farming purposes. Natural areas that are grazed are considered to have potential for more intensive farming.
- Anthropogenic managed vegetation (managed for landscaping, dust or soil control). E.g. Very large lawns or rough grass areas (> 0.4 ha) may be available for conversion to agriculture. Parks and golf courses are not considered to have potential for farming.

Built structures, wetlands and waterbodies are considered to have no potential for farming. It is assumed these areas would not likely be removed or filled in to create land with cultivation potential.

Available for farming parcels reflect the maximum amount of land that may be available for farming. It should be noted that these parcels may be providing value that was not accounted for in the ALUI. For example, parcels may be providing ecological goods and services such as soil stabilization, water purification, or wildlife habitat. Available for farming parcels provide an initial selection of parcels that may be available for agricultural expansion. Detailed investigation is required to confirm the suitability and trade-offs associated with converting these areas to agriculture.

Table 8. Availability status of privately owned parcels in the ALR

Parcel status with respect to farming	Privately owned ALR parcels			
	Number of parcels	% of parcels	Total ALR area (ha)*	% ALR area (ha)
Used for farming	131	29 %	1,056	41 %
Available for farming	221	48 %	1,197	47 %
Unavailable for farming	104	23 %	295	12 %
TOTAL	**456**	**100 %**	**2,547**	**100 %**

* The entire ALR area or parcel area may not be farmed or available for farming.

Table 8 details the number of privately owned ALR parcels by their availability for farming.

48% of these parcels are potentially available for agricultural production.

Figure 19. Availability status of privately owned parcels in the ALR by parcel count

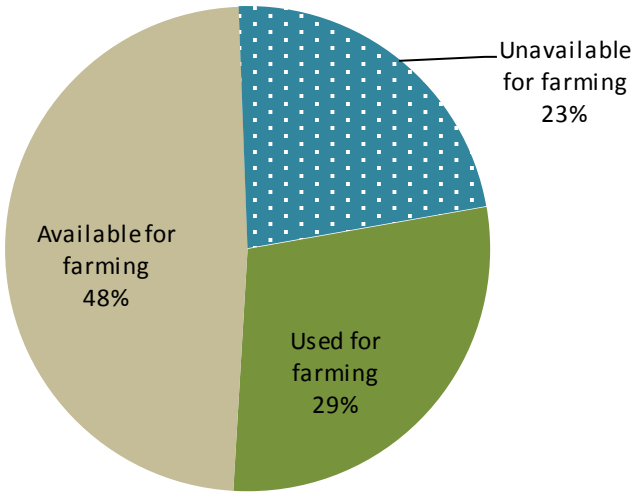


Figure 19 illustrates the proportion of privately owned ALR parcels by their availability for farming.

Forty-eight (48%) of the ALR parcels are "Available for farming" while 23% are "Unavailable for farming".

Figure 20. Parcel size distribution of privately owned parcels in the ALR by farming status

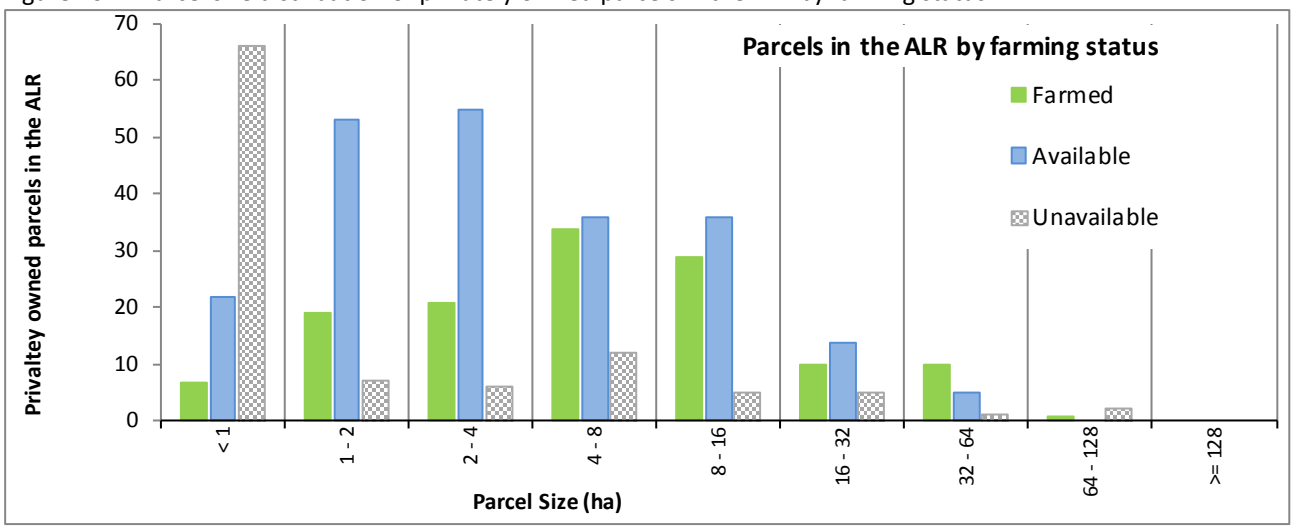


Figure 20 shows the size distribution of privately owned ALR parcels by their farming status. There is a high proportion of parcels that may be available for farming across most parcel sizes.

On parcels less than 1 ha in size, 69% of the parcels are "Unavailable for farming".

5.2 AVAILABLE FOR FARMING – PRIVATELY OWNED ALR PARCELS

Privately owned ALR parcels that are "Available for farming" offer the greatest potential for agricultural expansion. For a parcel to be considered available for farming it:

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

Parcels that have no apparent land use may provide the simplest opportunities to increase agricultural use. These parcels generally have little to no development and generally have low improvement values.

Figure 21. Land use and parcel size distribution of "Available for farming" parcels in the ALR

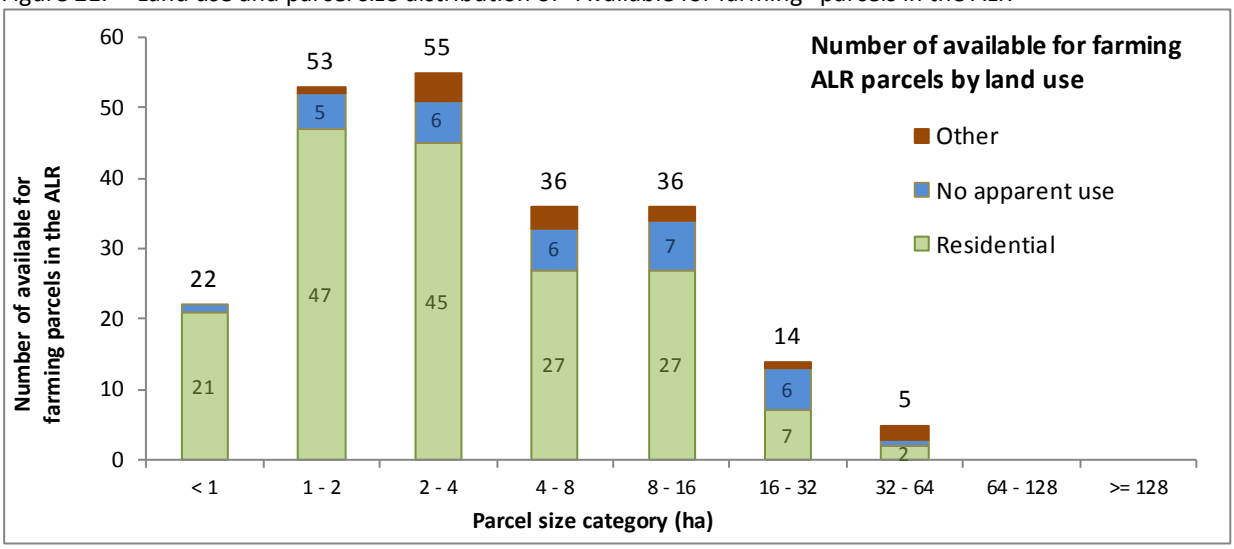


Figure 21 illustrates the existing land uses on the 221 parcels in the ALR that are privately owned and "Available for farming". In total, 80% of the available parcels have a residential land use (176 parcels), 14% have no apparent use (32 parcels), and the remaining 6% have other uses including forestry and recreation & leisure. Of the available parcels:

- *34% (75 parcels) are less than 2 ha*
- *59% (130 parcels) are less than 4 ha*
- *41% (91 parcels) are greater than 4 ha*
- *9% (19 parcels) are greater than 16 ha*

Figure 22. Land cover with potential for farming on "Available for farming" parcels in the ALR

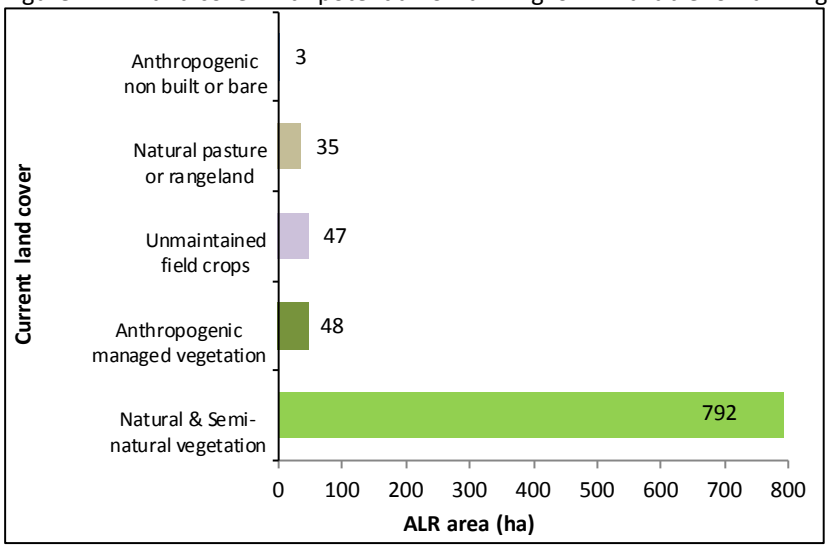


Figure 22 shows the types of land cover that have potential for farming on parcels that meet the 'Available for farming' criteria.

Land in natural & semi-natural vegetation offers the greatest opportunities to increase cultivation. These gains in cultivated land would have to be measured against the potential loss of ecological values such as wildlife habitat and societal values such as natural views and privacy.

The majority of the available natural & semi-natural vegetation (93% or 733 ha) is currently treed and would require clearing if cultivation were to occur.

5.3 UNAVAILABLE FOR FARMING – PRIVATELY OWNED ALR PARCELS

Parcels that are unavailable for farming have an existing land use that excludes agricultural development (e.g. golf courses, schools, small lot residential), or lack sufficient land cover that has potential for farming. Parcels that do not meet the minimum parcel availability criteria (>50% of the parcel area and >0.4 ha in land cover with potential for farming) are considered unavailable for farming. Examples of parcels not meeting the minimum availability criteria include:

- A parcel completely covered in trees and a steep slope. There is no available land as sloped areas are considered to have limited potential for farming.
- A parcel with 0.3 ha of available land.
- A parcel with 45% if its total area in land with potential for farming.

Figure 23. Parcel size distribution of unavailable for farming parcels in the ALR

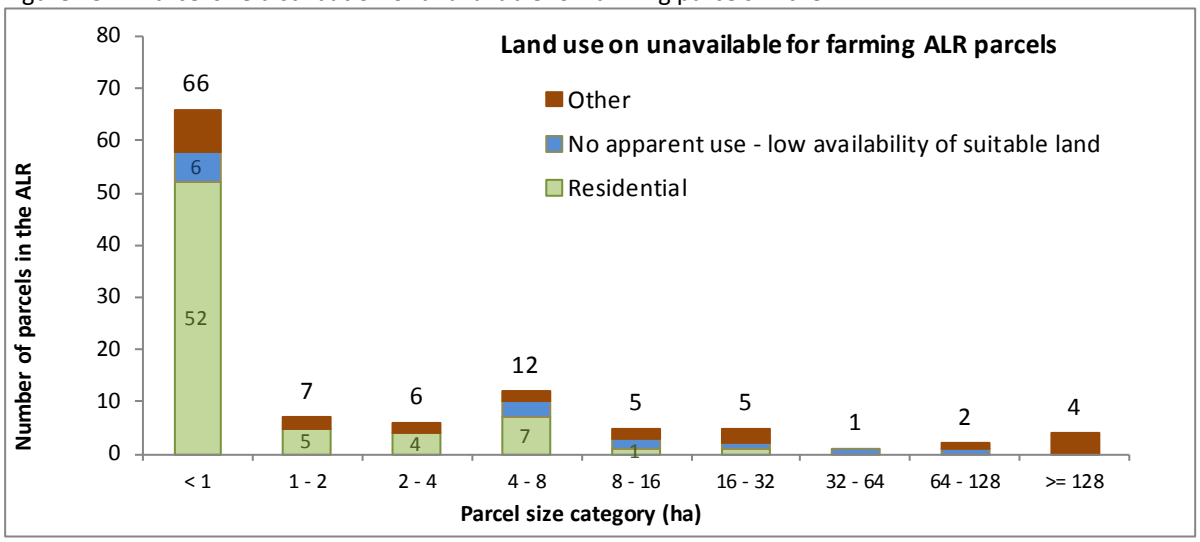


Figure 23 shows the number of privately owned ALR parcels that are "Unavailable for farming". These parcels have an existing land use or low availability of suitable land that presents a significant barrier to farming.

Residential use is the primary reason many small parcels (<1 ha) are "Unavailable for farming".

6. Farming Outside the ALR

6.1 FARMING OUTSIDE THE ALR

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

Figure 24. Distribution of farmed land cover

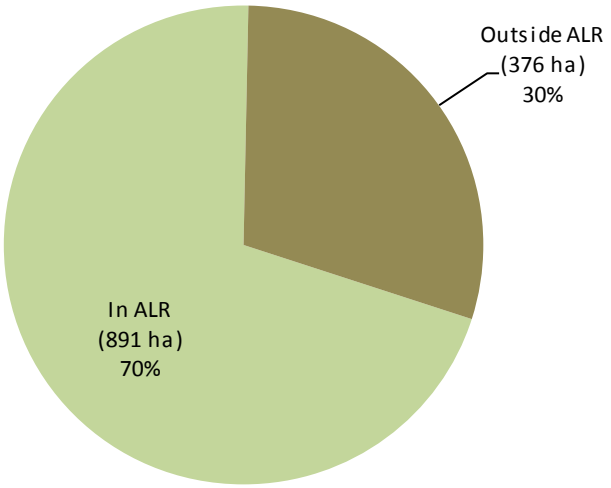


Figure 24 shows that 30% of the farmed land cover on Salt Spring Island occurs outside of the ALR (refer to Table 1 for more information).

In total, 376 ha of farmed land cover was identified outside the ALR.

This area is comprised of 354 ha of cultivated crops, 21 ha of farm infrastructure, and 1 ha of greenhouses.

Table 9. Crops outside the ALR

Cultivated Crops	Outside ALR (ha)
Pasture	217
Forage	87
Forage & pasture	20
Tree fruits	13
Vegetables	9
Vines & berries	4
Floriculture	2
Nut trees	1
Nursery	1
TOTAL	**354**

Table 9 details the cultivated crops identified outside the ALR. Pasture is the primary crop type.

Table 10. Livestock activities outside the ALR

Livestock group	Number of activities outside the ALR				Total activities
	Very small scale	Small scale	Medium scale	Large scale	
Equine	14	20	-	-	34
Sheep / goat	8	11	1	-	20
Beef	1	3	1	-	5
Poultry	29	2	-	-	31
Llama / alpaca	-	3	-	-	3
Swine	-	1	-	-	1
TOTAL	**52**	**40**	**2**	**-**	**94**

Table 10 shows the number and type of livestock activities recorded outside of the ALR.

Of the identified 94 livestock activities, nearly all are "small" or "very small" scale with less than 25 animals.

Also identified was 1 medium scale sheep (125 -500 sheep) and 1 medium scale beef operation (25 – 100 cattle).

Identified livestock activities outside of the ALR are associated with an estimated 700 AUEs.

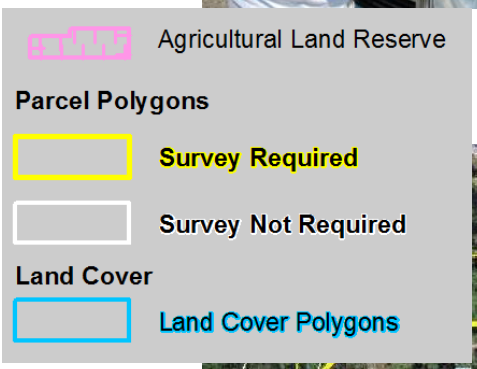
7. Methodology

7.1 INVENTORY METHODOLOGY

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

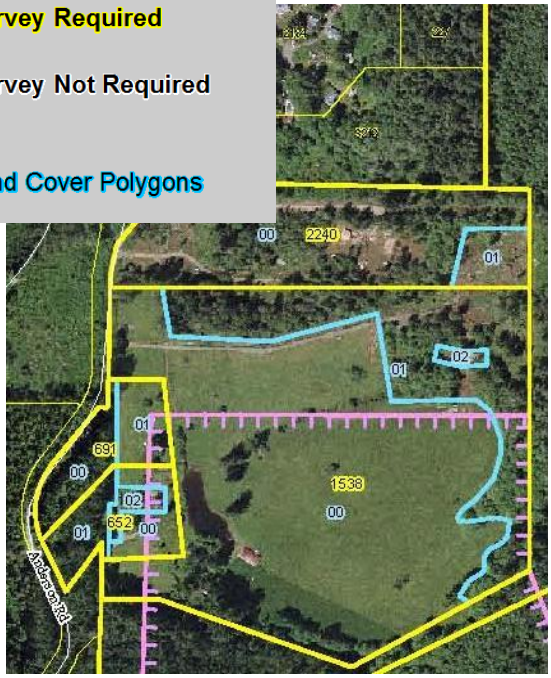
- AgFocus – A Surveyor's Guide to Conducting an Agricultural Land Use Inventory
- AgFocus – Field Guide to Conducting an Agricultural Land Use Inventory
- AgFocus – A GIS Analyst's Guide to Agricultural Land Use Inventory Data

The Salt Spring Island Agricultural Land Use Inventory was conducted in the summer of 2017 by a Professional Agrologist, a data technician, and a driver. 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 provide the basis for the survey and include:

- Legal parcel boundaries (cadastre)[16]
- Unique identifier for each legal parcel
- 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



[16] Cadastre mapping was provided through the Integrated Cadastral Information Society.

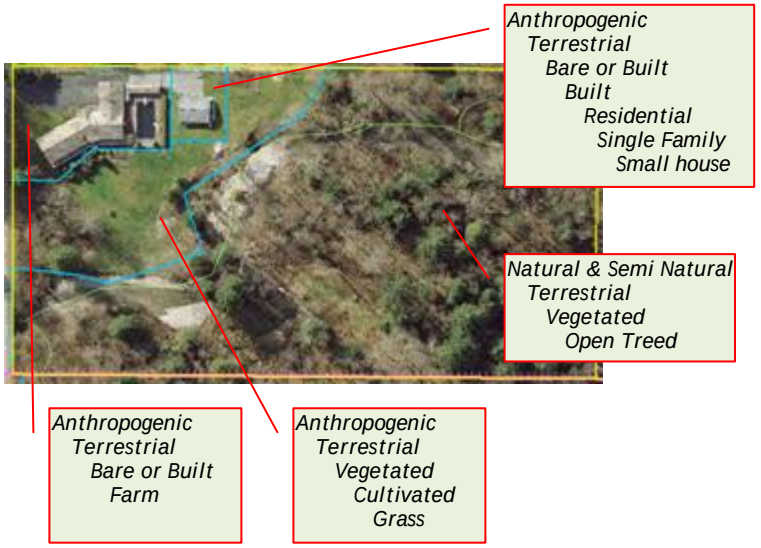
7.2 DESCRIPTION OF THE DATA

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

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

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

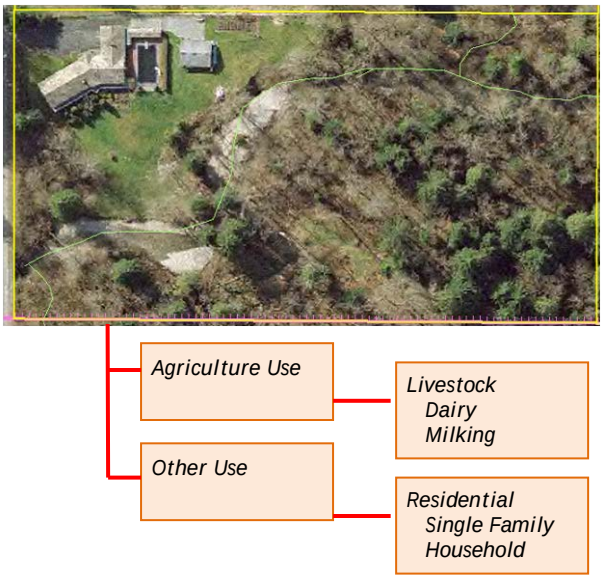
- Minimum polygon size (500 sq m ~5400 sq ft) or minimum polygon width (10 m ~33 ft)
- Polygon is homogeneous in physical cover and homogeneous in irrigation method
- Maximum level of detail required was reached



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

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

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



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

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

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

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

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

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

7.3 PRESENTATION OF THE DATA

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

Appendix A – Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Cadastre – 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 Cadastre Fabric maintained by the Parcel Fabric Section of the BC Government.

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

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

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

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

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

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

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

Greenhouses – See **Crop cover structures.**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Used for farming – 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 40% parcel area in cultivated field crops (excluding unused forage or pasture)
- at least 40% parcel area built up with farm infrastructure
- at least 25% parcel area built up with crop cover structures (excluding unmaintained structures)
- at least 23% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure and small scale livestock, apiculture or aquaculture operations
- at least 23% parcel area in cultivated field crops (excluding unused forage or pasture) and at least 45% 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 30% parcel area in cultivated field crops (excluding unused forage or pasture) or farm infrastructure
- at least 15% parcel area and at least 15 ha in cultivated field crops (excluding unused forage or pasture)
- at least 20% parcel area and at least 10 ha in cultivated field crops (excluding unused forage or pasture)
- at least 25% 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)

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.