GREATER TERRACE AGRICULTURAL AREA PLAN REPORT

Photo: Courtesy of Norma Kerby

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Greater Terrace Agricultural Area Plan Report
Final Report

March 2013

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DISCLAIMERS

Views and Opinions

The views and opinions expressed in this report are the views and opinions of the authors and do not necessarily represent the views of City of Terrace and Regional District of Kitimat-Stikine staff or elected representatives or those of the Governments of Canada and British Columbia or of the Investment Agriculture Foundation of British Columbia.

Statement of Limitations

Dr. Norma Kerby, R.P. Bio., Environmental and Planning Consultant

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ACKNOWLEDGEMENTS

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EXECUTIVE SUMMARY

Lynda Gagné and Norma Kerby

INTRODUCTION

The City of Terrace, the Regional District of Kitimat-Stikine (RDKS), and other local organizations and government agencies are strongly committed to increasing agricultural production in the Greater Terrace (GT) area. Agricultural production contributes to economic activity and can increase self-sufficiency, food security, and opportunities for obtaining fresh food. However, agricultural production has been quickly declining in this area in recent years. To address the lack of a comprehensive agricultural planning and economic strategy for the area, the City of Terrace and RDKS applied for and received funding from the Investment Agriculture Foundation of BC to conduct an agricultural land use inventory (ALUI) and develop an agricultural area plan (AAP) for the Greater Terrace area.

The objectives of the ALUI are to:

- provide a record of land uses in areas designated for agriculture and act as a benchmark for monitoring land use change;
- improve the understanding of land use and resource relationships;
- improve the information base to assist land use decision-making including official community plan and bylaw updates;
- provide data for an agricultural area plan; and
- identify opportunities for increasing agricultural production

The ALUI was conducted by the B.C. Ministry of Agriculture who has prepared a standard ALUI report for Greater Terrace that is used to inform the AAP process.

The objectives of the AAP are to:

- provide an overview of the agricultural land base, including information on land use, climate, soils, agricultural capability, and water supply and use;
- provide an overview of the local demographics and the economy, and the agricultural industry in the region;
- provide an overview of legislation and regulations that affect the local agricultural industry;
- through consultation with local agricultural producers and academic research, identify barriers faced by the industry in this region;
- identify ways to develop agricultural capacity and productivity through enabling policies, infrastructure, and the creation of organizations that can facilitate and provide economies of scale in the production and trade of local food;
- make policy recommendations regarding amendments to sections of the Official Community Plan and zoning bylaws that impact agriculture; and
- provide actual and potential food producers with information to assist them in navigating regulatory requirements, to assist them with production and distribution issues, and to assist them in locating potential sources of financial or management support.

This report summarizes what was done to achieve these objectives and what we found.

METHODOLOGY

Methods used to support the agricultural area planning process included conducting an agricultural land use survey to provide a baseline inventory, visual surveys of rural and agricultural zones in GT, a public meeting, public lectures, an online survey of residents, a survey of farmers, focus groups with farmers, an analysis of Census of

Agriculture data, internet searches, and a review of the related literature and of Canadian governments agricultural regulatory activities.

FINDINGS HIGHLIGHTS

AGRICULTURE IN CONTEXT

Agriculture and food security will be facing major challenges and opportunities over the next decades. The following summarizes some of the key global agricultural and food security issues identified in the literature as well as Canadian agricultural statistics:

- Agricultural production needs to increase by 60 percent in the next 40 years to meet projected needs
- Food waste is a major issue, with 30 to 50 percent of food produced for human consumption never reaching a human stomach
- The demand for local and organic food has been growing rapidly in recent years
- Agricultural production is concentrated in the hands of a few firms
- For agriculture to be sustainable and meet future needs, critical environmental and economic issues need to be addressed, including: loss of critical habitat and biodiversity; the mix of land allocated to meat and dairy versus crops; greenhouse gas emissions from agriculture; the degradation and or depletion of top soils, water supplies, and phosphorous; bee colony collapse disorder; invasive and noxious plant species; and adjusting to expected increases in energy prices
- In 2010, agriculture and agri-business in Canada provided 1 in 8 jobs and 8.1 percent of GDP
- The aging population is posing farm succession problems
- Farm management presents unique challenges to small scale producers who have fewer resources on hand to navigate a complex web of agricultural regulation

GREATER TERRACE LAND USE AND THE AGRICULTURAL LAND BASE

With almost 15,000 hectares of land in the Agricultural Land Reserve, a mild North Coast climate, and over one hundred years of agricultural history, the Greater Terrace area is well situated to increase agricultural activities over the next decades. Farming is an important part of the lifestyle of people living in this area, and farming and food growing activities are spread throughout the Plan area, on many types of soil capabilities and within and outside the Agricultural Land Reserve. Even within the urban areas of the City of Terrace and Thornhill, food growing activities are important aspects of living in the Greater Terrace area.

GREATER TERRACE AGRICULTURAL PRODUCTION AND FOOD SECURITY

The 2011 Census of Agriculture identified 52 agricultural operators in Greater Terrace (GT) in 2011. An additional nine operators were identified through our GT farmers' and agricultural operators' survey: nine of the 18 survey respondents who met Statistics Canada's definition of agricultural operator did not receive a 2011 Census of Agriculture questionnaire. Two of these missing farms have acreage between 240 to 399 acres representing two of the three largest farm acreage captured by both the Census and the GT farmers' and agricultural operators' survey. In addition, Daybreak Farms have been missing from the Census of Agriculture since 2001 and are by far the largest agricultural operations in GT. As a result, Census of Agriculture data seriously understates agricultural production in GT. Moreover, while the Census focuses on commercial agriculture, many GT growers grow for personal use. Finally, the objective of this study is to develop an agricultural area plan and consequently, we do not discuss or attempt to measure other local activities that contribute to food security, such as wild food gathering and hunting and fishing.

GT agricultural operators are engaged in a wide variety of agricultural activities. Most are small operations and hobby farms. While the Census of Agriculture data identified limited crop growing activities among Census respondents, the GT farmers' survey found that most respondents were growing a wide variety of crops.

Fifty three of the 61 (87 percent) farm operations identified had gross revenues of less than $25,000 in 2011, five (8 percent) had gross revenues between $25,000 and $100,000, and three (5 percent) had gross revenues of $100,000 or more. The three largest agricultural operations likely account for the vast majority of gross agricultural revenues in GT.

According to Census of Agriculture data, the number of Census farms in the RDKS declined from 184 to 106, a 42 percent decline, and farm acreage from 31,537 acres to 19,565 acres, a 38 percent decline. Despite this, farm revenues (taking Daybreak Farms into account), farm wages, weeks worked, and the value of farmland and buildings all increased over the same period.

Greater Terrace residents gardening habits and preferences for local food

We conducted the Greater Terrace Food Survey (GTFS), a survey of GT residents' gardening habits and food purchasing preferences. We found that the 122 GTFS respondents are not representative of GT and Canadian households, with their relatively high education, incomes, ages concentrated in the 30-64 years of age range, and purchases of organic food, but are likely to be fairly representative of Skeena Valley Farmers' Market shoppers and/or of people interested in local food growing activities. Most GTFS respondents have gardens, some fairly large, and they collectively garden over 1.8 acres and almost 12,000 square feet of greenhouse or covered space and own 458 fruit trees.

Sixty-eight percent of GTFS respondents are willing to pay more for local food, and some, much more. They put a high value on the usual reasons for buying local food including: freshness of local food, supporting local farmers and gardeners, the better taste of local food, supporting the local economy, creating less of a carbon footprint, and others. Local food being less expensive is by far the least important factor in their decision to buy local food.

Challenges and barriers faced by Greater Terrace agricultural producers

Agricultural producers face a number of significant barriers in the Greater Terrace area. Flooding, erosion, and drainage problems result in part from the higher levels of precipitation in the area and the highest capability soils are located in the floodplains of the Skeena and Kitsumkalum Rivers. Differences in available water supplies, soil types and soil fertility result from a mosaic of landforms on the valley floor, deposited during the complex deglaciation history of the region. Barriers which discourage new and potential farmers arise primarily from the lack of information about local farming conditions and the lack of cooperative farmer initiatives to overcome barriers such as the high costs of feed, gas, and farm insurance. In order to become a larger agricultural business or operation in this area, farmers must be able to overcome the barriers of a small local market, expansion into regional markets, and a restricted growing season. Participants in the public input processes for the Plan expressed optimism about their ability to singly or cooperatively to overcome these barriers, if they have the support of local and regional governments, and are able to access funding from Provincial and Federal government levels.

Infrastructure and conservation tools

Communities in North America and elsewhere have been organizing in a variety of ways to support production and distribution activities of small-scale farms that focus on supplying local and regional markets, to conserve agricultural land, and to address farm succession issues. Some of these ways include: community-supported agricultural organizations where consumers share the farming risk by buying a share of the planned output of one or more agricultural producers; community farms where farmland is held in trust for local food production that uses sustainable agricultural practices; agricultural co-operatives that support marketing and other activities for groups of producers; food hubs that facilitate the aggregation, storage, processing, and distribution of locally and regionally produced food; and, leasing arrangements that address farm succession issues by allowing young people to enter the industry without having to make large capital investments and allowing retired farmers to continue to live on their land while letting younger farmers farm it.

Recommendations

The recommendations in this report have been provided to assist the City of Terrace and Regional District of Kitimat-Stikine in setting priorities and a clear direction in their support of both a strong and profitable local agricultural sector and a network of healthy food growing activities that increase community food security and the local economy.

Amongst the most important of the recommendations to maintain the potential of larger scale agriculture within the Plan area is protection of the floodplains where the best soils and greatest agricultural acreages are found. If food production is a major goal, then actions should be taken to reduce the amount of erosion and land removal in

these areas. Policies are needed to assist farmers in the mitigation and reduction of the economic costs of farming in floodplain zones.

The Greater Terrace area is different from most agricultural areas, in that the land used for farming and growing food is spread across soils of all capabilities. Food production and life style activities such as recreational horses are very important to the residents of this area, but people tend to farm where they live, rather than farm where the best soils and farming conditions are located. Recommendations are provided which identify some of the conflicts and land use needs that arise from having such a dispersed agricultural and farming community.

Throughout the planning processes, there was considerable interest and enthusiasm by both existing farmers and new and potential farmers in the agricultural future of the area. One of their strongest requests was access to more information, either by a local on-line archive or by workshops and demonstrations. The participants felt that a farmers' organization would allow them to meet each other and share information. Recommendations identify the key areas of knowledge wanted by farmers and food producers.

Participants identified very specific barriers to the development of profitable agriculture and successful farming. Recommendations for actions to overcome these barriers are provided in this report and provide a guide for local and regional government initiatives to support growth of agriculture and enhance community food security.

Photo: Courtesy of Jennifer Reeves, Skeena River Ranch

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List of Acronyms

AAP – Agricultural area plan

AAFC – Agriculture and Agri-Food Canada

ALC – Agricultural Land Commission

ALCA – Agricultural Land Commission Act

ALR – Agricultural Land Reserve

ALRUSPR – Agricultural Land Reserve Use, Subdivision and Procedure Regulation

ALUI – Agricultural land use inventory

BCBHEC – B.C. Broiler Hatching Egg Commission

BCCMB – B.C. Chicken Marketing Board

BCCMC – B.C. Cranberry Marketing Commission

BCEMB – B.C. Egg Marketing Board

BCFIRB – B.C. Farm Industry Review Board

BCFSA – B.C. Food Safety Act

BCHMC – B.C. Hog Marketing Commission

BCMMB – B.C. Milk Marketing Board

BCAG – B.C. Ministry of Agriculture

BCTMB – B.C. Turkey Marketing Board

BCVMC – B.C. Vegetable Marketing Commission

CAFA – Canada Agricultural Products Act

CDCA – Canadian Dairy Commission Act

CFC – Chicken Farmers of Canada

CFIA – Canadian Food Inspection Agency

CHEP – Canadian Hatching Eggs Producers

EFC – Egg Farmers of Canada

FPAA – Farm Products Agency Act

GT – Greater Terrace

GTFS – Greater Terrace Food Survey

IAFBC – Investment Agriculture Foundation of B.C.

MIR – Meat Inspection Regulation

RDKS – Regional District of Kitimat-Stikine

TFC – Turkey Farmers of Canada

CHAPTER 1 – INTRODUCTION

Lynda Gagné and Norma Kerby

BACKGROUND ON AGRICULTURAL AREA PLANNING AND RESEARCH OBJECTIVES

The City of Terrace, the Regional District of Kitimat-Stikine (RDKS), and other local organizations and government agencies are strongly committed to increasing agricultural production in the Greater Terrace (GT) area. Agricultural production has been quickly declining in this region in recent years. The number of farms in the Kitimat-Stikine Census Division decreased from 184 in 1996 to 106 in 2011, a 42 percent decline, and farm acreage declined from 31,537 acres in 1996 to 19,565 acres in 2011, a 38 percent decline (Census of Agriculture, 1996, 2011). A substantial amount of the fertile land base is not in production while the region is experiencing a relatively high unemployment rate and current agricultural production does not meet local demand for fresh food. Climate change impacts are expected to result in warmer temperature for the area increasing the length for the growing season. Agricultural production contributes to economic activity, and if it is small-small scale and geared towards local markets, it increases self-sufficiency, food security, and opportunities for obtaining fresh food.

No comprehensive agricultural planning and economic strategy had been undertaken for this region as of 2011. The Governments of Canada and British Columbia encourage agricultural area planning in British Columbia by providing matched funding through the Investment Agriculture Foundation of British Columbia (IAFBC), for local governments to conduct agricultural land use inventories (ALUI) and develop agricultural area plans (AAP). To address the lack of a comprehensive agricultural planning and economic strategy for the area, the City of Terrace and RDKS applied for and received funding from IAFBC to conduct an ALUI and develop an AAP for the Greater Terrace area. For the purpose of this planning process, Greater Terrace is defined as the area extending from Terrace to Rosswood to the North, to Old Remo to the South-West, to New Remo to the North-West, to Lakelse Lake to the South, to Chimdemash to the North East, and includes Thornhill and Jackpine Flats. Excluded from the ALUI survey were Crown lands except for Crown lands under agricultural lease.[1]

The objectives of the ALUI are to:

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- provide an overview of the local demographics and the economy, and the agricultural industry in the region;
- provide an overview of legislation and regulations that affect the local agricultural industry;
- through consultation with local agricultural producers and academic research, identify barriers faced by the industry in this region;

[1] A more precise description of included areas can be found in Appendix I of *Greater Terrace Agricultural Area Plan: Land Use and the Agricultural Land Base*.

- identify ways to develop agricultural capacity and productivity through enabling policies, infrastructure, and the creation of organizations that can facilitate and provide economies of scale in the production and trade of local food;
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AGRICULTURAL LAND USE SURVEY AND INVENTORY

Staff from the B.C. Ministry of Agriculture and Lands conducted an agricultural land use survey of the Greater Terrace area in August 2012 to provide a baseline inventory and produce a report that will provide a record of land uses in areas designated for agriculture and act as a benchmark for monitoring land use change to:

- improve the understanding of land use and resource relationships;
- improve the information base to assist land use decision-making including official community plan and bylaw updates;
- identify opportunities for increasing agricultural production.

VISUAL SURVEYS

In order to quantify the relationship between soil capabilities, the Agricultural Land Reserve, and land use within each of the subareas, visual surveys were undertaken for the rural properties in the Greater Terrace area outside of the City of Terrace and Thornhill. As well, selected properties within the agriculture and rural zones of the City of Terrace and Electoral Area E (Thornhill) were surveyed.

Soil capability polygons were identified through soil capability maps. Agricultural Land Reserve maps and land parcel maps were provided by the Regional District of Kitimat-Stikine. A list of Farm Class properties was compiled from the BC Assessment data base.

Data collected included characteristics of soil capability types through soil pits and cutbank profiles. Agricultural activities and identifiable food-associated land use features that were surveyed included greenhouses, fruit trees, gardens (>10m2), large fields (>0.2 ha), cattle, horses, and other livestock. Parcels were identified by house number, map location, and/or GPS coordinates. Parcels were viewed from public roads or from crown land. In the rural areas of Greater Terrace outside of the City of Terrace and Electoral Area E (Thornhill), all public roads were surveyed. Within the City of Terrace and Thornhill, selected properties zoned agriculture or rural, or having a B.C. Assessment Authority Farm Class property status, were surveyed. As well, two urban neighbourhoods within the City of Terrace, each consisting of 100 consecutive properties, were sampled for measurements of urban food producing activities.

Sightings provided “at least” numbers e.g. there were not fewer of a particular characteristic than the number of sighted occurrences. Total activity numbers were not possible because some features were not visible from a public road or some features may only seasonably have been at a specific property e.g. grazing cattle. Inaccessible properties were not surveyed and were noted as unknown in terms of their contributions to agricultural production.

SURVEY OF RESIDENTS

An online survey or residents was conducted between May 2012 and January 2013. The survey included questions about residents' gardens and the fruit and vegetables they grow, their food shopping habits and preferences, including preferences for and purchases of local and organic foods and willingness-to-pay more for local food. In addition, respondents were asked a few demographic questions to determine how representative they are of Greater Terrace residents. Because the residents' survey was not randomly assigned, it was expected that those residents who are more likely to buy local food and support local agriculture were also more likely to complete the survey. We received 122 complete and usable responses, representing 1.6 percent of the 7,186 Greater Terrace private dwellings occupied by usual residents according to the 2011 Census of Population.

PUBLIC MEETINGS

The first public meeting for the Greater Terrace AAP was held at the Thornhill Community Centre on October 17, 2012, from 6 to 9 p.m. An open house was held for the first hour, followed by presentations by Ted Pellegrino, Regional District of Kitimat-Stikine and Tara Irwin, City of Terrace. Information gathered to date for the AAP was presented by Dr. Lynda Gagne, who discussed economic statistics and national trends applicable to the AAP. Dr. Norma Kerby gave a historical overview of agriculture in the Greater Terrace area and discussed the results of the visual surveys, showing relationships between food growing activities, soil capabilities, the Agricultural Land Reserve, and B.C. Assessment Authority Farm Class properties. The presentations were followed by an open forum regarding the barriers to agriculture in this region. Sixty-eight people attended the public meeting.

The second public meeting for the Greater Terrace AAP was held at the Thornhill Community Centre on February 22, 2013, from 6 to 9 p.m. The purpose of the meeting was to present the first draft of this report to the community and to receive additional feedback from the community before finalizing the report. Approximately 40 people attended the public meeting.

PUBLIC LECTURES

On August 7, 2012, Dr. Norma Kerby gave a lecture at Heritage Park Museum on the history of agriculture and heritage plants in the Greater Terrace area. This lecture was used to introduce the public to the Greater Terrace Agricultural Area planning processes. On November 1, 2012, Dr. Kerby gave an additional public lecture at the University of Northern British Columbia, discussing the methodology used in the AAP to identify local food growing activities at a variety of land use scales, and the relationships of these activities to soil capabilities and the Agricultural Land Reserve (ALR). Results of the visual surveys were compared to other methodologies, such as the Census of Agriculture and B.C. Assessment Authority Farm Class property lists.

FARMERS' FOCUS GROUP MEETINGS AND SURVEY

Local farmers, growers, and agricultural suppliers and services organizations were contacted and asked to participate in one of two focus group meetings and a farmers' and agricultural operators' survey. Farmers and agricultural operators who did not participate in the focus group meetings were subsequently contacted and offered to participate in an online version of the survey. The purpose of the focus group meetings and survey was to gather information about growers' land tenure, type and quantity of production, distribution methods and preferences, amounts of land in production, soil quality and climate related growing issues, labour need and practices, preferences for collaboration with other farmers, future plans, and major challenges. Part of survey was developed so that it could be compared to the 2011 Census of Agriculture data, because researchers discovered that the Census of Agriculture data does not include important GT agricultural operations that should have been included according to the definition used to determine inclusion in the Census.

Eighty-four households, farms, or agricultural organizations were initially contacted by mail to participate in one of the two focus group meetings[2]. Forty-four individuals, excluding staff and RDKS elected representatives, participated in the meetings, three of whom heard of the meetings by word of mouth rather than through a formal mail invitation. Six staff, consultants, and RDKS directors participated in one or both of the focus group meetings. Of the 84 households, farms, or agricultural organizations that were initially contacted by mail, 35 (42%) attended a meeting. Two additional farms were represented in absentia by meeting attendees increasing representation to

[2] Since some households, farms, or agricultural operations were represented by more than one individual, the number of potential individual research participants exceeds 84.

37 (44%). Finally, five of the farmers who were subsequently contacted and offered to participate in an online version of the farmers' survey completed part or all of the survey online, increasing participation to 42 or 50% of the list of households, farms, or agricultural organizations that were initially contacted by mail. Of the 34 surveys that were partially or fully completed, 29 yielded usable data.

Analysis of Census of Agriculture Data

The Census of Agriculture data for 1996, 2001, 2006, and 2011 were analyzed to provide a description of agricultural activities in Greater Terrace (2011), the Regional District of Kitimat-Stikine (1996 and 2011), and the North Coast (1996, 2001, 2006, and 2011). The data were used to provide a baseline for current production and an analysis of trends.

Greater Terrace agricultural potential and food security

As discussed in the next section, there are a number of pressures facing global agriculture that suggest that food prices are likely to substantially increase in the foreseeable future. With energy prices also expected increase, food and other agricultural products shipped from distant locations to remote rural areas will become relatively more expensive than if grown locally, and even more so if local agricultural producers are able to increasingly rely on locally produced agricultural inputs such as heavy soil builders and fertilizers that are expensive to ship. These trends favour the expansion of small-scale agricultural production destined to local markets, a type of agriculture in which Greater Terrace has a relative advantage.

With increases in temperatures as a result of climate change, Greater Terrace will experience longer growing seasons, as will the rest of the world. Greater Terrace may have an advantage over other regions however, because of the relative abundance of water in this area. The likelihood that this area will be faced with severe droughts as has been the case in southern regions of North America in recent years is low. Water is very important to agriculture and it is getting increasingly scarce and polluted all over the world, threatening the supply of food and other agricultural products in other regions of the world. While Greater Terrace will likely continue to have an abundance of precipitation in the future, with warming, snow will turn to rain and snowcaps may longer be available to feed streams in dryer summers. Hence, efforts to preserve winter rainwaters for dryer summer periods may become necessary.[3]

Demand-side pressures are also favouring the development of local agriculture. Concerns over the environmental and animal welfare impacts of industrial-scale agricultural production and over food safety have resulted in an increase in the demand for sustainably- and locally-produced food. Consumers increasingly prefer to buy their food from farmers they can talk to and from farms they can visit.

On the other hand, meat safety issues in the early 2000s resulted in tightening regulations enacted in 2004 that nearly extinguished meat production in the Greater Terrace area because of the resultant inability of producers to get their livestock and birds slaughtered and processed nearby. These regulations created such a problem for B.C. rural communities that the B.C Government put in place new and less restrictive slaughtering and processing regulations in 2010 to accommodate the needs of rural regional districts such as the Regional District of Kitimat-Stikine. This and other regulatory issues are discussed at greater length in the next section.

Overall, economic and environmental conditions favour an agricultural expansion in GT, although it will be necessary for the community and local governments to stay alert to address the needs of agricultural producers and to address the challenges that regulations pose for small producers.

Economic, environmental and regulatory contexts

Global agriculture is at a crossroad. Concerns are rapidly growing over whether the existing global intensive large-scale monoculture food system centralized in the hands of a few players is environmentally sustainable, healthy, or ethical. In the next 40 years, it is expected that the world will need to produce 60 percent more food than it currently does, although we are currently wasting 30 to 50 percent of the food we produce for human

[3] According to Norma Kerby, this is unlikely to be a problem, as climate models forecast that we are to have more summers similar to 2011 where it rained all summer.

consumption. With oil reserves declining and the impact that the use of fossil fuels has on a warming planet, the actual and hidden costs of energy consumption are expected to rise sharply. Climate change is expected to disrupt ecosystems and especially agriculture and biodiversity. Global water resources are becoming increasingly scarce and compromised by chemicals. Soils are eroding and becoming less fertile as a result of intensive monoculture, increasing farmers' dependence on high-energy inputs. Honeybees are experiencing collapse disorder, a trend that worsened drastically in the last year. These global trends are going to present considerable challenges for agriculture, but some also present increasing opportunities for Greater Terrace, an area with good soils, an abundance of water, a favorable climate, and a land base and location that make it ideal for gardening and for small-scale sustainable farming operations geared for a regional market.

Food safety concerns and the inherently unstable nature of agricultural commodity prices in the existing food system have given rise to a complex web of provincial and federal regulations around growing crops, animal husbandry, and the marketing and price stabilization of agricultural commodities. In addition, agriculture, like many other industries, receives price supports and subsidies, and research support. Economic and environmental issues and the regulatory context are discussed at greater length in the next chapter.

REPORT ORGANIZATION

The remainder of this report is organized as follows. Chapter 2 provides a contextual discussion of agriculture, including economic and environmental issues and trends, and agricultural regulation in Canada and British Columbia. Chapter 3 provides a discussion of land use and the agricultural land base in Greater Terrace. Chapter 4 provides a discussion of agricultural production in Greater Terrace and of local farmers' interest in collaboration and plans for the future. Chapter 5 provides a discussion of GT food survey respondents growing practices, and food purchasing habits and preferences for local food. Chapter 6 provides a discussion of challenges and barriers faced by Greater Terrace agricultural producers. Chapter 7 briefly discusses infrastructure (organizational) and conservation tools used in other jurisdictions to support agricultural production and distribution, and the preservation of farmland for agricultural purposes. Chapter 8 presents a series of recommendations and Chapter 9 concludes. Detailed tables and other information, including web links of interest to agricultural producers are presented in the appendices. A list of focus group participants who have agreed to have their names listed in this report is also included in the appendices along with a directory of agricultural producers who participated in our focus group or survey and formally agreed in writing to be included in the directory.

Photo: Courtesy of Lynda Gagné

CHAPTER 2 – AGRICULTURE IN CONTEXT

Lynda Gagné

INTRODUCTION

In this section we review a few key trends in agriculture, including expected increases in the world demand for food, increasing demand for organic and local food, agricultural concentration, agriculture and the environment, statistics about Canadian agriculture, and agricultural regulation in Canada and British Columbia.

WORLD DEMAND FOR FOOD

According to the OECD-FAO Agricultural Outlook 2012-2021 world "[a]gricultural production needs to increase by 60% over the next 40 years to meet the rising demand for food" and "[a]dditional production will also be necessary to provide feedstock for expanding biofuel production" (p. 4). Sustainable productivity increases are critical to meet this demand (OECD-FAO, 2012). In addition to sustainable production of food, responsible management and use of the food supply is also needed:

> Today, we produce about four billion metric tonnes of food per annum. Yet due to poor practices in harvesting, storage and transportation, as well as market and consumer wastage, it is estimated that 30–50% (or 1.2–2 billion tonnes) of all food produced never reaches a human stomach. Furthermore, this figure does not reflect the fact that large amounts of land, energy, fertilisers and water have also been lost in the production of foodstuffs which simply end up as waste. This level of wastage is a tragedy that cannot continue if we are to succeed in the challenge of sustainably meeting our future food demands. (Fox, 2013, p. 2)

In Canada, "[e]stimates of food waste in Canada range from 15% to almost 45% of food available for consumption, depending on the commodity" and "[m]ost of this waste occurs at the household level in preparation and storage" (Kittson, Smith, Saunders, & Islam, 2012, p. 65).

Projected increases in the demand for food and in energy costs suggest that food prices will likely rise in the future, and especially if agricultural producers and systems are slow to adapt to climate change. On the other hand, the extent of food and agricultural input wastes suggest that most if not all of the projected increases in food demand could be met by eliminating this waste. If food and agricultural inputs become more expensive as a response to increased demand, producers, processors, and consumers will undoubtedly respond by reducing the amount of food and agricultural inputs they waste.

DEMAND FOR LOCAL AND ORGANIC FOOD

In light of food safety concerns and the general population's increasing desire to consumer food grown closer to home, the demand for organic and local foods has recently been rapidly increasing. A 2011 survey by Farm Credit Canada (FCC) found that 43 percent of Canadians were willing to pay more for locally-grown food, with older and wealthier Canadians more likely to belong to this category. An OECD survey conducted in 2010 found that 76 percent of Canadians consuming organic food were more likely to do so for health reasons rather than environmental reasons and that 37 percent of Canadian respondents were not willing to pay more for organic food (OECD Publishing, 2011). Although one might thus conclude that 63 percent are willing to pay more for organic food, this incorrect as the question allowed a "don't know" answer and the percentage of those responding "don't know" is not revealed in the report. Nevertheless, these findings indicate that a substantial proportion of Canadians *are* willing to pay more for organic food. More generally, "[t]here is an increasing number of farms diversifying production, producing niche products such as organics, adopting environmentally-friendly production methods and producing non-traditional products and services such as agro-tourism" (Kittson, Smith, Saunders, & Islam, 2012, p. xiii).

AGRICULTURAL CONCENTRATION

TABLE 1 – NUMBER OF FARMS AND FARM AREA, CANADA (1921-2011) AND NORTH COAST (1996-2011)

	Canada			Regional District of Kitimat-Stikine		
Year	Millions of acres of farm area	Thousands of farms	Average farm size (acres)	Acres of farm area	Number of farms	Average farm size (acres)
1921	140.9	711.1	198			
1951	174.0	623.1	279			
1991	162.8	318.4	511			
1996	168.2	276.5	608	31,537	184	171
2011	160.2	205.7	779	19,565	106	185
% change 1921 to 2011	14%	-71%	293%			
% change 1996 to 2011	-5%	-26%	28%	-38%	-42%	8%

Source:

Statistics Canada (2012). *Farm and Farm Operator Data: Highlights and Analysis* . 2011 Census of Agriculture. Ottawa, Statistics Canada Catalogue No. 95-640-X

Statistics Canada (2012). *2011 Census of Agriculture* .

Statistics Canada (1997). *Agricultural Profile of British Columbia* . 1996 Census of Agriculture. Ottawa, Statistics Canada Catalogue No. 95-181-XPB

Agriculture in developed nations has seen vast changes since the industrial revolution, with the bulk of food production shifting away from small-scale family enterprises serving local markets to large-scale industrial agri-business serving global markets. Table 1 show how concentration of farming has evolved since 1921 in Canada using data from the Census of Agriculture. While Canadian farm acreage increased by 14 percent between 1921 and 2011, the number of farms decreased by 71 percent, and the average farm size increased 293 percent. A similar trend is found in the Regional District of Kitimat-Stikine (RDKS) between 1996 and 2011. Large industrial operations tend to specialize in one or a few crops and raise livestock in relative confinement and in crowded conditions. Increasing concentration in livestock slaughter and food processing has been documented and is supported by agricultural statistics. For example, "[t]he leading four firms slaughtered 64% of all U.S. hogs in 2007, compared with 32% in 1985", while the leading four firms processed 84% of steer and heifer in 2007 compared to 41% in 1982 (Johnson and Becker, 2009, cited in (Sexton, 2012). In Canada, Kittson et al. (2012) find that "[w]hile just 3% of food processing establishments have over 200 employees, these large firms account for half of the food processing industry's workforce" (p. 10). On the other hand, "the top four food processing establishments accounted for only about 20% of sales" compared to "65% in the petroleum and coal products industry" (p. 83). Concentration is higher on the food retail front, with the four-largest food retailers accounting for about 61% of grocery sales.

AGRICULTURE AND THE ENVIRONMENT

AGRICULTURAL IMPACTS ON THE ENVIRONMENT

Agriculture currently uses around 38 percent of Earth's non-ice surface, the largest use of land, with much of the remainder being either unsuitable for agriculture or included in ecological reserves. Sixty-two percent of crops are used for human food, 35 percent for animal feed, and three percent for "bioenergy, seed and other industrial products" (Foley et al., 2011, p. 2). Foley et al. succinctly summarize the adverse environmental impacts of modern industrial agriculture that will need to be addressed so that our growing population can be sustainably fed:

- The mix of land allocated to meat, dairy, and human food production needs to be critically evaluated; while some land is most suitable for grazing animals or in mixed crop-livestock systems, using too much land that is suitable for human crops for meat and dairy production reduces the total potential food supply.

- Agricultural expansion reduces wildlife habitats, biodiversity, and carbon storage, especially when tropical forests are cleared to make room for farm land. Intensive agriculture has adverse impacts on soil condition.
- "Intensification has also caused water degradation, increased energy use, and widespread pollution"(p. 2). Irrigation represents 70 percent of global fresh water withdrawals, and the use of fertilizers, manure, and leguminous crops to increase soil nitrogen have serious impacts on water quality, aquatic ecosystems, and marine fisheries.
- Finally, "[a]griculture is responsible for 30–35% of global greenhouse gas emissions, largely from tropical deforestation, methane emissions from livestock and rice cultivation, and nitrous oxide emissions from fertilized soils" (p. 2)

Foley et al. point out that policies have been either focused on either increasing agricultural production to the detriment of the environment or protecting the environment while ignoring productivity issues. To be successful at sustainably meeting the world's need for food, both environmental impacts and productivity need to be taken into account. Foley at al. propose the following broad solutions, which they estimate could increase the food supply by 100 to 180 percent without further exacerbating biodiversity and carbon storage loss, if properly applied:

- Discontinue tropical deforestation to increase the farming land base because "the food production benefits of tropical deforestation are often limited, especially compared to the environmental damages accrued" (p. 3)
- Improve productivity of underperforming agricultural land
- Increase efficiency in the use of agricultural inputs, including water, energy, and fertilizer
- Shift diets and reduce food waste

Environmental and economic issues faced by farmers

Although Foley at al. raise many of the most important environmental issues associated with agriculture, depletion of water supplies, soil erosion and depletion, phosphorous depletion, invasive and noxious plant species, honeybee colony collapse disorder, and rising energy prices are other important issues agriculture is currently facing. A recent Time World article provides stark statistics on world soil depletion:

> A rough calculation of current rates of soil degradation suggests we have about 60 years of topsoil left. Some 40% of soil used for agriculture around the world is classed as either degraded or seriously degraded – the latter means that 70% of the topsoil, the layer allowing plants to grow, is gone. Because of various farming methods that strip the soil of carbon and make it less robust as well as weaker in nutrients, soil is being lost at between 10 and 40 times the rate at which it can be naturally replenished (World Economic Forum, 2012).

Similarly, increases in meat consumption over the last 50 years have depleted world phosphorous reserves and current trends are threatening the sustainability of the world's supply of mined phosphorous (Metson, Bennett, & Elser, 2012) . Soil and mined phosphorous depletion and other issues affecting agriculture, along with increased demand for food, will likely result in significant shifts in what we eat and grow and how we grow it. Moreover, a recent article in the New York Times reveals that the honeybee collapse disorder soared in the last year in the U.S. "wiping out 40 percent or even 50 percent of the hives needed to pollinate many of the nation's fruits and vegetables." (Wines, 2013). Business as usual is not sustainable. If we are too slow to change, we can expect significant increases in food prices and global unrest.

Canadian agriculture

In 2010, agriculture and agri-business in Canada provided 1 in 8 jobs and 8.1 percent of GDP ($100.3 billion) in 2010, exported $35.5 billion and imported $28 billion in products, ranking as fifth largest exporter and sixth largest importer in the world. Based on these numbers, Canada exported 35 percent of what it produced and imported 30 percent of what it consumed. Agriculture and food processing represented less than 2 percent of provincial GDP in British Columbia, but contributed almost 10 percent of employment, highlighting the fact that agricultural workers are seasonal workers that tend to have lower wages than other workers. Around thirty-two percent of agricultural

workers were 55 years of age and older, a reflection of the aging population (Kittson, Smith, Saunders, & Islam, 2012) .

The aging population in most developed countries is raising a number of concerns, including fiscal sustainability concerns as older workers retire, contribute less to taxation, and draw more on public pension plans, and as an aging population increases the demand for and cost of public health care. On the agricultural front, an aging population poses farm succession concerns, especially since the younger generation that would normally take over frequently does not have sufficient capital to purchase agricultural land and equipment and many current farmers do not have offspring willing to take over the farm.

AGRICULTURE REGULATION IN CANADA AND BRITISH COLUMBIA

Commercial agriculture is heavily regulated and subsidized in Canada and most of the world, to preserve land for agriculture, insure the right to farm, address food safety, facilitate marketing, provide financing and crop insurance, and provide farmers or certain agricultural products with stable prices, among other issues. The complexity of agricultural and food regulation presents serious challenges to small scale producers who frequently do not have the resources necessary to comply with or understand the regulatory system. In this section, we review some of the key regulatory agencies and include web links to agencies, laws, and regulations. Agricultural operators should contact regulatory agencies when they need assistance in interpreting and navigating regulation.

Agriculture and Agri-Food Canada (AAFC) identifies 15 Acts of the Government of Canada that regulate Canadian agriculture. The Canadian Food Inspection Agency (CFIA), an agency of Health Canada, is responsible for a number of acts and regulations regarding food safety. In particular the Canada Agricultural Products Act (CAPA) regulates "the marketing of agricultural products in import, export and interprovincial trade and to provide for national standards and grades of agricultural products, for their inspection and grading, for the registration of establishments and for standards governing establishments" (Government of Canada, 1985a). The B.C. Ministry of Agriculture (BCAG) is responsible for provincial agricultural regulation and identifies 31 statutes for which it is responsible. Clearly, agricultural operators have to navigate various federal and provincial statutes and regulations. The complexity of regulations affecting an agricultural operation increases with farm size, the range of products grown, and especially with livestock and birds, and how far a farm's products are sold. Smaller scale fruit and vegetable farms that sell their products locally or regionally face the least amount of regulation. In the discussion below we briefly discuss some of the most important statutes and regulations affecting agricultural operator. However, the discussion is incomplete and existing and prospective agricultural operators are urged to consult provincial and federal agencies and their websites to become familiar with the laws and financial and other supports that may be of relevance to their operation.

FOOD SAFETY

B.C.'s food industry is subject to the Food Safety Act (BCFSA). The BCFSA states that manager, owners, or lessees of food establishments are responsible for making sure that the food in their establishment is safe for human consumption. A food establishment is "any place where, or any vehicle in which, in the ordinary course of business, food is grown, raised, cultivated, kept, harvested, produced, manufactured, slaughtered, processed, prepared, packaged, distributed, transported or sold, or is stored or handled for any of those purposes" (B.C. Government, 2002b). When the BCFSA was enacted in 2002 "it consolidated British Columbia's food safety legislation, including the Meat Inspection Act and the Health Act, into one statute. The Ministry of Health administers the Act at the food processing level, and the Ministry of Agriculture and Lands administers it at the farm level" (B.C. Ministry of Health, a). The BCFSA gives the Government the authority to enact regulations. The Meat Inspection Regulation (MIR) is a regulation of the BCFSA affecting meat-producing farmers. The B.C. Milk Industry Act and its Milk Industry Standards Regulation (MISR) affect dairy farmers.

As noted earlier, the Canadian Food Inspection Agency (CFIA) is also responsible for a number of acts and regulations regarding food safety. These regulate national standards and grades for agricultural products, consumer packaging and labeling, feed, fertilizer, animal health, meat inspection, plant breeding, plant protection, and seeds.

Meat slaughtering and processing

Meat slaughtering and processing regulation is an important part of the food safety regulatory regime in Canada. The Government of Canada regulates the slaughtering and packaging of meat that crosses provincial and national borders through the Meat Inspection Act (MIA). The Meat Inspection Regulation (MIR) introduced in 2004 in British Columbia covers meat grown in the province for sale within the province and represented a tightening of meat slaughtering and packing regulation requiring licensing of slaughtering and processing facilities. The regulation does not apply to "the slaughter of an animal by the owner of the animal for the owner's personal use and not for resale" (B.C. Government, 2004). The tightening of regulation likely caused many farmers in the Greater Terrace area to stop raising livestock and birds or to reduce the numbers they raised. While comparative census information is not available for Greater Terrace, Census of Agriculture data shows that for the North Coast, the number of heads of cattle decreased by 49 percent between 2001 and 2011 and the number of pigs by 84 percent over the same period. Although demographic and other economic factors may have contributed to this decline, the lack of availability of nearby licensed slaughtering facilities likely significantly contributed to the decline.

The MIR governs the licensing of meat slaughter establishments with four types of licenses currently available. Class A licenses permit both slaughter and cut-and-wrap services, and Class B licences, slaughter only. Class D and Class E licenses were introduced in 2010 with an amendment to the MIR "to support local livestock and meat production in B.C.'s more remote and rural communities" (B.C. Ministry of Health, b). Class D and E licenses are especially relevant to Greater Terrace since there is no Class A or B licensed facility in Greater Terrace. According to the Ministry of Health:

> The Class E licence allows on-farm slaughter of a small number of animals annually (1-10 animal units) for direct sale to consumers. Sales are restricted to the regional district in which the meat was produced, and operators are only permitted to slaughter their own animals.
>
> The Class D licence allows on-farm slaughter of a larger number of animals (1-25 animal units) for direct sale to consumers or retail sales to secondary food establishments (e.g., restaurants and meat shops) within the boundaries of the regional district where the meat was produced. Class D licence holders may slaughter their own or other peoples' animals. Class D licences are only available in 10 provincially designated regional districts (designated areas).
>
> **Note**: One animal unit means: combined weight, when measured alive, of 1000 lbs (454 kg) of meat (e.g., beef, poultry, bison, etc.)(B.C. Ministry of Health, b)[4]

Milk industry regulation

The B.C. Milk Industry Act (MAC) requires that in order to legally sell milk, a dairy farmer must be certified by an inspector. Certification requires that the farmer show proof of compliance with MAC and its regulations (i.e., the Milk Industry Standards Regulation) and also with federal and provincial statutes and regulations regarding the health of animals and animal contagious diseases.

Health of animals

The Health of Animals Act is a Government of Canada statute that seeks to protect animals from contagious diseases by requiring that "[a] person who owns or has the possession, care or control of an animal [ ] notify the nearest veterinary inspector of the presence of a reportable disease or toxic substance, or any fact indicating its presence, in or around the animal, immediately after the person becomes aware of the presence or fact" (Government of Canada, 1990) p.4. B.C.'s Animal Disease Control Act (BCADCA) provides for the appointment of a provincial veterinarian that administers the BCADCA, requires that there be a sufficient number of staff inspectors to enforce the Milk Industry Act, outlines the responsibilities of owners of cattle, horses and game that are diseased or suspected of being diseased, and of inspectors with respect to disease or suspected disease in cattle, horses and game.

[4] To apply for a D or E license, see: http://www.health.gov.bc.ca/protect/meat-regulation/apply-d-e-licence.html

MARKETING BOARDS AND COMMISSIONS

In Canada, the supply of and/or marketing of certain agricultural products is regulated by the Farm Products Agencies Act (FPAA), the Agricultural Products Marketing Act (APMA), and the Canadian Dairy Commission Act (CDCA)[5]. The FPAA establishes the National Farm Products Council or Farm Products Council of Canada (FPCC), which include three to seven government appointees, at least half of which are primary producers. The FPAA's main responsibility and authorities are to establish farm product supply management agencies with the authority to purchase and market regulated farm products. The Government also appoints the members of these agencies (Government of Canada, 1985b). National agencies currently include the Egg Farmers of Canada (EFC), the Turkey Farmers of Canada (TFC), the Chicken Farmers of Canada (CFC), and the Canadian Hatching Egg Producers (CHEP) (Government of Canada, 2012). National agencies have provincial counterparts and provinces have additional regulating agencies. The APMA governs the marketing of agricultural products in interprovincial and export trade and supports a number of province-specific federal regulations. The CDCA establishes the Canadian Dairy Commission, which coordinates federal and provincial policies to control milk production. Each province has its own milk marketing board. Provincial marketing boards regulate the interprovincial and export trade of milk, while the federal agency controls the marketing of industrial milk and dairy products in interprovincial and export trade (Government of Canada, 2012b).

In B.C., the British Columbia Farm Industry Review Board (BCFIRB) supervises the eight B.C. agricultural commodity boards: the Broiler Hatching Egg Commission (BCBHEC), the Chicken Marketing Board (BCCMB), the Egg Marketing Board (BCEMB), the Hog Marketing Commission (BCHMC), the Milk Marketing Board (BCMMB), the Turkey Marketing Board (BCTMB), the Vegetable Marketing Commission (BCVMC), and the Cranberry Marketing Commission (BCCMC).

More information about regulations affecting agriculture can be found here, here, here, and here.

THE B.C. AGRICULTURAL LAND USE COMMISSION AND THE AGRICULTURAL LAND RESERVE

In 1973, the B.C. Government enacted the British Columbia Land Commission Act. The Act established the Agricultural Land Commission (ALC). The ALC in turn established the Agricultural Land Reserve (ALR): "ALR boundaries were based on the capability and suitability of the land, its present use, local zoning and input from public hearings" to protect the 5 percent of B.C. Land most suitable for agriculture (B.C. Agricultural Land Commission, n.d.b). The act governing the ALC was amended and renamed several times over the years. The Agricultural Land Commission Act was enacted in 2002 and is the current legislation governing the ALC.

The ALR was established in response to concerns that the little land that was suitable for agriculture in B.C. was being rapidly diverted to other uses. According to Smith, B.C. had lost an estimated 78,000 hectares of good agricultural land to residential development in the Lower Fraser Valley and the Okanagan Basin in the 10 years that preceded the enactment of the 1973 British Columbia Land Commission Act (B. E. Smith, 1974).

According to the Agricultural Land Commission Act (ALCA), the purposes of the ALC are to: "(a) to preserve agricultural land; (b) to encourage farming on agricultural land in collaboration with other communities of interest; (c) to encourage local governments, first nations, the government and its agents to enable and accommodate farm use of agricultural land and uses compatible with agriculture in their plans, bylaws and policies" (B.C. Government, 2002a). The basic duties of the ALC involve deciding what is to be included in the ALR by reviewing and deciding on applications for inclusions and exclusions of land in the ALR. The Act restricts the use of ALR land for non-farm use and restricts the removal of soil, the placement of fill, and subdivision (unless permitted by the Act). The Act is supplemented by the Agricultural Land Reserve Use, Subdivision and Procedure Regulation (ALRUSPR). Owners of ALR land should familiarize themselves with the most important provisions of the ALCA and ALRUSPR.

FOOD SAFETY AND CONSUMER PREFERENCES

Concerns over the freshness and nutrition of the food we eat, food safety, food security, climate change, the environment, and animal welfare have resulted in increases in both the supply and the demand for food grown locally on small-scale farms in North America and other developed nations. Idealistically driven youth and retirees

[5] The Farm Products Agencies Act (1985) replaced the Farm Products Marketing Agencies Act (1972). Both acts establish(ed) the FPCC.

are taking to the land and they are not short of customers. Despite its appeal, farming is demanding work, and because small-scale farmers do not enjoy the same economies of scale that large farms do, costs of production on small farms are typically higher. Consumers need to be cognizant that fresher food, food safety, food security, and limiting negative climate change, environmental, and animal welfare impacts come at a cost. Generally they are cognizant of this, and as we see later in this report, most consumers of local food are willing to pay more for it than they are willing to pay for non-local food. This preference for local food presents Greater Terrace (GT) with excellent local marketing opportunities for food grown in the area. Moreover, GT abounds with soil suitable for agriculture and has appropriate weather for agriculture. Because GT is relatively remote and because the GT available agricultural land base consists of smaller acreages more suitable to small-scale diversified farming, it is unlikely that GT is going to become a net agricultural exporter in the near future, except to areas within the Regional District of Kitimat-Stikine and neighbouring regional districts. Neighbouring regional districts are also working on AAPs and there is the potential for collaboration and exchange with them. For instance, while much of GT is particularly suited to growing fresh fruit and vegetables, much of the Bulkley-Valley is particularly suited for growing meat.

CHAPTER SUMMARY

In this section we reviewed trends in agriculture, the world demand for food, including organic and local food, agricultural concentration, environmental issues caused by agriculture and faced by agriculture, statistics on Canadian agriculture, and agricultural regulation in Canada and British Columbia. It is clear from this review that business in agriculture as usual is not sustainable.

In the remaining chapters of this report, we review Greater Terrace's agricultural land base and use, agricultural production, residents' growing activities and their preferences for local food, types of organizations other communities have been using to support local food production, and challenges and barriers faced by agricultural producers, and provide a series of recommendations to support agriculture in Greater Terrace. Given the challenges facing agriculture in the future and expected increases in food prices, it is important for Greater Terrace to consider and address food security and agricultural sustainability issues. Greater Terrace is very well positioned for an increase in sustainable agricultural production that would promote food security in this remote region and provide residents with healthy food choices that are respectful of the environment.

Photo: Courtesy of Rudi Peters, Skeena Valley Apiary

CHAPTER 3 – LAND USE AND THE AGRICULTURAL LAND BASE

Norma Kerby

INTRODUCTION

Two technical reports were prepared for the Greater Terrace Agricultural Area Plan to examine different aspects of agricultural land use and food growing activities in the Greater Terrace area. The first, *The Greater Terrace Agricultural Land Use Inventory*, prepared by the Ministry of Agriculture, examines how many land parcels are used for farming and how much land is involved. The second report, *Land Use and the Agricultural Land Base*, prepared by Dr. Norma Kerby, is a detailed examination of the soils, climate, water, and land use patterns in the Greater Terrace area, their characteristics, and how they relate to the pattern of agricultural activities and food production at all scales of operations. Both reports are supplementary to this document and available through the Regional District of Kitimat-Stikine and the City of Terrace.

Field-based commercial agriculture is dependent upon the characteristics of the landscape, including soils, water, and climate. The resulting agricultural land use patterns are normally reflective of these factors, and the areas which have the most farming activity are associated with the best locations to farm. In the Greater Terrace area, though, only some of the larger scale agricultural activities are associated with the highest soil capabilities and the Agricultural Land Reserve (ALR). Both the Agricultural Land Use Inventory and Agricultural Land Base survey determined that more agricultural activity occurs outside of the ALR on lower quality soils than within the ALR on high capability soils. Despite the Greater Terrace area having significant potential to develop viable commercial agricultural ventures due to a favourable climate and thousands of hectares of higher capability soils, certain factors in the natural landscape and in the history of the area act as impediments to larger scale agricultural development.

Compared to commercial agriculture, non-sale food growing activities are extensive and important in the Greater Terrace area. Based on visual surveys and information from local farmers, the Greater Terrace area has many non-commercial small farms and properties which grow significant amounts of food for home consumption and exchanges. These farms are often located outside of the ALR and on lower quality soils. Food production and agricultural activities, in particular, horses, are important to the life styles of residents in the Greater Terrace area. A significant number of properties are involved in this type of small scale farming.

By examining both the history of agriculture in the Greater Terrace area, and the attributes of the agricultural land base, we can better understand this dispersed pattern of agriculture, small-scale farming, and food growing land uses characteristic of the Plan area. The Greater Terrace area does have agricultural districts but all of the subregions within the Plan have measurable agricultural and food growing activities, despite their suitabilities for agriculture.

TRANSFERRING HISTORICAL KNOWLEDGE AND EXPERIENCE

Farming in the Greater Terrace area started in the early 1900's when the land base was opened up to homesteads and pre-emptions. For the first six decades, agriculture was one of the primary economic factors for the area, then, with competition from high wages in the forest industry, agriculture went into a slow decline but remained an integral aspect of the life styles in the Greater Terrace area.

There has now been over one hundred years of intergenerational transfer of agricultural knowledge regarding how to successfully farm in this region. One of the consistent requests during the public events supporting development of this Plan was access to this knowledge. Historical agriculture information, including soils, varieties of crops, and farming techniques, could provide a foundation upon which the new round of agriculture in the Greater Terrace area might be based. Transfer of knowledge between members of extended farm family groups or within neighbourhoods already occurs in the Greater Terrace area, but there is not a consistent mechanism by which historical farming "know-how" is being preserved and passed on to new farmers.

Recommendation 1: Establish an archive of historical agricultural information.

Establish an archive of historical agricultural information relevant to the Greater Terrace area, including maps and publications from historical experimental farms, the B.C. Department of Agriculture, and the Canadian Department of Agriculture, as well as other local historical records and a bibliography of agricultural publications and links.

Recommendation 2: Interview experienced and retired farmers, and document important agricultural information and knowledge.

Interview and record applicable information and knowledge from experienced farmers, agricultural operators, and seniors in the Greater Terrace area. Make this information available through an archive.

Recommendation 3: Facilitate exchanges of agricultural information and ideas between experienced and new or expanding farmers and food producers.

Examine mechanisms by which experienced and new farmers and food producers in the Greater Terrace area can meet one another and exchange information and ideas.

THE AGRICULTURAL LAND BASE – CLIMATE

The milder climate of the Greater Terrace area is one of the most important assets in its potential future for both community food security and commercial agriculture. Situated in a West Coast Temperate rainforest climate, it is drier and warmer in the summer than the outer coast due to its inland valley location. Terrace's mean annual temperature is 6.3^{o}C, with daily summer temperatures in July averaging 16.4^{o}C and daily winter temperatures in January averaging -4.3^{o}C. The average frost free period is 153 days, from May 14 to October 13, giving the area a long growing season.

As Terrace is in a transition zone between interior and coastal climatic conditions, temperatures can also vary significantly with certain weather systems. The extreme maximum temperature on record is 36.5^{o}C, and the extreme minimum temperature on record is -26.7^{o}C (Environment Canada, 2012).

Precipitation is another factor contributing to agricultural viability of the Greater Terrace area. Terrace receives an average of 133 cm of precipitation per year. Of this, 375 cm falls as snow (37.5 cm water equivalent) and 97 cm as rain.

Although Terrace gets half of the precipitation levels of Prince Rupert, the Greater Terrace area can receive extreme amounts of precipitation during short periods of time due to Pacific cyclonic storms. The extreme rainfall on record is 11.5 cm of rain in 24 hours (October, 1978). The extreme snowfall is 191 cm of wet snow in one day (February, 1972)(Environment Canada, 2012).

Recommendation 4: Compile climate information relevant to local agriculture.

Establish an on-line site with descriptions of the climatic characteristics of the Greater Terrace area and with links to applicable published climatic information. This site should include pages about or links to explanations of long-term climatic factors affecting this area, such as records of extreme frosts, extreme precipitation events, snow depths, degree growing days, and sunshine hours, as well El Nino and La Nina oscillation patterns. As well, facilitate the collection of localized weather readings from the subareas, such as Rosswood and Chimdemash, whose local weather conditions and climate factors affecting agriculture vary from those of the Terrace subarea.

Recommendation 5: Facilitate workshops regarding climate factors important to agriculture.

Facilitate workshops to assist farmers in gaining knowledge about climate factors in the Greater Terrace area, in order to be better able to design their agricultural operations to withstand this area's weather oscillations and extreme weather events.

Recommendation 6: Facilitate workshops regarding climatic farming techniques important to farming in a coastal climate.

Compile, distribute, and facilitate workshops regarding climatic farming techniques which assist sustainable agriculture in a coastal climate, such as greenhouses, row covers, cold frames, hot beds, raised garden beds, garden boxes, water radiators, black plastic, and lithic (stone) heating.

Recommendation 7: Facilitate the availability of construction plans for greenhouses and other climatic farming techniques.

Obtain cost-effective construction plans for climatic farming techniques, such as greenhouses and raised garden beds, and make them available to the public.

Recommendation 8: Facilitate the availability of cost-effective building materials for climatic farming agricultural structures.

Obtain information and encourage cooperative methods of obtaining cost-effective building materials for climatic farming features such as raised garden beds and greenhouses.

Recommendation 9: Facilitate the availability of building plans and workshops regarding home and commercial cold storage facilities.

Review building regulations, obtain building plans, and hold workshops to provide information regarding the safe construction of cold storage facilities, including root cellars and cold rooms, for both residences and for larger farm operations.

Recommendation 10: Examine the feasibility of cooperative cold storage facilities for commercial agriculture.

Undertake a feasibility study to determine the need for and economic feasibility of year-round cooperative cold storage facilities for commercial agricultural crops.

Recommendation 11: Facilitate research regarding the factors affecting pollination of local agricultural crops, in particular tree fruits.

Facilitate discussions regarding the cooperation between local apiarists and fruit growers in terms of pollination of agricultural crops and production of honey. Promote research that examines the impacts of weather variations and other factors on fruit tree pollinators.

THE AGRICULTURAL LAND BASE – SOILS

With a cool, inland coastal climate, most soils in the Greater Terrace area are leached, acidic, and shallow in depth. Nutrient levels are low and soil forming processes are slow**.** The natural soil type, which develops on drained slopes over different types of parent materials, is called a podzol. Podzols have a white leached upper mineral layer and a red, iron rich subsoil. Other types of soils occur in the Greater Terrace area, depending upon drainage and frequency of disturbance. Examples include organic soils in poorly drained areas and regosols or brunisols (beginning soils) in floodplains subject to frequent depositions of silt and sand.

There are five basic types of parent materials over which soils develop in the Greater Terrace area. Due to a very complex pattern of deglaciation at the end of the Pleistocene 9,500 years ago, including a marine inlet which covered the Terrace area, the pattern of materials on the valley floor is a mosaic of many materials and can change dramatically over short distances. These materials include recent silts and sands in active alluvial floodplains; sands and sandy gravels in elevated glaciofluvial deltas; clays in glaciofluvial marine and glaciolacustrine (lake) deposits; coarse gravels and boulder-rich gravels in glacial outwash plains; and broken bedrock (colluvium) on mountain slopes.

The best parent materials for agriculture soils, in terms of arability and natural nutrients, are the silty to sandy alluvial deposits of recent floodplains, in particular at Old Remo, New Remo, Braun's Island, south of Graham Avenue, Copper City Flats, and the Beaver River Flats at the north end of Kitsumkalum Lake. In comparison, sands and sandy gravels of glaciofluvial deltas form soils that are arable, but subject to droughtiness (dryness) in summer. Examples are the upper benches in the City of Terrace and Thornhill.

Weaker soils for agriculture are formed on parent materials that are either poorly drained or excessively drained. Thick glaciofluvial marine clays, deposited into salt water which extended into the Terrace area at the end of the Ice Age, are often saturated, massive in structure, and subject to rapid erosion when disturbed. Clays are common in the Thunderbird, Old Remo Road, and Terrace North areas. In contrast, the coarse gravels and boulder fields of glacial outwash plains, such as Jackpine Flats and north of Deep Creek in the Kalum Valley, have little natural water or nutrient retention. They normally form soils which are unsuited to agriculture.

Recommendation 12: Facilitate workshops regarding the characteristics of local soils and techniques for soil conservation. Facilitate the availability of this information on-line.

Facilitate workshops and put information online explaining the structures and characteristics of the soils of this region, and how to work with them in terms of soil conservation and preservation.

Recommendation 13: Facilitate workshops regarding soil nutrients and techniques for the organic enhancement of soil nutrients.

Facilitate workshops and put information online explaining soil nutrients and sustainability techniques which can be used to enhance soil nutrients, as well as to reduce acidity, levels of leaching, and removal of fine particle fractions from the soil.

Recommendation 14: Facilitate access to soil testing for local farmers.

Assist the access of local food growers to soil testing. The natural soils in the Greater Terrace area have nutrient deficiencies which, if not addressed by appropriate farming techniques, can significantly affect the growth of crops.

Recommendation 15: Examine the potential for cooperative purchases of soil improvement materials and cover crops.

Examine the potential for cooperative purchases and use of appropriate soil improvement materials, such as lime for acidity, seed for winter field cover crops, and seed for nitrogen-fixing rotational crops, which will allow soil improvements in a sustainable fashion.

Recommendation 16: Examine the sale and movement of topsoil and compostable materials in the Greater Terrace area.

Examine the sale and movement of topsoil and compostable materials throughout the Greater Terrace area, both extractive and receiving locations, in terms of impacts from spread of weeds and soil diseases, plus the impacts of soil removal.

THE AGRICULTURAL LAND BASE – WATER SUPPLIES

The Greater Terrace area averages 1.3 meters of precipitation annually. Most streams in the Greater Terrace area are perennial and groundwater tables are often close to the surface. One would expect that this amount of water would facilitate sufficient water supplies for any type of agricultural venture. This is not the case, as precipitation can vary both seasonally (e.g. drought in summer and floods during fall cyclonic storms) and spatially (e.g. location in a valley bottom with clay soils versus location on top of a ridge with gravel soils). The area's deglaciation history left an unpredictable mosaic of surficial geology in the valley bottom, and access to water depends upon location within that mosaic.

Subareas of the Greater Terrace area are unequal in terms of access to sufficient volumes of water for agriculture. Other than issues related to which landform occurs on a property, water problems can result from whether a farm has access to a community water system or has an independent water supply. Most properties in the Greater Terrace area are outside of community water systems. Farms in unserviced areas might have individual wells or group water systems, or, in some cases, farmers use cisterns or must truck in water. The availability of water for agriculture is on a property-specific basis.

Certain subareas are serviced by community water systems – portions of North Terrace, Dutch Valley, Braun's Island, the City of Terrace, and Thornhill - but the abilities of these community water systems to support the volumes of water required by commercial agriculture have not been determined. Planning processes are required to delineate the relationships between expanded commercial agriculture and the feasibility of these community water systems to support this level of agricultural activity.

Recommendation 17: Determine how water supplies and water regulations impact existing and potential local agriculture.

Work with agriculture operations in each subarea to determine how water supplies might be an issue for agriculture, and what might be possible in terms of environmentally-sound solutions to these issues. Evaluate the availability of water systems to supply agricultural operations, including both community water systems & surface/subsurface water supplies.

Recommendation 18: Evaluate drainage, erosion, and agricultural contamination issues associated with clay soils.

Examine drainage issues in subareas of the Greater Terrace area with clay soils and determine how appropriate farming techniques can be used to avoid contamination of surface waters and erosion problems associated with these soils.

Recommendation 19: Evaluate the impacts of agriculture on groundwater quality and domestic water supplies in coarse soils with high percolation rates.

Examine the impacts of agriculture on groundwater and domestic wells in those subareas of the Greater Terrace area which have coarse soils with high percolation rates.

THE AGRICULTURAL LAND BASE – FLOODPLAINS AND EROSION

As the best agricultural soils are within the alluvial floodplains next to the Skeena, Kitsumkalum, and lower Zymagotitz Rivers, the preservation of agricultural opportunities in these floodplains is very important. Erosion and flooding were major issues raised during the public input processes of the Plan. Avoidance of floodplains was a deciding factor for some farmers in their decision as to where they would locate their operations. Bank erosion was also expressed as a significant issue. Farmers felt that they did not individually have the resources to stop removal of their farm land.

As the patterns of erosion were changed significantly following the flood of 2007, documentation of current and potential impacts of land removal by bank erosion is not readily available to farmers. If these farm lands are considered a valuable asset for future food production, then an assessment of which actions should be taken to prevent further land removal is of outmost importance.

Recommendation 20: Document and undertake a geotechnical assessment of the patterns of bank erosion and flooding affecting the agricultural areas along the Skeena and Kitsumkalum Rivers.

Document and undertake a geotechnical assessment of the current configuration of bank edges and the patterns of bank erosion affecting the agricultural areas along the Skeena and Kitsumkalum Rivers. Develop projections as to how this erosion will impact the agricultural land base into the future. Document potential methods remediation and sources of funding which might be used to correct significant areas of potential agricultural land removal.

Recommendation 21: Work with agricultural operators located in floodplains to reduce the impacts of flooding on land and infrastructure investments.

Facilitate workshops and make readily available information regarding regulations which affect agriculture in floodplains. Work with agricultural operators located in floodplains to provide information and programs which might reduce the impacts of flooding of agricultural land and infrastructure investments.

Recommendation 22: Provide information regarding terrain hazards to agricultural operators. Facilitate information for agricultural operators on-line and through workshops regarding terrain hazards in the Greater Terrace area, including hazards associated with mountain slopes and steep terrain, as well as the potential for some types of surficial materials, such as glaciofluvial marine clays, to erode, gulley, and fail with disturbances.

Recommendation 23: Include assessment of potential terrain hazards in determination of regulations that permit agricultural and rural land development in the Greater Terrace area.

Include assessment of potential terrain hazards in the determination of regulations that permit agriculture and rural land development in the Greater Terrace area.

THE AGRICULTURAL LAND BASE – AGRICULTURAL LAND USES

LAND USE AND SOIL CAPABILITIES

The agricultural capability of a landscape is based upon four factors - the ability of that landscape to be cultivated, the natural attributes of the soil, the range of crops that the land can produce, and the severity of limitations to agricultural crop growth at that location. Agricultural soil capability depends upon a number of characteristics,

including the type of parent material for the soil, drainage, soil depth, soil texture, stoniness, tendency to droughtiness, and climate. Using a scale from 1 to 7, soil capability Class 1 includes the best agricultural soils and Class 7 includes soils without agriculture potential.

Due to climatic and soil structure limitations, Class 1 soils and Class 6 soil (natural grasslands) are not found in the Greater Terrace area. Classes 2, 3, and 4 soils have limiting factors, such as flooding, and droughtiness, but these three soil classes have the ability to grow a range of agricultural crops. Class 5 soils have significant limitations, such as topography or stoniness, and are best suited for permanent pasture or forage. Class 7 soils have no potential for agriculture productivity due to severe limitations.

TABLE 2 - GREATER TERRACE AREA: LOCATIONS OF UNIMPROVED SOIL CAPABILITY CLASSES[1]

Class*	Types of Soils**	Landforms***	Examples of Locations[1]
2	Silty loams; silty sandy loams; often brunisols	Alluvial floodplains and benches** - fine-grained deep soils; naturally fertile; easy to cultivate; support a wide range of market garden crops; suitable for mechanized tilling	Old Remo floodplain; Whitebottom Road floodplain; New Remo floodplain; Gossan Creek floodplain; subject to flooding and bank erosion.
3	Silty loams; silty sandy loams; often brunisols due to frequent flooding	Alluvial floodplains and benches; some glaciofluvial marine clays - fine-grained soils; naturally fertile; easy to cultivate; grow a wide range of market garden crops; subject to flooding and bank erosion.	New Remo; Old Remo; Little Island; Braun's Island; Copper City Flats and Kitselas Road; Kitselas; Usk East; DL 6637 north of Chimdemash; west of Kofoed Drive (Thornhill); south of Graham Ave. (Terrace)
4	Mostly clay-based podzols	{Glaciofluvial marine clays} or (lacustrine/lake clays); limitations to agriculture due to soil structure problems associated with clay soils.	(Kitselas/Gitaus); {crown land in Thunderbird area}; (clay areas in Rosswood); subject to surface and slope erosion, as well as slope failures.
5	Sandy loams, sandy gravels, and podzols (some clays)	Glaciofluvial deltas and kames - often sandy; (lacustrine/lake clays); {glaciofluvial marine clays}; normally 60 to 80 cm of surface soil development; leached upper layers; acidic, nutrient poor soils. - sandy soils are suitable for mechanized tilling but droughty during dry summers; good for fruit trees and irrigated market gardens; improved to Class 4 soils with irrigation and fertilizers. - clay soils can be prone to erosion, gulleying, and slope failures.	Chimdemash Loop; Usk West; (Usk East); Gossan; north Kitselas Road; Benches and Horseshoe in City of Terrace; lower and upper benches in Thornhill; Dutch Valley; Airport Bench; portions of Lakelse area; {Rochester Basin; Thunderbird; Beam Station Road; Old Remo Road; Whitebottom Road}
7	Podzols and regosols	On gravel to boulder glaciofluvial outwash plains; (bedrock outcrops); or {eroded glaciofluvial clay deposits}. - soil structure types or lack of soil limit agricultural activities.	Kalum Lake Road N of Deep Creek; Copperside; parts of Rosswood; (N Kitselas Road); (Old Remo Road); {Terrace North; Old Remo Road}

1 = examples of locations; private land parcels only; soil capabilities are mapped at a 1:50,000 scale in polygon format; capability ratings can vary within a polygon at a larger scale.

Sources: *soil capability classes: (B.C. Agricultural Land Commission, n.d.a); **soil classification (University of Saskatchewan, n.d.); ***surficial geology landforms: (Clague, 1984).

These land capability classes for agricultural soils have very specific distributions across the Greater Terrace area. Soil capabilities are associated with the pattern of glaciofluvial landforms, erosion features, and recent alluvial

floodplains. In the Greater Terrace area, the highest capability soils (best for agriculture) are Class 2 and 3 soils, found in the alluvial floodplains of the Skeena River. The lowest soil capabilities are the Class 7 soils, which include very coarse, rocky soils in locations such as Jackpine Flats, Copperside Road, and north of Deep Creek.

In the complex mosaic of soil types in the Skeena, Lakelse, and Kitsumkalum Valleys, soil capability is very important in the process of identifying areas of soils which may have the most important natural attributes for existing and potential food production.

Recommendation 24: Facilitate the availability of soil capability mapping.

Soil capability mapping is an essential tool for existing and potential farmers in determination of the capability of their land for commercial field agriculture. Many farmers would benefit from access to soil capability mapping.

LAND USE AND THE AGRICULTURAL LAND RESERVE

Land is included in the Agricultural Land Reserve primarily based upon the capability of the soil for agriculture. Agriculture Land Reserve lands, including both Crown lands and private lands, are protected through the Agricultural Land Commission Act from uses or actions which would diminish the agricultural capabilities of the soil.

TABLE 3 - GREATER TERRACE AREA: AGRICULTURE LAND RESERVE AND SOIL CAPABILITY CLASSES*

Location of Agriculture Land Reserve Land	Soil Capabilities** (unimproved)	Landforms***	Agriculture Activities
Old Remo floodplain Whitebottom Road New Remo floodplain	Classes 2 and 3	Alluvial floodplains and benches; flat, easily tillable, nutrient rich soils	Some farming; includes crown land upstream in the Zymacord Valley and in the Lakelse River area.
Little Island; Braun's Island; Copper City Flats and Kitselas Road; Kitselas; Usk East; DL 6637 (north of Chimdemash); west of Kofoed Drive (Thornhill); south of Graham Ave. (Terrace)	Classes 3 and 5	Alluvial floodplains and benches; some glaciofluvial marine clays; naturally fertile; normally flat; suitable for intensive, mechanized farming or pasture land.	Active farming areas - Braun's Island and Little Island; some activity along Kitselas Road and Copper City Flats; active farming areas in Thornhill and S of Graham Avenue.
Thunderbird area	Class 4	Glaciofluvial marine clays and lake clays	- crown land in the Thunderbird area and along Lakelse River
Chimdemash; Usk West; Usk East; north Kitselas Road; Dutch Valley; portions of the Lakelse area; most of Rochester Basin (Thornhill and south); Thunderbird; Beam Station Road; Old Remo Road; Terrace North - Dover and Merkley Roads	Class 5	Sandy glaciofluvial deltas and marine glaciofluvial clays - suitable for permanent pasture and forage crops; some sandy areas are suitable for fruit trees - mixed farm land; often used for horse pastures	- large areas of Class 5 soils are not included in the Agricultural Land Reserve due to urban and residential development, in particular within the City of Terrace, Thornhill, and on the Airport bench.

Notes:

*detailed Agricultural Land Reserve maps are available through the RDKS and City of Terrace

Sources: ** soil capability classes: (B.C. Agricultural Land Commission, n.d.a); ***surficial geology landforms: (Clague, 1984).

Based on data from the Ministry of Agriculture's 2012 *'Greater Terrace Agricultural Land Use Inventory'*, there are 14,933 hectares of designated ALR land in the Greater Terrace plan area, of which 95% are not used for farming or associated activities. Only 761 hectares or 5% of the ALR land base in the Greater Terrace area are used for farming - either solely for farming (193 ha) or for land uses associated with farming (residential, transportation,

utilities - 569 ha). Of the remaining hectares of ALR within the Plan area, 9,492 ha or 64% are found in surveyed and unsurveyed Crown lands (7,934 ha), foreshores (339 ha), tree farm licenses (446 ha), and right-of-ways (773 ha). The remaining 4,680 ha or 31% are used for other types of privately owned land use activities than farming. For example, 13% of total ALR hectares or 1,869 ha are occupied by residential land use, with no associated farming activities.

The ALR in the Greater Terrace area include most of the Class 2 to 4 soils but also includes large areas of Class 5 soils best suited to permanent pasture or forage and not suitable for most intensive farming techniques (B.C. Ministry of Agriculture and Lands, 2012).

Recommendation 25: Facilitate the availability of information regarding the Agriculture Land Reserve, the location of land in the Agricultural Land Reserve, and Agricultural Land Reserve regulations.

Workshops and clear on-line information regarding the Agriculture Land Reserve would be beneficial in clarification of regulations and permissible land uses associated with the ALR.

Recommendation 26: Request a review of current ALR boundaries.

ALR boundaries in the Greater Terrace area were established in the 1970's. Some areas of good agriculture potential have been missed. As well, the ALR includes areas which have been eroded away by the Skeena and Kitsumkalum Rivers. A review of ALR boundaries in this area would be very beneficial.

LAND USE AND THE NUMBER AND SIZES OF FARMS

Three different standard surveys have been used to determine agricultural activity in the Greater Terrace area (Table 4) - the Federal Census of Agriculture, B.C. Assessment Authority Farm Class properties, and the Ministry of Agriculture's 2012 Agricultural Land Use Inventory. The three methods do not agree as to how many farms or farmers there are in the Greater Terrace area (Table 4).

The differences between survey methods and survey results are problematic as the data is utilized by various government levels to make decisions regarding agriculture in the Greater Terrace area. The methodologies appear to be underestimating the number of operational farms and the value of farm sales occurring in the Greater Terrace area. They also appear to miss mid to small sized agricultural operations which contribute significantly to local food production (see Chapter 2).

The Ministry of Agriculture's Greater Terrace Agricultural Land Use Inventory is the most recent standard survey in the Greater Terrace area. Based on data from 2012, the inventory records 78 privately owned parcels of land 'used for farming' in the Greater Terrace area, out of a total of 1,816 parcels of privately owned land. Of this, 15 parcels were used for farming without other land uses, and 63 parcels were mixed farm use (farming plus residential, transportation or utilities land uses). This was a 4% utilization rate of privately owned land parcels (greater than 0.4 ha or 1 acre in size). A further 69 parcels were noted as having agricultural activity, but did not qualify as being 'used for farming' as the percentage of the land parcel being used for farming was too small. According to the Agricultural Land Use Inventory, the total number of parcels of land with some level of agricultural activity was 147.

The Ministry of Agriculture's Greater Terrace Agricultural Land Use Inventory also provides information as to where parcels of land used for farming are located, but these parcels must meet certain criteria in order to be identified as 'used for farming'. Of the parcels identified in the Agricultural Land Use Inventory, the data shows that a total of 47/78 or 60% of land parcels 'used for farming' are located fully or partially within the Agricultural Land Reserve. Of the parcels with 'evidence of agricultural activities' (but not qualifying as 'used for farming'), 13/69 or 19% of land parcels are within or partially within the ALR. Of all parcels showing agricultural activity (147), 59% of parcels are not (all or partially) within the ALR.

For the 78 land parcels identified in the Agricultural Land Use Inventory (Ministry of Agriculture, 2012), where is the greatest amount of land 'used for farming'? Based on total lot sizes and not the amount of space used for farming, the most land 'used for farming' is in Old Remo (**288** ha), followed by Lakelse South (**258** ha - Mt. Layton Hotsprings properties), Highway 16 East (Copperside to Chimdemash)(**135** ha), Thornhill (**134** ha), New Remo (**126** ha), Terrace North (City of Terrace to Deep Creek)(**61** ha), City of Terrace (Graham Avenue) (**55.5** ha), City of Terrace (West Bench) (**36** ha), Little Island (**34.5** ha), Jackpine Flats (**31** ha), Braun's Island (**15.5** ha), N of Deep

Creek (**8** ha), and Dutch Valley (**6** ha). Rosswood was identified in the study as not having any parcels 'used for farming' under the ALUI definitions.

TABLE 4 – DETERMINATION OF AGRICULTURAL OPERATIONS IN THE GREATER TERRACE AREA

Method	# of Farms, Land Parcels or Agricultural Operations	Hectares of Farm Land	Average Parcel Size (ha)***
2011 Census of Agriculture, with GT Farmers Survey	61 agriculture operations 52 (Census) + 9 (Farmers Survey) # of A operations = 61 Locations unknown	1,512 ha 1166 ha (Census) + 346 ha (Farmers Survey)	24.8 ha: 51 > 4 ha > 8 ha = n/a 10 parcels < or = to 4 ha (10 acres) and > 0.4 ha (1 acre)
2012 Agricultural Land Use Inventory	78 land parcels 19 within City of Terrace; 6 parcels in Thornhill; 53 parcels in rural GT*; # of A operations = n/a	1,196 ha 761 ha in ALR 435ha outside ALR	15.3 ha: 47 > 4 ha 24 parcels > 8 ha 31 parcels < or = to 4 ha (10 acres) and > 0.4 ha (1 acre)
2012 B.C. Assessment Authority Farm Class Property Tax Status	62 land parcels 21 within City of Terrace; 6 parcels in Thornhill; 35 parcels in rural GT; # of A operations** = 48	856.3 ha 537.3 ha in ALR 319ha outside ALR	13.8 ha: 39 > 4 ha 26 parcels > 8 ha 23 parcels < or = to 4 ha (10 acres) and > 0.4 ha (1 acre)

Notes:
GTAAP area includes both incorporated and unincorporated privately owned parcels.
Sources: (B.C. Assessment Authority, 2012; B.C. Ministry of Agriculture and Lands, 2012; Gagné, 2012; Statistics Canada, 2012a)
*Plan area outside of the City of Terrace and Electorial Area E (Thornhill)
**agricultural operation = same owner for one or more parcels of farmed land

***Census average is for agricultural operations and not for parcels (not available)

For the aggregate of both parcels 'used for farming' and parcels 'with agricultural activity', the ranking for amount of land in parcels with agricultural activities is: Old Remo (**566** ha), Lakelse South (**260** ha), Thornhill (**185** ha), Highway 16 East (Copperside to Chimdemash)(**152.5** ha), New Remo (**149** ha), Terrace North (City of Terrace to Deep Creek)(**102.5** ha), **Rosswood (102 ha)**, Jackpine Flats (**92** ha), City of Terrace (Graham Ave.) (**68** ha), Kalum Lake to Deep Creek (**67** ha), City of Terrace (West Bench) (**39.5** ha), Little Island (**34.5** ha), Braun's Island (**20.5** ha), Dutch Valley (**6** ha), and Terrace Horseshoe (**1.5** ha).

The Greater Terrace Agricultural Land Use Inventory presents five trends for the Greater Terrace area:

1. parcels of land 'used of farming' and 'not used for farming but with agricultural activity' are located throughout the Greater Terrace area.
2. there are more parcels involved in agriculture outside of the ALR (59%) but more hectares of land are involved in agriculture within the ALR than outside of it (62%).
3. the average size of a parcel of land 'used for farming' (15 ha) is larger than the average size of a parcel with evidence of agricultural activity (9.5 ha).
4. the majority of the parcels (81%), 'not used for farming but with agricultural activities', are outside of the ALR.

5. the subarea with the most agricultural activity is the Old Remo area.

It is very important that reliable and consistent information be available regarding agricultural activities in the Greater Terrace area, in order that appropriate land use decisions can be made. The Agricultural Land Use Inventory is a standardized method of determining agricultural activities. The report used for the Plan is based on 2012 land uses and a similar inventory should be undertaken at least every five years. Similarly, although not all agricultural operations have B.C. Assessment Authority Farm Class status, an up-to-date inventory should be kept of Farm Class properties.

Recommendation 27: Request that Statistics Canada review the agricultural operators contact list for this area before the 2016 Census of Agriculture.

The Census of Agriculture surveys for 2011, 2006, and 2001 are clearly missing agricultural operations in the Greater Terrace area, including one of the biggest producers for the Northwest Region (Chapter 2). It is important for planning and funding reasons that the Census includes all Greater Terrace agricultural producers which grow products for sale.

Recommendation 28: Facilitate workshops and availability of information regarding BC Assessment Authority Farm Class property tax reductions.

Receiving farm property tax benefits could be critical to allowing some farm operations in this area to become more economically viable. Helping farmers understand the property tax status and assisting them to achieve that status would be beneficial to encouraging farming in the Greater Terrace area.

Recommendation 29: Facilitate the compilation of accurate statistics for agriculture and food growing activities in the Greater Terrace area.

Accurate statistics for the full spectrum of agricultural and farming activities would be very useful in planning for future community food security & food production in the area.

Recommendation 30: Maintain an up-to-date list of agricultural operations, agriculture land parcels, & locations of agricultural activities.

The locations of agricultural operations are important in planning for agricultural land uses. None of the three standard methods of determining agricultural activities agree but if information is collected on a regular basis, the Greater Terrace area is small enough that more comprehensive measurements of agricultural activities should be able to be determined.

LAND USE AND FOOD GROWING ACTIVITIES

Visual surveys (Table 5) were utilized to correlate locations of food-growing activities with soil types and the ALR. Three indicators were utilized to identify food growing activities - fruit trees, greenhouses, and large gardens (>10 m^2). In addition, large fields (> 0.4 ha) and the actual numbers of horses and cattle were recorded. All public roads in rural Greater Terrace were surveyed, as well as key agricultural areas and sample areas within the City of Terrace and Electorial Area E (Thornhill). The records of activities provide a minimum or at-least number for each activity.

Farming in northwestern British Columbia occurs at many scales. Farmers are seldom full-time and often combine their farming endeavours with other methods of obtaining income. Food growing and agricultural activities in the Greater Terrace area do not necessarily mean that the resulting produce is available for sale. Food exchanges and gifting, as well as food production for home consumption, are important life style aspects of living in the Greater Terrace area and contribute significantly to community food production. The question then becomes, from the perspective of community food security, protection of agricultural lands, and encouragement of food production: where are the food growing activities occurring?

Determining the locations of farms which sell produce, compared to land parcels on which food production occurs but is not for sale, is difficult within the Plan area. Agricultural and food growing land uses are not concentrated in one or two subareas within the Greater Terrace area but are spread throughout the entire Plan area (Tables 4 and 5). Agricultural operations can be found on ALR and non-ALR lands, on soil capabilities from Class 2 to Class 7, and within rural areas and urban incorporated areas. Small scale food producers, especially those within urban and rural residential areas, are not included in agricultural statistics. From a land use regulation perspective, this

generates challenges as to which subareas in the Greater Terrace area should be identified for special agricultural zones, and which types and densities of farming should be permitted within non-agricultural and non-rural land use designations. In addition, if food production is spread throughout the entire Plan area, how can this activity be accurately identified and enhanced?

TABLE 5 – GREATER TERRACE FOOD PRODUCING ACTIVITIES: BASED ON VISUAL SURVEYS*

Location*** in Greater Terrace	# of properties w/fruit trees	# of properties** w/ green-houses	# of properties w/ large gardens	# of properties w/ large fields	# of properties with cattle(#)	# of properties with horses (#)	Total Uses (all columns)
Rosswood	3	14	13	20	2 (10)e	5 (11)	57
Kalum Lake to Deep Creek	9	5	17	6	2 (5)	6 (12)	45
Terrace North - Deep Creek to City of Terrace	42	28	37	15	2 (17)	7 (24)	131
Dutch Valley	7	2	5	4	1 (10)	1 (1)	20
Old Remo	32	14	22	22	4 (20)	14 (40)	108
New Remo	30	7	13	6	2 (12)	4 (12)	62
Braun's Island	15	5	8	4	-	2 (6)	34
Little Island	-	-	-	1	1 (9&)	-	2
Jackpine Flats	13	20	24	5	4 (18)	13 (36)	79
Lakelse	10	20	26	2	-	-	58
Hwy 16 East	69	18	57	13	2 (12)	8 (20)	167
Total Rural	230	133	222	98	18 (104)	60 (162)	761
Thornhill - rural	39	11	15	10	1 (1)	7 (12)	83
Graham City of Terrace	44	11	10	13	2 (20)	3 (7)	83
West Bench City of Terrace	42	17	18	24	4 (35)	12 (27)	117
Rural Urban	125	39	43	47	7 (56)	22 (46)	283
Total Rural and rural-Urban	355 properties	172 properties	265 properties	145 large fields	25 properties with 160 cattle	82 properties with 208 horses	1044 accumu-lative uses
Urban- City of **** Terrace - Horseshoe	75	17	23	-	-	-	115
Urban- City of **** Terrace - Medeek	69	18	29	-	-	-	116

2012 Visual Surveys: At least values are based on actual sightings of features; and represent a minimum value for that attribute. Visual surveys included all public roads in rural Greater Terrace and sample/focus areas within Thornhill and the City of Terrace.

* = visual survey: what was seen was counted; represents 'at-least' and not definitive numbers for each value; **property = based on one street address; viewed from public road.

***location = see Appendices for roads included in each location ****urban = sample survey of 100 consecutive properties

The amount of food growing activity in the Greater Terrace area is significant (Table 5). In rural Greater Terrace outside of the boundaries of Thornhill and the City of Terrace, there were at least 230 properties with fruit trees. Large gardens greater than 10 m^2 were also plentiful in rural Greater Terrace, with at least 222 properties having large gardens. At least 133 active large greenhouses were found in rural Greater Terrace, most commonly used for tomatoes, cucumbers, and grapes. Greenhouses allow extensions of the growing season and food production during the cool, wet summers which occur cyclically in the Greater Terrace area. The amount of food growing activity in the Greater Terrace area is significant (Table 5).

When the rural visual survey results were combined with the results from the large rural lots of Thornhill and the City of Terrace, the number of properties rose to at least 355 properties with fruit trees, 265 properties with large gardens and 172 properties with greenhouses. In addition, 145 properties in the Greater Terrace area had large open fields, suitable for grazing or were in the process of being grazed. Food production activities are significant across the non-urban sections of the Greater Terrace area.

The raising of large livestock, such as cattle, pigs, and horses, is an important farming activity in the Greater Terrace area. In the combined rural areas, both within and outside the City of Terrace and Thornhill, 82 properties were recorded as having 208 horses. These are at-least numbers. Most likely there are more horses in the Greater Terrace area. Compared to the 2011 Census of Agriculture of 131 horses in the Greater Terrace area, the 208 horses visually recorded included horses on properties used for farming and horses on non-farming lots in areas such as Jackpine Flats. The importance of horses in the Plan area, not in terms of food production but in terms of life style aspects, will need to be addressed in any agricultural planning and land use designations.

Recommendation 31: Assess and define agricultural districts and important farming areas within the Greater Terrace area and implement supportive bylaws and regulations.

Agriculture operations and farming are spread throughout the Greater Terrace area, but, based on soil capabilities and locations, some areas have strong long term potential in terms of food production. Although these areas may or may not have protection through the Agricultural Land Reserve, it is important that regional and local governments be supportive in preserving and enhancing their agricultural capabilities.

Recommendation 32: Assess the roles of non-commercial agriculture and food production activities in the life styles and community food security for the Greater Terrace area.

The values of agriculture and farming are not solely based on sale of products. As food production for home consumption and exchanges is a significant aspect of living in the Greater Terrace area, protection and enhancement of food growing activities and their land bases are important aspects of the future of farming in this area.

Recommendation 33: Facilitate workshops and access to information about the care and cultivation of fruit trees in the Greater Terrace area.

Based on the visual survey, fruit trees are the most common method of non-commercial food production in the Greater Terrace area. With the long history of fruit orchards in this region, and the large number of trees currently growing in the Greater Terrace area, assistance to both agricultural operators and local gardeners in caring for fruit trees and utilizing their crops would be very beneficial.

Recommendation 34: Assess the land use needs of larger livestock in the Greater Terrace area, in particular, horses and cattle and their seasonal uses of agricultural lands.

Large livestock, in particular cattle and horses, are moved about the Greater Terrace area to grazing areas and wintering areas. Assessment of the land needs of these types of livestock, and balancing uses between food production from cattle and agribusiness/recreational uses of horses, are necessary in the land use planning processes for larger agricultural spaces in the Greater Terrace area.

Recommendation 35: Assess the numbers, densities, and locations of horses, cattle, and other large livestock in agricultural and non-agricultural areas of Greater Terrace.

The keeping of large livestock in non-agricultural portions of the Greater Terrace area, such as rural residential subdivisions, may benefit from analyses of desirable densities of animals relative to land use conflicts and environmental impacts. This should be balanced with the importance of horses to the life styles and recreation of some people attracted to rural Greater Terrace for the acreages available to house their horses.

Recommendation 36: Facilitate workshops and information regarding best management practices for the care of livestock and siting of pens and waste piles on smaller land parcels.

Many agricultural activities, including raising large livestock, are occurring on smaller land parcels. It is important that management of livestock avoids serious issues with surface water and groundwater contamination, and other environmental concerns.

URBAN FOOD GROWING ACTIVITIES

Compared to the rural areas, is food growing in urban areas an important land use activity? Certain residential sections of the City of Terrace developed over former pre-World War II farms which had productive soils for fruit orchards and market gardens. Two of these areas were sampled during the study to see if gardens, greenhouses, and fruit trees were important to urban residents (Table 5). On 100 consecutive properties sampled in the Horseshoe area (Loen Avenue to Straume Avenue), 75% of the urban lots had fruit trees, and 23% had large gardens. The same high values were noted for the South Terrace area at Medeek Avenue and the north side of Graham Avenue. In this neighbourhood, the survey of 100 consecutive properties determined that 69% of the properties had fruit trees and 29% had large gardens. These numbers are very high in terms of food growing activities in residential lots. For some of the lots, the majority of the space in their backyards was occupied by fruit trees and gardens. It is apparent that urban food production collectively in the City of Terrace is an important contributor to community food security and local food consumption economics.

Support by local government for urban food producing activities is important, not only for the contribution to food production in the Greater Terrace area, but also for the life style aspects of living here. Being able to grow food and garden helps to attract and retain a viable labour force within the City of Terrace and Thornhill.

Recommendation 37: Review bylaws and local government policies with regards to encouraging food producing activities on private properties within urban areas.

The densities of food growing activities in some urban areas are important contributors to community food security in the Greater Terrace area and assist families in the economics of living in northwestern B.C. As the same opportunity is not available to all residents in urban areas, opportunities for food growing activities can be provided through features such as community gardens or utilization of public spaces for edible landscaping.

Recommendation 38: Encourage and support community urban food growing activities such as community gardens and edible landscaping in both institutional and public spaces.

The number of properties, both rural and urban, involved in food producing activities (Table 4), provides strong evidence that food production for home consumption and non-sale food exchanges, are important and wide spread throughout the Plan area. These types of non-commercial food growing activities need to be considered in any discussions of community food security and agricultural land use planning. Their importance to the life styles, culture, and food economics of the Greater Terrace area should not be undervalued.

Recommendation 39: Encourage and support sustainable food growing activities, food exchanges, and food preservation as part of the life style and economics of living in the Greater Terrace area.

CHAPTER SUMMARY

The Greater Terrace area has a long history of farming. Fruit trees, livestock, horses, chickens, gardening, food exchanges, gifting, and food preservation are important aspects of the lifestyle of this region. The people who live here care about what they eat. A sustainable agricultural sector and effective community food security, though, will require long term investments in the agricultural land base of the Greater Terrace area, combined with individuals who are willing to invest time, energy, and money into growing agricultural products. The agricultural land base is not a secure asset. Natural processes such as flooding, bank erosion, and soil damage can remove farming opportunities presented by the land base. Knowledge about this land base, and understanding of the unique North Coast climatic conditions found in the Greater Terrace area, are important to development of a durable and rigorous agricultural sector. Food production by both commercial and non-commercial food growers will benefit from access to good agricultural information and sharing of agricultural techniques amongst farmers of all levels of experience.

Photo: Courtesy of Anita Hein, Anita Farm - Terrace, BC

CHAPTER 4 – GREATER TERRACE AGRICULTURAL PRODUCTION

Lynda Gagné

INTRODUCTION

In this chapter, the information contained in the tables located in Appendix I and Appendix II is summarized. The data for Greater Terrace (GT)[6], Regional District of Kitimat-Stikine (RDKS), and North Coast (NC)[7] agricultural production comes from the 2011, 2006, 2001, and 1996 Censuses of Agriculture and the 2012 Greater Terrace farmers' and agricultural producers' survey[8]. Our research shows that the 2011, 2006, and 2001 Censuses of Agriculture did not include one of the largest agricultural operations in GT and that the 2011 Census of Agriculture did not include other important agricultural operations in the area. The 2012 Survey of GT agricultural operators also does not offer complete coverage because not all agricultural producers participated in our focus groups or completed our online survey. Consequently, these data sources do not provide a full accounting of agricultural production in the area. Moreover, while people who grow for personal consumption and exchanges do not qualify as agricultural operators and are not included in the Census data by definition, their production provides a plentiful source of food for this area. In addition, fishing, hunting, and the gathering of wild foods are beyond the scope of this research, but these activities also provide a substantial amount of food for this area. Hence, our available data understates the amount of local food and other agricultural production we have to meet our needs.

To address some of the Census data shortfall, an additional column was added in Tables 6 to 11 (Active 2011 and no census quest.) that provides information about 9 GT agricultural operations that meet the 2011 Census of Agriculture definition for inclusion but who reported not receiving the 2011 Census of Agriculture questionnaire in response to a question asked in the GT farmers' and agricultural operators' survey. The information from these operations should be added to the 2011 Census data for GT giving a total of 61 producers. However, while this improves completeness of the data, not all active agricultural producers participated in our survey and we are likely still short 10 or so operators.

NUMBER OF FARMS, FARM SIZES, AND FARM ACTIVITIES

Table 6 shows that 52 agricultural operators completed the 2011 Census of Agriculture and that at least an additional 9 should have also been included in the Census for a total of 61. Except for three (2 Census, 1 survey) larger operations (gross receipts over $100,000), and five (Census) medium size operations (gross receipts between $25,000 and $99,999) 53 of the 61 (87 percent) of these operations are small hobby farms with revenues below $25,000. Thirty-nine of the 52 Census farms (75 percent) reported gross receipts below $10,000 for 2011. Ten (17 percent) of the 60 non-apiary farms are on less than 10 acres, 31 (52 percent) on 10 to 69 acres, 9 (15 percent) on 70 to 129 acres, and 10 (17 percent) on 130 acres or more. The largest non-apiary acreage is reported at 240 to 399 acres.

GT farms are engaged in a variety of activities as Tables 6 to 11 indicates. Activities include cattle ranching, poultry and egg production, sheep and goat production, and other animal production. Thirty-two of the 52 2011 GT Census farms are growing crops (Table 7) and 3 farms are involved in honey production (Table 10). Tables 17 to 20 show results for all farmers who participated in the GT farmers' survey. Some of these results are in sharp contrast with 2011 Census results for GT. For instance, Table 18 shows that 22 farmers (76 percent of respondents) grow potatoes, yet the 2011 Census shows only 4 farmers (8 percent of the 52 respondents) growing potatoes. Similarly, Table 18 shows 17 survey respondents (59 percent) growing strawberries and 18 (62 percent)

[6] Census of Agriculture information for GT is only available in 2011. The Census of Agriculture does not refer to GT per se and the Census of Agriculture boundaries for what is termed as GT in Census of Agriculture tables do not exactly correspond to the boundaries described in Chapter 1, but are their closest approximation. More specifically, 2011 Census of Agriculture information used for GT consists of all of the area included within the boundaries of the Regional District of Kitimat-Stikine C part 1. For a map of the area, see Appendix I.

[7] North Coast includes the Regional Districts of Kitimat-Stikine and Skeena-Queen Charlotte.

[8] The expressions "agricultural operators", "agricultural operations", "farmers", and "farms", are used interchangeably.

growing raspberries, yet the Census 2011 only reports 2 farmers (4 percent) growing strawberries and 3 (6 percent) growing raspberries. Moreover, Table 9 shows that very few of the 52 Census farms are engaged in vegetable production while Table 19 shows that the majority of farms are engaged in at least some vegetable production. It is quite possible that these discrepancies are related to whether these products are only grown for personal consumption. Personal consumption items would not be included in the Census of Agriculture data because the Census of Agriculture gathers information on commercial output.

Tables 11 and 17 show heads of livestock as of mid-2011. A noteworthy discrepancy is the difference in chickens and hens reported in the Census (1,454) and by all survey respondents (32,377). Daybreak Farms, amongst GT's largest agricultural operations, were not included in the Census and have been missed for the last three Censuses, explaining the discrepancy. Overall, it appears that Census information is likely fairly reliable with respect to large livestock production, although at least 68 heads of cattle or calves were missed (Table 11, column 1), but not at all reliable with respect to chickens and hens, and not very reliable with respect to fruit and vegetable production. As noted earlier, it is possible that some of the production that is invisible in the Census is mostly for personal consumption and exchanges, although Daybreak Farms do not fall into this category.

Table 10 shows the production of other crops, egg production, and honeybee production. One 2011 GT Census farm reported producing sod, four farms (3 Census, 1 GT farmers' survey) reported producing nursery products for resale, eight (6 Census, 2 GT farmers' survey) reported having heated greenhouses, and 11 (6 Census, 5 GT farmers' survey) reported having other covered areas. Twenty-three (19 Census, 4 GT farmers' survey) farms reported producing almost 800,000 dozens of eggs. Three (2 Census, 1 GT farmers' survey) reported raising honeybees.

More generally, information from the Census and the GT farmers' survey show that GT farmers are engaged in a wide variety of agricultural activities, and that Census of Agriculture data is currently not a reliable source of information regarding their extent, diversity, and value.

Decline in farming activity in the North Coast

Table 6 shows that the total number of Census farms dropped from 184 in 1996 to 106 in 2011 for the Regional District of Kitimat-Stikine (RDKS), a 42 percent decrease. Although some of this decrease may be attributable to tightening of meat processing regulation, a large if not the largest part may also be attributable to the aging demographic, which is causing succession issues in agriculture, in the absence of children wanting to take over their parents' farm.

Table 7 shows farm area in the RDKS declined 38 percent between 1996 and 2011. Land in crops dropped by 44 percent from 6,626 to 3,734 acres. Tame or seeded pasture dropped by 56 percent, from 5,795 to 2,556 acres. Natural land for pasture dropped by 44 percent, from 10,348 to 5,819 acres.

Tables 8 and 9 also show sharp drops in in the number of farms reporting fruit and vegetable production in the RDKS. The total number of farms with vegetables dropped from 35 to 11, a 69 percent drop. The number of farms reporting apple production dropped from 15 to five, a 67 percent drop, and the number of farms reporting pear production dropped from 8 to zero. Similar drops are observed for specific vegetables and a variety of other fruit. However, as noted earlier, it appears that fruit and vegetable production is understated in the 2011 Census. The decline observed in Census number for agricultural production may in part be the result of weakening Census collection protocols, which is more likely to result in missed farms if farm properties have been changing hands and contact information has changed.

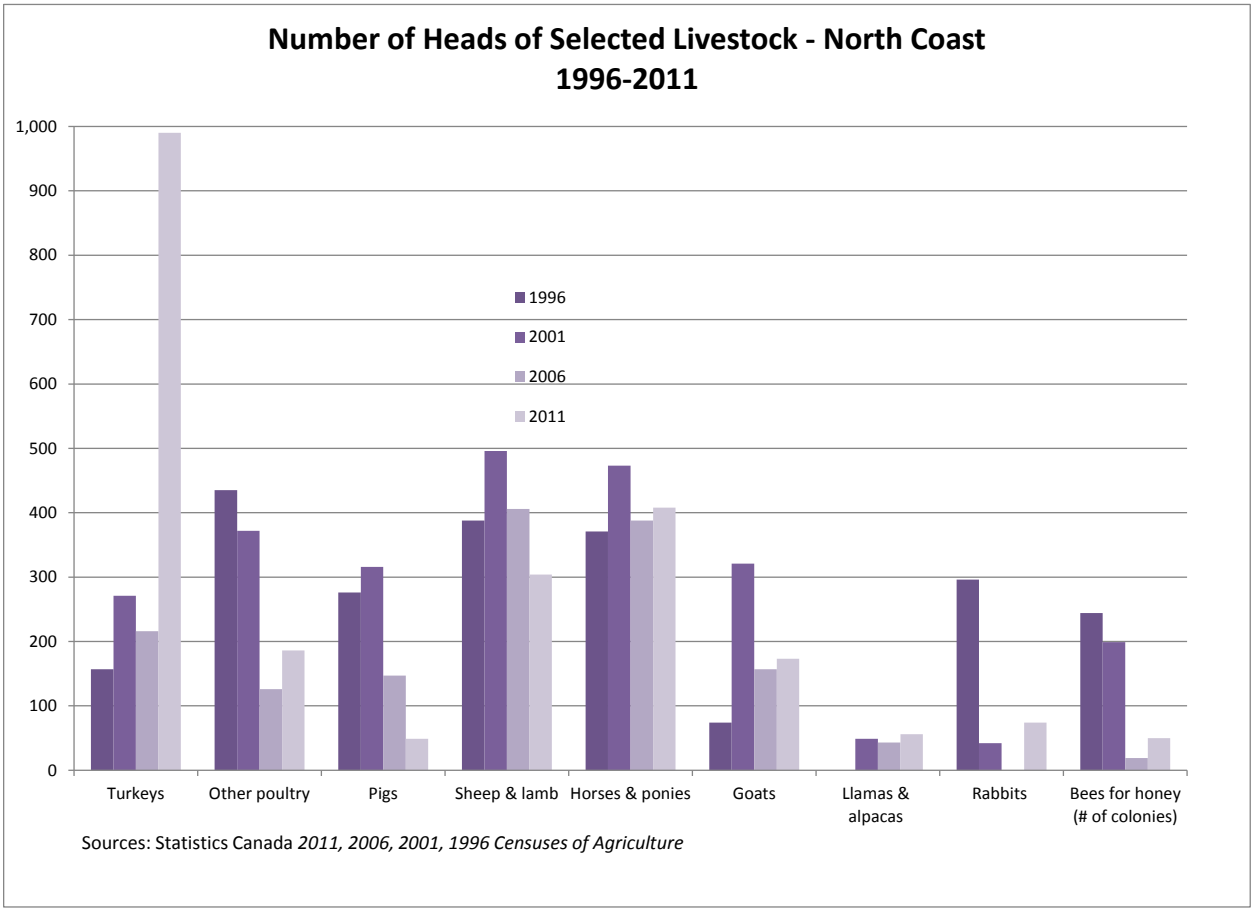
Table 11 shows that the number of heads of cattle and calves in the RDKS declined from 2,326 in 1996 to 989 in 2011, a 57 percent decline. In the North Coast, the number of pigs declined from 276 to 49, an 82 percent decline, and the number of sheep and lamb declined from 388 to 304, a 22 percent decline. On the other hand, goats increased from 74 to 173, a 134 percent increase. Figure 1 (next page) shows changes in selected livestock and bird numbers in the North Coast between 1996 and 2011. Turkey production increased fivefold, goat production more than doubled, while the number of rabbits and bee colonies for honey declined sharply.

Although the number of farms and most agricultural output seem to have declined fairly sharply since 1996, Table 16 shows a decrease in total gross farm receipts of less than $1 million (23 percent), and this even though Daybreak Farms were included in 1996 and not included in 2011. Given that egg production in 2011 was

understated by almost 800,000 dozens, 2011 gross revenues would likely exceed those reported in the 1996 Census had the Daybreak Farms been included in 2011. Hence, while overall reported production has seen a significant decrease, its market value has not. This could be a reflection of increases in food prices, and especially for local products, which consumers tend to now prefer.

Similarly, Table 16 shows that the value of farmland and buildings in the RDKS increased from $51.03 million in 1996 (includes Daybreak Farms) to $59.32 million in 2011 (does not include Daybreak Farms). This increase, coupled with the decrease in acreage (Table 7; 38 percent) suggests that the value of farmland in the RDKS has risen sharply over the last 15 years, although the increase could also be the result of farmer investment in new buildings. An increase in the value of farmland makes farming more expensive for new entrants, increasing barriers to entry in farming as more startup capital is needed. Higher food prices validate the investment but difficulties in raising startup capital can still remain. Yet GT and Northern land prices are very affordable compared to prices in the Okanagan, the Lower Fraser Valley, and Vancouver Island. Given GT's favourable land and climate for agricultural operations, it is still possible to buy a farm here and engage in agricultural production for a reasonable cost.

FIGURE 1 – NORTH COAST LIVESTOCK, 1996-2011



Sources: Statistics Canada *2011, 2006, 2001, 1996 Censuses of Agriculture*

LAND INPUTS, MANURE, AND LAND PRACTICES

Table 13 shows that only one (2 percent) of the 52 GT 2011 Census farm reported using insecticides and fungicides. Six (12 percent) reported using herbicides, 12 (23 percent) commercial fertilizers, and 35 (67 percent) reported producing or using manure. Twenty four farms (46 percent) reported manure being spread naturally by grazing animals.

Table 14 shows that 9 (17 percent) GT 2011 Census farms reported using crop rotation, 12 (23 percent) reported in-field or winter grazing, 15 (29 percent) reported rotational grazing, 2 (4 percent) reported winter cover crops, 6

(12 percent) reported plowing under green crops, 16 (31 percent) reported windbreak or shelterbelts, and 12 (23 percent) reported buffer zones around water bodies. Seven (14 percent) farms reported using irrigation on 44 acres (1.5 percent of farm acreage).

FARM LABOUR

Table 15 reports $359,783 in wages paid in GT 2011 Census farms. This amount excludes the largest employer, Daybreak Farms. Although the number of farms in the North Coast reporting wages declined from 31 to 23 (26 percent) between 2001 and 2011, the wages paid increased from 292,664 to 440,183 (50 percent). Weeks of paid work increased from 609 in 2001 to 750 in 2011 (23 percent) for the North Coast (all data from 2001 to 2011 excludes Daybreak Farms). Of the total 750 weeks of employment in 2011 for the North Coast, 549 (73 percent) were in Greater Terrace. Taking into account Daybreak Farms, we can conclude that the vast majority of the agricultural employment in the North Coast is located in GT. Moreover, while both the number of farms and farm acreage have declined, farm employment has increased.

Although most North Coast agricultural employment is in GT, Table 20 shows that only 5 of 29 (17 percent) GT farmers' survey respondents reported hiring non-family labour. The most important reasons stated for not hiring non-family labour were that it is too costly (38 percent), the farm is too small (33 percent), or it is not needed (29 percent).

FARMER COLLABORATION

Table 20 shows that 19 (66 percent) GT farmers' survey respondents collaborate with others to purchase farm inputs and see the potential for sharing farm equipment in their area. Eleven (8 percent) have been involved in agricultural cooperative or community organizations and 25 (86 percent) are interested in an agricultural cooperative or community organization to collaborate on purchasing inputs and sharing equipment. Clearly, collaboration among GT farmers is already quite prevalent and there is a great deal of desire to increase it.

FARM EXISTENCE AND FUTURE PLANS

Table 20 shows that 8 (28 percent) GT farmers' survey respondents are new farmers in this region (1 to 2 years) and that 14 (48 percent) have been GT farmers for more than 10 years. Most (18 or 62 percent) plan to continue to operate for more than 10 years and a significant proportion (9 or 31 percent) do not know how long they will continue to operate. While this presents a picture of moderate stability, there is the potential for significant farm turnover in the next 10 years.

CHAPTER SUMMARY

This chapter summarizes agricultural production in GT and reviews agricultural production trends in the North Coast and RDKS between 1996 and 2011. GT agricultural operators are engaged in a wide variety of agricultural activities and most are small operations. The three large agricultural operations likely account for the vast majority of gross agricultural sales in GT. Many farms in GT are hobby farms and many likely engaged in limited farming activities to take advantage of property tax breaks.

The number of farms, farm acreage, and recorded farm activities have declined substantially in the North Coast and the RDKS over the last 15 years. Despite this, farm revenues (taking Daybreak Farms into account), farm wages, weeks worked, and the value of farmland and buildings have all increased. These contradictory trends suggest that both farmland and the prices of agricultural products have increased sharply, although the mix of agricultural products (e.g., horse boarding versus food production) may have had an impact on gross revenues.

Most GT farmers are collaborating with each other to purchase inputs and many more would like to collaborate with other farmers. GT farmers are overwhelmingly in support of an agricultural cooperative or community organization to facilitate collaboration on the purchase of inputs including equipment. Most GT farmers are experienced and most plan to continue their operation for more than 10 years, although there are a number of recent entrants and almost a third of existing farmers may be retiring in the near future.

In the next chapter, we examine food growing activities from a sample of GT residents, their preferences for local and organic foods, and their food purchasing habits, to round out the supply and demand for food in GT.

Photos: Free-run hens and eggs grading, courtesy of Daybreak Farms

CHAPTER 5 – GREATER TERRACE RESIDENTS FOOD GROWING AND CONSUMPTION HABITS AND PREFERENCES

Lynda Gagné

INTRODUCTION

In this chapter we review the results of the Greater Terrace Food Survey (GTFS) that was conducted between May 2012 and January 2013. These results are summarized in the tables in Appendix III. Invitations to participate in the survey were distributed along with 2012 property tax notices, to various groups interested in local food, and posted in local businesses, educational institutions, non-profit agencies, and local government service offices. Invitations to the survey were also posted on the City of Terrace and the Regional District of Kitimat-Stikine's websites. We received 122 complete and usable responses, representing 1.6 percent of Greater Terrace private dwellings occupied by usual residents (7,186) according to the 2011 Census of Population.

CHARACTERISTICS OF SURVEY RESPONDENTS

In order to determine whether respondents to the survey are representative of Greater Terrace residents, we asked respondents to answer questions about their gender, age, household size, education, and individual and household income. Respondents' age groups and household sizes were then compared to the age and household size distributions in the 2011 Census of Population data for Greater Terrace[9] (Statistics Canada, 2012b) and respondents' education and individual incomes were compared to those of other Canadians in 2010 (Statistics Canada, 2011; Statistics Canada, n.d.).[10] These comparisons are shown in Table 24 of Appendix III.

GTFS respondents were less likely to be 20 to 29 years of age (9 percent) than the general GT population (16 percent). There were also less likely to be 65 years and over (7 percent versus 17 percent). Conversely, Greater Terrace Food Survey respondents were more likely to be 30 to 64 years of age (84 percent versus 67 percent).

GTFS respondents were less likely (16 percent) to live in 1 person households than the general GT population (26 percent), more likely to live in 2 or 3 people households (63 percent versus 51 percent), and almost equally likely to live in larger households.

GTFS respondents were much more educated than the general Canadian population. While 48 percent of Canadians did not have a certificate beyond high school in 2010, only 13 percent of GTFS respondents did not have a certificate beyond high school in 2012. GTFS respondents were also much more likely to have a post-graduate certificate, diploma, or degree in 2012 (25 percent) than Canadians in general in 2010 (7 percent). Similarly, GTFS respondents were less likely to have incomes below $20,000 (17 percent in 2011 versus 39 percent of Canadians in 2010) and much more likely to have incomes between $30,000 and $59,999 (50 percent in 2011 versus 29 percent of Canadians in 2010).

On the basis of the above analysis, it is unlikely that GTFS respondents are representative of the general GT population. The implication of this is that it is not possible to determine aggregate demand for local food on the basis of the demand for local food from GTFS respondents. The sample is self-selected (not random) and respondents are unlikely to be typical of the general population or represent the general population's preferences for local food. GTFS respondents are however likely fairly representative of the following groups of people: 1) those who shop at the Skeena Valley Farmers' Market, and 2) those who have an interest in local food and

[9] The Census of Population does not refer to GT per se and the Census of Population boundaries for what is termed as GT in Table 24 do not exactly correspond to the boundaries described in Chapter 1, but are their closest approximation. More specifically, 2011 Census of Population information used for GT consists of all of the area included within the boundaries of the Regional District of Kitimat-Stikine C part 1. For a map of the area, see Appendix I.

[10] The 2011 Census of Population community profiles did not include information on income or education at the time of writing. Consequently, GTFS respondents' education and income were compared to Canadians rather than to the general GT population.

agriculture. Members of the latter group may not necessarily be Skeena Valley Farmers' Market shoppers if they have large food gardens of their own. While GTFS may not be representative of the general GT population, their preferences are still of interest to local food producers because GTFS respondents are representative of GT residents who buy or support local food producers.

FOOD GARDENS, FRUIT TREES, AND CROPS

Table 21 (Appendix III) presents information on GTFS respondents' food gardening habits. Eighty percent of respondents had food gardens in 2012. The total size of gardens was 1.8 acres and the average size 971 square feet for the 81 respondents (of the 98 with gardens) who provided garden size information. If this average is representative of large garden sizes in GT, and we combine this information with the results of visual surveys reported in Chapter 3 that find 265 properties with large gardens (in excess of 10 square meters), total garden area for large gardens in GT is almost six acres. Fifty-four survey respondents reported having greenhouses or other covered space with a total space of 11,698 square feet and an average space of 217 square feet. If this average is representative of greenhouses and covered space in GT, and we combine this information with the results of visual surveys reported in Chapter 3 that find 172 greenhouses, total greenhouse/covered space in GT exceeds 37,000 square feet. Note that the visual surveys did not capture all gardens and greenhouses and hence the estimates presented here reflect minimum activity.

Eighty three or 68 percent of respondents reported having fruit trees, with an average of 5.5 fruit trees and a total of 458 fruit trees. If the average of 5.5 fruit trees from the GTFS is applied to the results of visual surveys reported in Chapter 3 that find 355 properties with fruit trees, the total number of fruit trees in GT nears 2,000, representing a minimum number of fruit trees, as not all trees were seen.

GT residents grow a variety of vegetables, berries[11], and herbs. The 12 most commonly grown foods in order of occurrence excluding herbs[12] are tomatoes (87 percent), onions (77 percent), berries and salad greens (76 percent), peas (74 percent), potatoes (72 percent), carrots (70 percent), rhubarb (66 percent), zucchini or summer squash (63 percent), beets and cucumbers (60 percent), and beans (58 percent). These crops are also representative of what can be found at the Skeena Valley Farmers' Market, providing an indication of the foods GT people prefer to grow here and buy locally.

FOOD PURCHASING HABITS AND PREFERENCES

Tables 22 and 23 (Appendix III) present the food purchasing habits and preferences of GTFS respondents. Most survey respondents (91 percent) shopped at least once at the Skeena Valley Farmers' Market in 2011 and almost 50 percent shopped more than 10 times at Skeena Valley Farmers' Market in 2011. Sixty-eight percent of GTFS respondents are willing to pay more for local food and 11 percent don't know whether they are or not. The 83 respondents who were willing to pay more for local food were then asked whether they were willing to pay an extra randomly-assigned percentage between 5% and 50%. With 5 percent being a fairly small premium, 100 percent of those asked were willing to pay it. As expected, and consistent with demand theory, the percentage of people willing to pay a premium for local food generally decreased as the premium increased. Although we would expect a continuous decline, because the sample sizes for each question are fairly small, random errors are large and the decline is not perfectly continuous. Interestingly, 50 percent of those asked whether they were willing to pay 45 percent more for local food said yes and 25 percent of those asked whether they were willing to pay 50 percent more for local food said yes. Since respondents are likely fairly representative of Skeena Valley Farmers' Market shoppers, we can conclude that these shoppers generally recognize the added value and production costs of local food.

We asked GTFS respondents who had reported buying local food in 2011 to rate the importance of various factors on a scale of 1 to 10 in their decision to buy local food. The factors and results are presented in Table 22. The most important factor was that 'local food is fresher'. Most other factors were also ranked fairly highly with scores

[11] Information about specific berries grown was not asked.

[12] The GTFS did not specifically ask respondents about growing herb and the amount of herb grown is therefore likely to be underestimated.

ranging from 8.89 for supporting local farmers and gardeners to 7.41 for safer local food. The only factor that ranked less than 7 was 'local food is less expensive' with a 4.13 score.

We asked GTFS respondents to identify how frequently they would use certain distribution methods (farmer's market; produce box; year-around indoor market; farm gate; supermarket with local food display) for local food if they were all simultaneously available. The results are shown in Table 23 (Appendix III). The most frequently preferred method reported was the local food display at the supermarket with 71 percent of respondents indicating that they would use this method three times per month or more. The next two most frequently preferred methods were the (outdoor) farmers' market and a year-around indoor market for local food and crafts. While local food distribution through supermarkets is convenient for consumers, it poses fairly significant coordination issues for food retailers because of their relative inability to handle small batches of different supply. Given that most GT farmers are small scale, it is unclear that the farming and supermarket communities will be able to come together until some GT farmers increase their scale of operations. The produce box delivery service, very popular in many larger communities, was the least popular with GTFS respondents. This could be because GTFS respondents are not yet very familiar with such arrangements. Another reason is that produce box delivery services are especially appealing to urban residents who rely on cycling or public transit for transportation or are inconvenienced by traffic and distances to local food markets. The proportion of GT residents who face these types of issues is likely quite low and those who face transportation challenges may not have the means to participate in a produce box service. Moreover, box services do not allow the consumer to see what they are going to get before they buy it, which means it is likely that only the most dedicated local farm supporters will buy in. In the presence of other popular distribution methods such as the farmers' market, the produce box service will likely face fairly serious hurdles until more production is established and GT local food consumers develop a greater degree of comfort with the method.

GTFS respondents were asked approximately how much they spent on certain food grown GT (fresh produce; eggs; meat) or meat grown in Northern British Columbia in 2011. Respondents were given the option to respond that they do not know and several respondents chose that option. Table 23 shows the results for those who did respond to the questions. Of the 64 respondents providing an estimate of their spending on GT produce, the average spent was $272. Of the 88 respondents providing an estimate of their spending on GT eggs, the average spent was $74. Of the 82 respondents providing an estimate of their spending on GT meat, the average spent was $186. Of the 81 respondents providing an estimate of their spending on Northern BC meat outside of GT, the average spent was $269. Unfortunately, because the sample is not representative, it is not possible to use these results to estimate overall GT purchases for these products.

GTFS respondents were asked how frequently they purchased certain types of organic foods and organic or free range eggs. Most GTFS respondents answered the questions. Organic or free range eggs were the most frequently purchased items, with the average frequency of purchase at 62 percent. This was followed by organic produce (38 percent), meat (35 percent), grains (27 percent), dried or canned staples (25 percent), and dairy products (23 percent). These numbers are very high considering that the value of organic retail sales in Canada in 2008 was estimated at 2.5 percent of total sales (Agriculture and Agri-Food Canada, 2010). This is likely a reflection of the sample's selection: GTFS respondents tend to support local food and tend to be more educated and have higher incomes. Organic food purchasers also are typically more educated and have higher incomes.

GTFS respondents were asked about their weekly food budget and how it is allocated between types of food. Respondents reported an average weekly food budget of $157. One third of this budget is allocated to fresh and frozen produce. Respondents reported spending an average of $32 (20 percent of budget) on poultry, beef, pork, and lamb, with poultry representing the largest share ($13 or 8 percent of budget). Respondents reported spending an average of $12 on canned goods and $4 on eggs. Respondents reported spending $100 per week on fresh and frozen produce, canned goods, eggs, poultry, beef, pork, and lamb, all goods that in theory could be produced locally. The total weekly food budget of $157 for food is slightly above the $140 average for Canadian households reported in the 2009 Survey of Household Spending (Statistics Canada, 2010). This difference could be the result of many factors, such as GTFS respondents' higher average education and income, their interest in local and organic food, and the cost of food in GT. Assuming that GT households spend approximately $5,000 per year on food that could be produced locally or regionally, 7,186 usual resident households could generate local food

retail revenues of around $36 million. This is a huge potential market for any farmer wanting to serve the local market.

CHAPTER SUMMARY

In this chapter/section, we have seen that GTFS respondents are not representative of GT and Canadian households, with their relatively high education, incomes, ages concentrated in the 30-64 years of age range, and purchases of organic food. Most GTFS respondents have gardens, some fairly large, and they collectively garden over 1.8 acres and almost 12,000 square feet of greenhouse or covered space and own 458 fruit trees. If the size of GTFS respondents gardens, greenhouses, and the number of fruit trees they have are representative of GT parcels with gardens, greenhouses, and fruit trees that were identified through the visual surveys discussed in Chapter 3, the estimated GT acreage gardened for large garden only is almost six acres, GT greenhouses occupy at least 37,000 square feet, and there are at least 2,000 fruit trees in GT.

Most GTFS respondents are willing to pay more for local food, and some, much more. They value the freshness of local food the most and a low price of local food is the least important factor in their decision to buy local food. They spend slightly more than the average Canadian household on their food, which is reasonable considering their expressed preferences for local and organic food. Using Canadian spending data on local food and the proportion of the food budget GTFS respondents spend on food that could be produced locally, as much as $36 million of food could be sold to local residents by local farmers if appropriate distribution channels were in place. This represents at least a 12-fold increase over the value of existing production. No estimates have been made of whether GT agricultural land, climate, and water resources could support this much agricultural production.

Now that we have reviewed commercial agricultural production, food garden production, and the local demand for food, we turn to barriers facing the agricultural industry in GT.

Photo: Courtesy of Jennifer Reeves, Skeena River Ranch

CHAPTER 6 – BARRIERS TO AGRICULTURE

Norma Kerby

WHAT IS A 'BARRIER TO AGRICULTURE'?

From 1900 to the 1950's, agriculture was an important economic component of the Greater Terrace area. Connected by rail to the rest of Canada, the area's ability to grow a wide range of crops, including tree fruits, gave it a competitive advantage over coastal and interior northern communities. The natural agricultural assets of the area around Terrace were impressive - plentiful water, milder climate, and thousands of hectares of arable land. Dozens of working farms occupied the benches of the Terrace area and the fertile floodplain soils of Old Remo, New Remo, Copper City Flats, and Braun's Island. Agriculture rivaled the cedar pole companies and sawmills in its ability to generate employment and economic wealth for the community.

Today, full-time commercial farming has almost disappeared from this area. Compared to even thirty years ago, when there were 9 full-time farmers and 27 almost full-time farmers based out of Terrace, farming as an economic activity has been struggling. Hundreds of Greater Terrace families grow food and use it for home consumption or exchanges, but commercial farming, with the consistent production of saleable products, is limited to only a few companies and farms.

What is a 'barrier' to agriculture? A 'barrier' is an impediment or obstacle to the realization of an opportunity or action. Barriers prevent agricultural development. Some barriers can be overcome with simple actions, such as provision of more opportunities to sell agricultural products at a reasonable price. Other barriers are beyond the reach of local initiatives. For example, provincial quotas for egg production and the North American commodity prices for grain are determined by factors at a scale that is seldom influenced by local issues.

The barriers to agriculture and food growing activities in the Greater Terrace area are not based on lack of a suitable agricultural land base. The Greater Terrace area has large acreages of very good agricultural soils. The majority of barriers to resurgence of an agricultural industry arise from government regulations and the economics of growing food and making a profit. Farmers need to make money. Very few viable agricultural businesses can afford to grow and sell agricultural products at a loss for more than a short period of time. If we want agricultural operators to be career farmers, then profits must be sufficient to support them above poverty level. Government regulations and policies at all levels must work with farmers in order to achieve economic viability, and governments must try to minimize the impediments that they place in front of sustainable agriculture.

In comparison, the barriers to non-commercial food growing activities are often simpler - access to land, access to information and knowledge about farming, and access to storage facilities and processing techniques to extend the use of local produce through the non-growing season. The scales of food growing activities are at many levels in this region. Support and encouragement by local and regional governments for a wide variety of life style farming and gardening efforts are essential to increasing community food security. Barriers to food production on a non-commercial scale may result from local bylaws and regulations, but many barriers also arise from the challenges of growing food in an inland North Coast climate. Collectively, though, at the current levels of food growing activities (Chapter 3), the amount of non-commercial food produced in the Greater Terrace area is an integral component of the economics that allow people to live here.

The identification of barriers to agriculture in the Greater Terrace area was a collaborative process. Participants in the Greater Terrace Agricultural Area Plan's public meetings, farmers' focus groups, and public lectures, as well as residents submitting statements through the Plan's surveys and individual comments, worked together to identify barriers affecting agriculture and food producing activities. Some of the barriers that they highlighted are unique to the farming conditions of this area. Others arise from modern patterns of agricultural challenges at Provincial, national and global levels. In this chapter, the focus is on barriers arising from local conditions. Agricultural challenges arising from regulations and global and national economic and environmental conditions are addressed in Chapter 2.

THE AGRICULTURAL LAND BASE AND BARRIERS TO AGRICULTURE

The climate, soil, and landscape agricultural attributes of the Greater Terrace area are many, but, according to local participants in the planning process, certain factors dominate in preventing farms from being profitable. For non-northern B.C. residents, these factors may appear quite different from those one would encounter in more southerly latitudes, such as the Fraser Valley, but in this region, these issues can significantly affect the profitability of a farm or success in food growing activities.

WILDLIFE AND OTHER ANIMAL PROBLEMS

For urban dwellers, the number of wildlife related problems experienced in the Greater Terrace area might appear unusual, but many of the farms and agricultural operations are located on large rural properties or on rural residential lots next to undeveloped crown land. The movements of wildlife through farm properties can present serious impediments to secure and profitable farming.

MOOSE

Moose like to eat fruit trees, especially apple trees. A large moose in the winter will enter an orchard and eat an entire young fruit tree or, on older trees, eat all of the branches which would bear the next summer's crop of fruit. Similarly, if berry bushes protrude above the snow, they can become a moose's meal. Cows and calves winter in the valley bottoms and will spend two or three months feeding in an orchard. Current game laws do not allow actions against moose and electric fencing becomes buried by snow. The damages to trees and shrubs caused by moose can be barriers to establishment of viable fruit orchards and berry farms.

Recommendation 40: Discuss with provincial wildlife managers and wildlife researchers acceptable actions which would allow protection of orchards from winter moose attacks.

BEARS

Black bear problems are a major issue for farming in the Greater Terrace area. Similar to moose, black bears, and occasionally grizzly bears, can be serious threats to fruit trees, gardens, and poultry. Black bears can eat from gardens and livestock feed throughout the growing season. In the autumn, the problems become very serious, especially if the wild berry crop fails and the salmon runs are meager. Large adult black bears will climb and crush fruit trees, or even push them over in order to reach ripening fruit. Some bears will enter chicken pens and feed on both grain and chickens. Grizzly bears can represent a threat to larger livestock, especially young cattle.

The current policies under *Bear Aware*, according to participants in the Plan's public sessions, do not address the issues for farmers. Bear damage can be significant and, in the case of fruit orchards, cause damage that takes years to repair. Participants expressed frustration with their inability to address bear problems. Unmanaged black bears are considered by many farmers to be one of the most significant barriers to safe and successful farming in the Greater Terrace area.

Recommendation 41: Work with provincial wildlife managers to develop acceptable solutions which will allow black bears and agriculture to co-exist without jeopardizing one another.

BEAVERS

Beavers were identified by participants as creating problems for agriculture, including chopping down young fruit trees and damming streams which flood agricultural land. Historically, beaver populations were controlled by trapping, but trapping is not a common occupation in this area now. Beavers are a localized barrier to farming in terms of the damage that they can initiate by flooding farm land and damaging valuable trees.

Recommendation 42: Work with the local trappers association, Provincial wildlife managers, and local farmers to develop a plan for rectifying beaver issues when they arise, including an emergency contact which farmers can call to address beaver problems.

DOMESTIC DOGS

None of the participants express concerns about the other wild predators which occur in the Greater Terrace area - wolves, coyotes, foxes, and cougars, plus avian predators, such as owls, hawks and eagles. There were a number of concerns expressed, though, about uncontrolled domestic dogs. The concerns included dogs damaging planted

gardens, dogs stealing and eating feed, and dog packs harassing or chasing and killing farm animals. One suggestion was to bring in regulations requiring that all dogs be tied or fenced in agricultural areas. As dogs are used on many of the rural farms to chase away wildlife, the acceptance of dog containment regulations might be difficult in more remote locations such as Rosswood or Old Remo, but might be a necessity in other areas with livestock, such as Jackpine Flats or Terrace North. Uncontrolled domestic dogs are seen as a barrier to raising livestock, especially sheep, by many local farmers.

Recommendation 43: Work with the existing animal control systems for the City of Terrace and Regional District of Kitimat-Stikine to develop a dog control plan for agricultural areas. Have a clear method of contact for farmers in emergency situations.

Pollinators

According to some participants, the lack of pollinators is affecting crops, in particular fruit trees, which have shown low fruit set over the last five years. Other crops requiring open pollination, such as many heritage varieties of fruits and vegetables, are also experiencing problems with low levels of pollinating insects. Low pollination success is considered a significant barrier to the economic viability of fruit orchards and open pollinated crops.

Recommendation 44: Work with local apiarists and farmers to increase bee pollination for fruit orchards and other crops which require open pollination. Assist local farmers in determining non-crop methods, such as supporting patches of fireweed or planting flowers which attract bees, in order to increase the numbers of pollinators on their farms.

Erosion and flooding

The Greater Terrace area has thousands of hectares of arable land, but the geography of the valley systems in which farming occurs generates barriers to agriculture related to erosion and flooding. These barriers not only arise from costs and damage to agricultural investment, they are also enforced through negative attitudes by farmers towards floodplains due to potential economic losses and the perception of lack of help available for farm properties which have been harmed by flooding. The floodplains of the Greater Terrace area are also associated with channel switching and serious bank erosion, which can lead to physical losses of agricultural land (Chapter 3). Erosion and flooding are barriers to agriculture in the Greater Terrace area, not only from the damage and economic losses that they cause, but also through the negative attitudes that have developed about farming in floodplain areas.

Flood of 2007

The impacts of major floods are discussed in Chapter 3. Special concerns were expressed by farmers regarding the aftermath of the 2007 flooding episode. High water and river flow brought large amounts of debris into floodplain areas such as Braun's Island, south of Graham Avenue, Old Remo, and New Remo. Where farmers have not been able to afford to clean up the logs, these fields have been left in a non-arable state. Financial support and logistical support are needed to return this farm land back to productivity. Damage by the 2007 floods, including deposition of flood debris on arable land, is identified as a barrier to farming in certain areas.

Recommendation 45: Work with farmers and agricultural operators to identify farm land which was damaged during the 2007 floods and assist them to find funding for cleanup and rehabilitation of farm land.

Soil erosion

Erosion is not limited to the floodplains. With the Greater Terrace area's higher precipitation levels (133 cm per year) and erosion-prone soils in some locations (especially glaciofluvial marine clays), farmers are reluctant to invest in certain ALR areas due to concerns with slope failure, gullying, and poor soil structure. Participants in the public input processes expressed frustrations with the lack of guidance and assistance in dealing with soil protection and erosion issues. They felt that there was no point of contact where they could discuss their issues and no financial assistance available to solve major erosion problems. In particular, the development of erosion gullies in clay soils and the rapid bank erosion along the major rivers were problems that farmers felt were beyond the ability of one agricultural operator to solve. Both logistical support and financial support by governments were identified as being needed to address these major erosion issues. Soil erosion and land instability are identified as major barriers to agriculture and farm security in the Greater Terrace area.

Recommendation 46: Work with farmers and agricultural operators to locate major erosion problems. Assist farmers in finding funding to develop remedial plans and undertake actions to address farm land degradation and land losses to erosion.

Maintaining forest cover on sensitive agricultural lands

Input from local farmers suggested that they recognized the value of maintaining forest cover on erosion-prone land or along river banks to deflect and slow currents during major floods. Some also suggested that they were interested in examining the potential to use these forest lands for harvesting natural botanical products, such as mushrooms, devil's club, and berries. They felt that there could be good global markets for these products and pointed to the value of the mushroom harvest in the past.

Recommendation 47: Work with farmers and agricultural operators to identify the types of erosion-prone areas that would benefit from permanent forest cover. Support studies which could identify potential markets for botanical products from natural managed forest cover.

Drainage

Some farmers expressed concerns about drainage problems which arise from issues on adjacent properties and crown land upstream of their farms. The sources of the drainage issues are varied, but, with the Greater Terrace area's high levels of precipitation, in soils with low permeability and in topographic depressions, poor drainage can impede planting in the spring, or drown out crops, especially maturing crops in the autumn. Drainage issues are identified as barriers to agriculture for several locations in the Greater Terrace area.

Recommendation 48: Work with farmers and agricultural operators to identify locations with drainage issues. Examine possible solutions to improve drainage with local, regional, and provincial governments.

Logging practices

Some participants felt that industrial logging practices are affecting erosion rates, water quality, and wind speed conditions adjacent to and on their farms due to harvesting of stream bank trees and trees on steep slopes or in wind prone areas. Whereas in the past these areas of trees next to private property were too limited in size to be harvested, farmers feel that the crown land surrounding them is being logged too extensively. Logging practices which remove forests adjacent to agricultural areas are considered a barrier to agricultural productivity and safety.

Recommendation 49: Work with local farmers and agriculture operators, the Provincial government, and local forest industry companies to discuss and take action regarding the impacts of forest harvesting adjacent to or upstream of agricultural lands.

Soils

Soils are the foundation upon which agriculture develops (Chapter 3). Participants in the planning process expressed concerns regarding soil related issues in the Greater Terrace area and identified these concerns as barriers for which solutions could most likely be found if farmers were given information as to which actions they should take. The lack of good information about local soils is seen as a barrier to successful agriculture (Chapter 3).

Land clearing

Due to the massive size of stumps from the original coniferous forests or large stumps in regrowth forests, the cost of land clearing in floodplains and in wet to moderately moist sites is very high. Land clearing may be less expensive in areas where farms have been abandoned or are not currently being used for farming (the stumps have already been removed), but regrowth is normally very dense and specialized equipment is required to reclear the land. Land clearing is further complicated by the tendency of wet soils to compact and loose structure. The shallow depths of most upland soils in this area are also a problem, as vigorous land clearing will remove the viable soil layers. Land clearing is a barrier to agriculture due to the high cost of preparing the soil for tilling and the difficulties in accessing machinery which will minimize soil damage during land clearing.

Recommendation 50: Work with agricultural operators and farmers to identify funding that can be used to assist land clearing. Determine environmentally compatible methods and equipment that can be used during land clearing to minimize soil damage.

Poor quality soils

As explained in Chapter 3, the Greater Terrace area has large hectares of low capability Class 5 and Class 7 soils. As well, even the higher capability Class 2 and 3 soils can have nutrient deficiencies due to the accelerated rates of leaching associated with a North Coast climate. Several participants wanted to know what to do about poor soil conditions and lack of soil nutrients in local soils. Location of farms on poorer types of soil and lack of information about techniques to correct for soil nutrient deficiencies are barriers to successful agriculture throughout the Greater Terrace area.

Recommendation 51: Work with agricultural operators and farmers to provide information and workshops regarding the methods used compensate for low capability soils and the methods used to improve soil nutrients in a sustainable fashion.

Access by apiarists to Crown Land with low capability soils

Class 7 soils and colluvial mountain soils are good for honey production as they grow fireweed during the initial stages of reforestation. Fireweed honey is a valuable commodity and sells well in southern B.C. Honey production is an important agricultural opportunity in the Greater Terrace area. Access to crown land for bee colonies was discussed during the public participation processes. Lack of access to Class 7 soils and mountain soils on crown land can be a barrier to honey production.

Recommendation 52: Work with local farmers and the Provincial government to ensure continued access to crown lands for honey production.

Agriculturalists and experimental farms

There was interest amongst the Greater Terrace farming community to have a stronger presence of professional agriculturalists in the area. These professionals could provide expert help in determining the best crops and practices for an inland North Coast climate with leached coastal soils. It was also felt that there is the need to have an experimental farm which could determine the best varieties of crops and livestock to grow in this northern location.

District agriculturalist - Availability of professional assistance

Some participants expressed frustration with the difficulties in finding agricultural information about the Greater Terrace area. They feel that there should be a central group or agency to which they can direct questions and get an informed answer. In the past, there was a District Agriculturalist in Smithers, who was very effective in this area, but now the closest District Agriculturalist is in Prince George. The lack of a District Agriculturalist in the northwestern part of British Columbia is identified as a barrier to agriculture due to the difficulties in obtaining professional advice and guidance.

Lack of experimental farms

Canada once had a network of agricultural stations which tested and developed the best varieties of crops and livestock for each region. Terrace had an experimental farm during the peak of the area's agricultural production. Participants in the planning process complained that they only learn about the best varieties of crops by talking to other people and the information is hard to get. The lack of an experimental farm and the information that it would gather about the best varieties of crops and livestock to grow in the Greater Terrace area is a barrier to successful agriculture.

Agricultural practices

A number of barriers to agriculture are associated with agricultural practices in the Greater Terrace area, such as prevention of crop and livestock diseases, control of weeds, and disposal of farm wastes. Problems can arise from these practices due to the large amount of precipitation annually (132 cm) and the milder coastal climate which allow diseases and weeds to spread and persist in the area.

Livestock diseases

Documentation of livestock diseases in the Greater Terrace area is not readily available to local farmers. Some new farmers expressed frustration with the difficulties that they have finding out how they should be managing their poultry, rabbits, and larger livestock, and felt that they could only obtain information from the Internet or

through someone mentioning what they might do to cope with a particular disease. Fear of having infected animals has prevented some individuals from raising particular types of livestock.

The lack of information about animal diseases and how to avoid and treat them is a barrier to successful agriculture as it both discourages new farmers and can be a heavy economic cost to others.

Recommendation 53: Work with local farmers and agricultural operators, the Provincial Government, and local animal care specialists to develop an educational program and local contact who can address issues regarding livestock diseases in the Greater Terrace area.

Fruit tree diseases

Tree fruit diseases were mentioned several times during the public participation processes, in particular, the conflicts between farmers managing their trees for fruit production, and abandoned or poorly managed trees on properties next to them. Establishing fruit orchards requires considerable investment in terms of time to maturity and cost of trees. Having uncontrolled sources of tree diseases adjacent to a farm has the potential of eliminating that investment. Lack of a management plan and regulations to control fruit tree diseases in the Greater Terrace area is seen as a major barrier to the establishment and maintenance of commercial orchards.

Recommendation 54: Work with local farmers and agricultural operators, the Provincial Government, and local and regional governments to establish a management plan and regulations to control fruit tree diseases in the Greater Terrace area.

Noxious weeds and introduced species

The lack of control over the spread of noxious weeds was one of the most discussed topics during the public participation process. Agricultural operators who maintain hay fields, turf farms, and nurseries are faced with the encroachment of serious infestations of weeds, with little apparent government action. The lack of weed management on abandoned land or unmaintained properties and right of ways, such as public land, railways, and major highways, is jeopardizing the profitability of these agricultural operations. Participants suggested that they would like to see local government action, with regulations, fines, and costs of weed eradiation levied against offenders. The lack of control over the spread of noxious weeds and introduced species in the Greater Terrace area is strongly identified as a barrier to profitable agriculture.

Recommendation 55: Work with local farmers and agricultural operators, the Provincial Government, the Northwest Invasive Plant Council, and local and regional governments to establish and fund a weed management plan for the Greater Terrace area.

Pesticides

According to one commercial agricultural business, the lack of choice of regulated pesticides to deal with noxious weeds and pests, has a significant impact on their ability to grow agricultural products. Other participants did not agree with the concept of using pesticides and felt that there should be regulations regarding pesticide use, especially if adjacent farms are certified as organic or applying for certification. They felt that the use of pesticides which could move on to their properties could affect their ability to grow organic crops. They suggest that, instead, training in weed control agricultural techniques should be provided. Conflicts between pesticide users and farmers who wish to grow organic products could be a barrier to agriculture in the Greater Terrace area.

Recommendation 56: Work with local farmers and agricultural operators, the Provincial Government, and local and regional governments to establish a pesticide management program in the Greater Terrace area which allows the option of certified organic farms in certain agricultural districts.

Safe disposal of animal carcasses

Participants identified the need for a licensed composting facility for disposal of animal carcasses and slaughter offal. They were concerned with disposal on their own properties, both in terms of legal issues and issues with attracting wildlife. The lack of a licensed composting facility for animal materials is a barrier to agriculture due to concerns with legal and appropriate disposal of this material.

Recommendation 57: Work with local farmers and agricultural operators, the Provincial Government, and local and regional governments to establish or encourage the establishment of a licensed composting facility in the Greater Terrace area which could handle animal carcasses and slaughter offal.

Safe disposal of antibiotics

Questions arose during the public participation processes as to the safe disposal of animal antibiotics. Farmers were aware of the environmental problems from dumping antibiotics into water or septic tanks, and wanted to have a safe place to which the antibiotics could be delivered. The lack of an identified disposal location for agricultural antibiotics is a barrier to agriculture and discouraging to some farmers who want to raise livestock.

Recommendation 58: Work with local farmers and agricultural operators, the Provincial Government, and local and regional governments to determine a safe mechanism by which antibiotics used in agriculture can be safely disposed.

Safe disposal of animal wastes

Farmers were aware of the environmental problems from animal wastes washing into surface water or leaching into groundwater tables, and wanted to have safe procedures and options by which wastes such as winter manure piles could be stored and utilized on site or moved to composting facilities.

Recommendation 59: Work with local farmers and agricultural operators, the Provincial Government, and local and regional governments, to determine safe procedures and options by which animal wastes can be safely composted on site or moved to regional composting facilities.

Dumping of fill and industrial wastes on agricultural land

Dumping of fill and industrial wastes on agricultural land, in particular, on ALR lands, and the lack of regulations or enforcement of regulations is seen to have a very negative impact on adjoining or downstream farms. Farmers expressed dismay that nothing appeared to be done about this dumping. Use of agricultural and ALR land as disposal sites for fill and industrial wastes is a barrier to agriculture, not only on the specific properties, but on adjoining agricultural properties.

Recommendation 60: Work with local farmers, agricultural operators, the Provincial Government, local and regional governments to monitor use of farm land for disposal of industrial materials. Establish and enforce regulations to prevent this use. Establish a contact system by which farmers can report emergency situations when and where this dumping is occurring.

Barriers Associated with Agricultural Opportunities

Starting a Farm or Agricultural Business

There are many barriers to starting a farm or agricultural business in the Greater Terrace area. As the number of full-time farmers and agribusinesses is limited in this region, the availability of help during start-up of a farm at any size is very limited. The barriers to new farmers range from lack of information, to problems with soils and climate, variations in weather from year to year, animal issues, or lack of financial help. In the face of so many challenges, new farmers can become discouraged and quit

Availability of information

New farmers and individuals wanting to start farms are having difficulties finding good information. There are a number of Facebook groups and informal gardening clubs, but the information that potential farmers receive from those groups is not detailed enough to use for commercial farming. In the past, the Kitsumkalum Farmers' Institute, which operated from 1910 to 1990, was an invaluable mechanism for older farmers to pass on information to new farmers. Several participants indicated that they wanted to have more knowledge and local information about farming, and wished to see more workshops and demonstrations about farming techniques.

Participants were interested in specific types of information, such as understanding regulations that affect ALR land or working with regulations for meat production. Lack of consistent sources of information and consistent programs of educational workshops for new farmers is a barrier to agriculture in the Greater Terrace area, as many

people interested in farming become discouraged when they encounter farming problems and are unable to find answers or solutions.

Recommendation 61: Identify potential mechanisms by which farming workshops, demonstrations, and educational courses can be offered on a regular basis, including possible collaboration with an academic institution.

"On the farm mentoring"

"On the farm mentoring" is used to allow new farmers or potential farmers to learn from experienced ones. Some participants were interested in having a similar program here. Questions were raised as to whether there are grants available for experienced farmers to pay them to mentor new farmers. "On the farm mentoring" might be a mechanism by which new farmers or potential farmers could learn from experienced farmers but the lack of funding is a barrier to development of this type of program.

Recommendation 62: Identify potential mechanisms by which "on the farm mentoring" might be financed as a program in this area.

Programs which help new farmers

Most participants were unaware of programs for new farmers, such as those offered by the 'Beyond the Market' Program, or felt that the programs did not offer local information. Similarly, the Greater Terrace Food Association has been working towards community food security, but most participants were unaware of GTFA. The lack of publicity and information about programs which might help new and potential farmers is a barrier to assisting more agricultural and food growing ventures in this area.

Recommendation 63: Assist new potential and potential farmers in becoming aware of associations and programs which might provide useful information, materials, and project funding.

Start-up capital

According to some participants, there is not enough start-up capital available for someone to try to develop a farming business. Banking institutions are reluctant to fund agricultural ventures and the participants were not aware of any other sources of start-up funding other than self-funding or relatives.

The lack of information about start-up capital and the apparent lack of sources for start-up capital are significant barriers to new farmers or potential farmers in this area.

Recommendation 64: Assist new potential and potential farmers in becoming aware of possible sources of start-up capital. Lobby senior levels of government to identify the Greater Terrace area as being a priority of agricultural development funding.

Operating a successful farm or agricultural business

Once a farm is established in the Greater Terrace area, there are a number of barriers which can impede a farm or agricultural business from being viable and successful.

Regulation of meat sales

The Provincial regulation of meat sales from small farm livestock producers, implemented in 2007 (Chapter 2), had an immediate and devastating impact on livestock production in the Greater Terrace area. With the recent change to allow small scale Class D and E slaughter licenses within the Regional District of Kitimat-Stikine, there is a stronger return to production of small livestock such as chickens, turkeys, and rabbits, but beef production is still impacted by the lack of a slaughter house in the Greater Terrace area

Recommendation 65: Work with local farmers, agricultural operators, the Provincial Government, and local and regional governments to examine the need for slaughter facilities for large livestock and to assist small livestock producers to obtain Class D and E slaughter licenses.

Availability and cost of feed

The availability of feed and the cost of feed were identified by participants as the **primary factors** (after meat regulations) which hinder livestock production in the Greater Terrace area. According to participants, there is a

lack of reliable supplies of feed locally. The cost of feed, even if delivered in bulk or cooperatively amongst many farmers, is still very high due to transportation costs.

The potential for using grain from Prince Rupert was discussed. A major agricultural business in Terrace suggested that they might be able to expand their feed manufacturing to supply bulk feed locally, but they would require consistent volume demands to justify the investment. The lack of secure feed supplies for livestock and the cost of the feed are major barriers to poultry, rabbit, and larger livestock production in the Greater Terrace area.

Recommendation 66: Work with farmers and agricultural operators to examine options that will provide secure supplies of cost-effective livestock feed in the Greater Terrace area, including options that may involve grain from the Port of Prince Rupert.

Branding

Participants felt that development of a Greater Terrace "brand" could be important in development of new agricultural ventures. They would like to see support for local labeling and packaging. They would also like controls over packaging in order to avoid unfair labeling of 'organic' products or use of the term

'local' e.g. whether the products are genuinely organically grown and whether the products are from the Greater Terrace area. The lack of labeling regulations as to whether a product is locally grown and whether it is naturally or organically grown is a barrier to new farmers in terms of establishing their products within the Greater Terrace market.

Recommendation 67: Assist the development of labeling and packaging which identifies agricultural products as being produced in the Greater Terrace area and clearly identifies the method of farming used to produce that product.

ALR versus bylaws

It was uncertain to many of the participants as to whether Provincial regulations governing the Agricultural Land Reserve take precedence over local bylaws e.g. the ALR regulations permit additional residences on farm property for agrotourism or migrant workers, but Regional District and City bylaws do not. This appeared to be a major point of contention for some participants and a perceived impediment to development of new farm ventures. The perceived lack of clarification and coordination regarding regulations and bylaws pertaining to land uses on the ALR is a barrier to development of new farm ventures and would benefit from a clear presentation to land owners with ALR properties as to which land uses they may undertake.

Recommendation 68: Clarify the relationships between local and regional government bylaws and regulations pertaining to the ALR and have this information available to owners of ALR properties.

Skeena Valley Farmers' Market

The Skeena Valley Farmers Market is a key outlet for selling fresh produce at good prices. There is some confusion as to regulations which apply to selling produce at a public market and participants were interested in more information. They were also interested in which products are the most in demand and what prices could be asked for those products. The lack of information about how the Skeena Valley Farmers' Market functions as a preferred outlet for selling farm produce is a barrier to some farmers who would like to participate but do not have sufficient information to make planting and marketing decisions.

Recommendation 69: Undertake a full season survey of the Skeena Valley Farmers Market to determine the demand for certain farm products and the pricing of these products. Make this information available to existing and potential farmers and food grower vendors at the Market.

Expand the Skeena Valley Farmers' Market

The Farmers' Market is at capacity and could expand, possibly on to Davis Avenue. It is important to give local farmers an outlet to sell their produce. There appears to be a strong demand for local food, including people from Prince Rupert and Kitimat who drive to Terrace to buy at the Market. Some participants expressed concerns that they would like to sell at the Farmers' Market but there weren't any spaces left. Others expressed the concern that they only have produce available at certain times of the season and there are not spaces available for non-

regular vendors. The lack of capacity at the Skeena Valley Farmers' Market is a barrier to farmers and food growers who would like to sell at that venue.

Recommendation 70: Work with the Skeena Valley Farmers' Market Association to determine solutions to the lack of capacity at the Farmers' Market. Work with farmers and food producers to determine the best possible options by which they could use expanded space which would be dedicated to sale of local farm products.

Year-round produce sales

According to many of the participants, there needs to be a location at which produce can be sold year-round e.g. an indoor farmers' market. An indoor farmers' market would assist to overcome weather problems associated with selling produce in the early spring and late autumn, and would allow sales of produce that can be stored throughout the winter months. It would also provide incentives for year-round greenhouses and early greenhouse production. The lack of a winter location for sale of local produce is a barrier to the economic viability of farms and food growing activities in the Greater Terrace area.

Recommendation 71: Assist farmers, food growers, and the Skeena Valley Farmers' Market to examine the feasibility and sources of funding for a winter indoor farmers' market.

Farm gate stands

Bylaws preventing farm gate sales of produce appear to be a barrier for some participants to sell their crops. They feel that farm gate sales are necessary as the Farmers' Market is at capacity and only operates half a day per week. A number of other participants who were not farmers supported the idea of buying produce directly from farms. Regulations which prevent farm gate sales are seen as a barrier to the sales of local produce.

Recommendation 72: Work with farmers and food growers to develop bylaws and regulations that permit farm gate sales under safe conditions.

Sales to supermarkets and restaurants

Sale of local products to supermarkets and restaurants is a complex issue in terms of safe food regulations and consistency in providing supplies to these customers. A number of participants expressed interest in these types of markets. The Greater Terrace Food Association has placed a priority on local retail outlets accessing local farm products. The development of these markets would be a key component in allowing commercial viability of local farms. The lack of a consistent market for local produce at restaurants and supermarkets is a barrier to the development of commercial farms in the Greater Terrace area.

Recommendation 73: Undertake an analysis of the markets for local produce at restaurants and retail stores, and the steps which would be needed to ensure that food safety regulations were met and supplies could match the needs of these major markets.

Storage of produce for off-season sales and consumption

The issue of storage of produce in the non-growing season has been discussed in Section 3. In terms of sale of products, the Farmers' Market operates from May to the end of October, and the suggestion has been made that an indoor winter farmers' market would greatly assist in the viability of local farms. The problem then becomes the storage of produce, such as cabbages, carrots, turnips, squashes, potatoes, and apples. Historically, farms had large root cellars or cold rooms, and produce would last until early spring. Many local farmers and food growers do not have storage facilities, or their storage is too warm to maintain the quality of the products. The lack of adequate winter storage facilities is a barrier to the winter sales of local farm produce.

Recommendation 74: Work with local farmers and food growers to determine storage and processing techniques that could extend the period of sale for farm produce through the winter. Examine the feasibility of a commercial or cooperative food storage facility which would allow produce to maintain food safety regulations.

Making a profit

The planning process for the Greater Terrace Agricultural Area Plan was fortunate to have some of the largest agricultural businesses in the region participate in the planning sessions. Their assessment as to the factors leading to the profitability of agriculture provided invaluable insights into the barriers to full-time agricultural ventures.

Support for local larger scale agricultural businesses

The larger-scale agricultural businesses located in the Greater Terrace area make important contributions to the local economy and provide stable employment. It would be beneficial for these businesses and for potential and new agribusinesses to have clear guidelines from local and regional governments as to how and where they can conduct intensive agriculture or undertake larger scale agricultural operations. In order to make investments at these levels, the businesses need certainty as to the appropriateness of their locations and activities, and, wherever possible, avoidance of current and future land use conflicts.

Recommendation 75: Work with local and potential large scale agricultural operations and businesses to ensure that they are able to function with a minimum of land use and regulatory conflicts.

Limited local market

Two companies which operate large, full-time agricultural businesses clearly explained that the Greater Terrace local market was not sufficient to support their businesses. Both have well developed regional markets for their products and produce diversified product lines. For any farm or agribusiness to operate on a full-time basis, it was felt that, at the minimum, the agricultural operation would need to expand to include markets in the Nass, Kitimat, and Prince Rupert if they wished to have a sufficient level of income to be viable. The size of the local Greater Terrace market is a barrier to full time agricultural ventures and viable full-time agribusinesses must expand to include regional markets.

Recommendation 76: Evaluate the potential for northwest regional agricultural markets and assist local producers in accessing these markets.

Unreliable transportation

Local agricultural businesses which access regional markets felt that local transportation systems do not provide a reliable method of getting fresh or live agricultural products to customers. The larger businesses own their own transportation methods and deliver their products directly to their customers. Even with the high price of fuel, they felt that this was a necessity in order to ensure that products get to the customer in a timely fashion. This represents a major issue for new farmers or farmers working at a smaller scale. One possible key to allowing local farmers to expand into regional markets would be to have a cooperative method of distributing agricultural products. The lack of reliable transportation to regional markets is a barrier to new and smaller scale farmers and cooperative transportation may be required to get products to these expanded markets.

Recommendation 77: Examine the solutions to effective transportation of agricultural products to regional markets, including cooperative transportation methods for new and smaller scale farmers.

Long distances to major markets/Development of special products

Only one participant indicated that he had accessed major markets in larger urban centres. His product of fireweed honey is a high value product which can absorb the costs of transportation. Some of the participants felt that there are other high value agricultural products which could be grown in the Greater Terrace area, but they would require processing in order to be expensive enough to cover the costs of shipping. Examples included dried organic fruits and vegetables, and organic jams and jellies, as well as natural forest products, such as mushrooms, which could be managed on forested private agricultural lands. The long distances to major markets and the costs of transportation are barriers to commercial agriculture in this area, unless the products are unique and valuable enough to cover transportation costs.

Recommendation 78: Assist farmers and agricultural businesses to examine potential products unique to this area which might be able to access major markets. Examine cooperative actions which might be able to overcome the high costs of shipping agricultural products outside of this region.

Limited season for farm products

As discussed in Chapter 3, there is a limited season for the growth of fresh produce and farm products in the Greater Terrace area. In order to increase the economic viability of local farms and to allow them to make a profit, it is important that methods to extend the production season are considered. It is also important to identify products, such as livestock, which can be grown and processed year round. Participants also talked about season extending opportunities in the Greater Terrace area, such as warm water from the Lakelse Hotsprings or microhydro projects, which could be used to operate greenhouses in a more cost effective fashion. The shortness of the viable growing season is a barrier to the profitability of agriculture in this area and methods and products that can extend income flow for more months in the year should be identified.

Recommendation 79: Assist farmers and agricultural businesses to examine how agricultural activities and income can be extended to cover a greater number of months in the year.

Local support

Participants discussed how important local support is and will be for generating a market for local farm products. They talked about the need for marketing and educating the public, and production of a local producers' guide for the area. The lack of publicity and information about local farmers and local farm produce is a barrier to expanding the number of viable farms in the Greater Terrace area.

Recommendation 80: Examine how local farm products can be publicized and local support for farmers can be increased, including production of a local producers' guide which is updated each year.

Available labour/farm workers

The availability of farm workers was a major point of discussion during the public meeting. Some participants expressed the concern that, even if they wished to expand production, they would not be able to do any more of the labour themselves. They also indicated that there are serious difficulties finding affordable farm workers. Various suggestions included the use of interns, students, WOOFers, and migrant workers. The question was given that, if a farm could only be economical if it has free or cheap labour, such as students, how will it survive as a business over the long term. Is the problem finding people who will do the hard labour associated with farming, or is the question where to find people who will work for free or for very low wages? No resolution was reached in the discussion. The lack of affordable and available farm workers is a barrier to the expansion of some farms to commercial agricultural businesses.

Recommendation 81: Examine the issue of affordable farm labour and provide information to farmers as to the possible options available to help fund farm workers. Assess whether there are skill training options available for development of local farm workers.

Costs which limit profits

Participants clearly described which costs were impacting farm profitability - high gas prices, high feed prices, high seed and fertilizer costs, and high farm insurance. As gas prices increase, the prices of farm staples, such as feed, fertilizer and seed, increase. As feed prices increase, mostly due to North American factors, the feasibility of growing livestock and producing products such as eggs and meat, lessens.

In terms of farm insurance, some farmers have chosen not to insure their operations due to the high costs of insurance. The high prices for gas, feed, equipment, seed, fertilizer, and insurance are major barriers to the ability of local farms to generate a profit.

Recommendation 82: Assist farmers, agricultural businesses, and food growers to determine if there are cooperative methods by which the high costs of operating a farm and growing food can be reduced.

Equipment

As part of the discussion regarding the high costs of many aspects of farming, several of the participants expressed an interest in sharing equipment, especially larger pieces of equipment needed for tilling and harvesting hay. The very high prices for equipment are stopping some of the participants from expanding their farm operations. The high price of farm equipment is a barrier to the expansion of farming activity and cooperative actions might be necessary to bring certain pieces equipment into this area.

Recommendation 83: Assist farmers, agricultural businesses, and food growers to look at cooperative methods or lease or loan ventures which would allow essential pieces of farming equipment to be brought into the area.

Vandalism and theft

Participants identified vandalism and theft as being serious issues for farming ventures closer to or within urban areas. It was noted during the visual surveys that some farm properties have gone to considerable efforts to protect access to their properties. Livestock farmers have also expressed problems with theft of cattle and some graze their cattle in concealed pastures to avoid this problem.

Vandalism and theft can be barriers to profitable farms and can be very discouraging to farmers.

Recommendation 84: Work with the farming community, local and regional governments, and law enforcement to design a program to increase security of farm operations and livestock in the Greater Terrace area. Designate a specific contact sequence by which farmers can report loss or damage to farm assets.

Implementation

Overview

The *Greater Terrace Agricultural Area Plan Report* and the supplementary documents, *Land Use and the Agricultural Land Base* and *Greater Terrace Agricultural Land Use Inventory*, provide a solid analysis of agricultural and food growing activities in the Greater Terrace area. The recommendations arising from this analysis reflect both extensive consultation with the farming community, as well as the characteristics of an inland North Coast climate and landscape. In order for the Agricultural Area Plan to be effective in providing an environment in which agriculture can be maintained and enhanced, it is important that these recommendations be considered, prioritized, and implemented. The following are key factors in the implementation of the Plan - establishment of an on-line archive; establishment of an Agricultural Advisory Commission; support for a Farmers' Organization; review and prioritization of materials from the Greater Terrace Agricultural Area Report; and review and revisions to local and regional bylaws and policies to support agriculture and food growing activities.

Archives

There is a strong interest amongst the Greater Terrace farming community to have a stable, accessible mechanism by which important agricultural information specific to the Greater Terrace area can be made available to both new and established farmers and agricultural operators.

Permanent archive for agricultural information

An on-line web site could be established which includes important agricultural information and links to information, such as the 'Beyond the Market' Program, historical information and reports, climate, farming techniques, workshop results, building plans for greenhouses, soils, soil capability, floodplains, and successful varieties of plants for the Greater Terrace area. Several recommendations from the GTAAP report speak to the desire of the farming community to have access to more information (see Recommendations 1, 4,7, 9, 12, 22, 24, 25, 55, 56, 57, 63, 65, 66, 70, 71, and 76).

Recommendation 85: Establish a permanent on-line archival site for agricultural information about the Greater Terrace area, with links to broader agricultural information relevant to the Greater Terrace area. This site should be hosted by a stable entity, such as local government.

Maintain and update the agricultural archives

As information and new publications become available and workshops are held, it is important that this information is not lost and that farmers have access to relevant information as soon as possible.

Recommendation 86: Maintain and update the on-line archival site on an ongoing basis.

Consultation with the local agricultural community

In order for implementation of the Greater Terrace Agricultural Area Plan to be relevant to the farming community in the Greater Terrace area, it is important that consultation with that the community continue on from the high

levels of participation during preparation of the Plan. One mechanism to achieve this is to establish a permanent agricultural advisory commission.

Permanent Agricultural Advisory Commission

Establishment of a Greater Terrace Agricultural Advisory Commission is important to the success of implementation of the Agricultural Area Plan. An Agricultural Advisory Commission (AAC), with representation from local farmers and agribusinesses, could provide direct feedback to the City Council and the Regional District Board, and can provide advice to staff on issues and land use matters affecting agriculture. An AAC serves in a valuable role during development and implementation of the GTAA Plan, such as planning for urban/farm interfaces, or review of regulations which affect agriculture. A permanent AAC provides advice from an agricultural perspective on such issues as applications for changes to the Agricultural Land Reserve (ALR), revisions to zoning and subdivision bylaws, and amendments to Official Community Plans (OCPs).

Recommendation 87: Establish and utilize a permanent Greater Terrace Agricultural Advisory Commission.

Farmers' organization

There are several groups which are working with local food growers, but, at this time, there is not a permanent farmers' organization, such as a Farmers' Institute. For those growers who wish to start or expand their operations into bigger commercial operations, having a farmers' organization would provide a forum through which they could meet other farmers. For local governments, a farmers' organization could provide a recognized mechanism by which agricultural operators could be contacted.

Recommendation 88: Encourage the establishment of a permanent farmers' organization which supports activities and dissemination of knowledge to local agricultural operators and food growers.

Review and prioritize recommendations from the GTAAP report

Review and prioritize actions recommended in the GTAAP Report

There are 90 recommendations in the GTAAP Report. In order for the concerns of the farming community to be considered, and for actions to be taken which protect and enhance agricultural activities, it is important to review and prioritize these recommendations to identify those recommendations which might receive immediate attention, and those which require actions over a longer timeframe.

Recommendation 89: Review and prioritize the recommendations in the Greater Terrace Agricultural Plan. Set a timeframe for actions to be initiated for the top priority recommendations. Work with the Provincial Government and regional and local governments to act on important recommendations.

Review and revise bylaws to support agriculture

Review and modify bylaws to support agriculture and food growing activities

The Greater Terrace area is complex in terms of where and how agricultural activities are occurring. Although there are certain districts, such as Old Remo, which can be easily defined in terms of agricultural activities, there are a greater number of farms and agricultural activities spread out across the entire Greater Terrace agricultural plan area. Providing bylaws and regulations that recognize this and promote food production and agricultural activities in a variety of locations and land use circumstances is important in maintaining and expanding the importance of agriculture, farming, and food growing activities in the Greater Terrace area.

Recommendation 90: Review and modify bylaws and other regulations in order to promote agriculture as an important land use and life-style activity within the Greater Terrace area.

Chapter Summary

Participants identified many significant barriers to agriculture which prevent or hinder the development of agricultural operations in the Greater Terrace area. The physical landscape can present barriers in terms of soil types and soil fertility, but the most important barriers to development of high capability soils are associated with issues inherent to floodplains. New and expanding farmers face a number of barriers, the majority of which are associated with gaining knowledge as how best to farm in this area. In order for agricultural businesses and larger

farms to make a profit and be economically viable, they must overcome barriers associated with the size of the local market, expansion into regional markets, and reliable transportation methods for products. Other factors which can act as barriers to viable agricultural operations include the lack of farm workers, prices of feed and equipment, and high gas prices. Successful agricultural businesses which are located in the Greater Terrace area can act as models as to how to overcome some of these barriers.

Implementation of the recommendations designed to decrease or eliminate the barriers to agriculture in the Greater Terrace area will require prioritization as to which recommendations require action now or within a longer timeframe. Continued consultation with the farming community is essential to the success of the Greater Terrace Agricultural Area Plan.

Photo: Courtesy of Quinton Freeman, Uplands Nursery

CHAPTER 7 – INFRASTRUCTURE AND CONSERVATION TOOLS

Lynda Gagné

INTRODUCTION

In this chapter we briefly review the type of activities that have been undertaken and organizations that have been created in other jurisdictions to support production and distribution activities of small-scale farmer and to preserve agriculture land. The focus of this chapter is on small-scale and local food production because the vast majority of GT farmers are engaged in small-scale production that can easily serve GT and neighbouring regional districts but not so easily serve more remote markets. However, some of the topics we review are also applicable to larger scale production. This chapter focuses on business and other organizational models and activities that support production, distribution, and the preservation of agricultural land, including community-supported agriculture, community farms and farmland trusts, agricultural co-operatives, food hubs, and leasing arrangements.

COMMUNITY-SUPPORTED AGRICULTURE

Del Castillo Shelton (2012) defines community-supported agriculture (CSA):

> CSAs are local, small-scale networks of producers that grow seasonal food such as vegetables and fruit, and/or meat products, in which local consumers buy prepaid shares of inventory. The delivery of the boxes of produce to consumers occurs in a variety of ways: through home delivery, farm pick-ups, or at community drop-off points. (del Castillo Shelton, 2012, p. 1)

In the CSA model, consumers share in the farming risk. If the harvest is good, consuming members will get more products in their boxes, and if it's bad, they will get less. CSAs provide a form of insurance to farmers that would not be available if they were to sell their products at a farmers' market or through other means. Because of this insurance, the long-term financial viability of farms is not as threatened as it would be otherwise, and farms are less likely to be abandoned over adverse events.

CSAs may involve one or many farms. One advantage of having several farms is that risk is reduced – an adverse event on one member farm does not necessarily mean an adverse event on another member farm. Another advantage of having several farms is that the diversity of products included in the boxes can be increased. CSAs should consult with their customers to determine their food preferences and multiple farms CSAs need to plan and coordinate production as a group and allocate revenues from consumer shares in a way that is acceptable to all participants.

CSAs are popular across Canada and the United States. Farm Folk City Folk provide a listing of CSAs in British Columbia and more information about what CSAs are all about. Agatha Jedrzejczyk is putting together a CSA box program for Greater Terrace. If you would like to participate either as a farmer or a consumer, you can contact her at agathajed@gmail.com or 250-641-3663.

COMMUNITY FARMS AND FARMLAND TRUSTS

Farm Folk City Folk describe the community farm concept:

> A community farm is a multi-functional farm where the land is held "in trust" for community rather than owned privately. A community group or co-operative governs the land use agreements, and agricultural uses of the land are shared by a community of farmers. The primary focus of a community farm is local food production using sustainable agricultural practices. Land holders, land managers, and farmers work together by mutual agreement. Farmers are housed on or near the land. People who want to farm sustainably on a small scale are investing in community farming. (Farm Folk City Folk, n.d.a)

Community farms are related to farmland trusts. Farmland trusts are legal entities set up to preserve farmland. According to Farm Folk City Folk, the authority of the Agricultural Land Commission is very limited in what it can accomplish in this regard, and farmland trusts are vehicles that can be used to fill this gap (Farm Folk City Folk,

n.d.b). Farmland trusts may purchase land for the community and/or manage agricultural conservation covenants/easements.[13]

AGRICULTURAL CO-OPERATIVES

Agricultural co-operatives have been the backbone of agriculture for many years, but are relatively rare in British Columbia compared to other Canadian provinces. This may have to do with the layout of farmland in B.C., which results in less specialization of production than what is found in the prairies. Agricultural co-operative can be used to market agricultural outputs globally, but they can also be used to buy inputs, lease equipment, or provide any other service that a collection of member farmers would want to receive. Agricultural co-operatives are popular in Quebec, a province with a long and strong tradition with co-operatives. As noted in the Farm Folk City Folk's description of community farms, these operations can also be managed via agricultural co-operatives.

The Rural and Co-operatives Secretariat estimated the number of agricultural co-operatives at 1,300 in 2008. Of the 8,022 Canadian co-operatives, 588 were located in B.C. Agricultural co-operatives were involved in farm supply, providing farmers with a wide range of inputs; in processing and marketing, performing "activities to process and market agricultural products" (p. 8); and in farm support, providing support services "such as collective grazing management, credit facilitation and the sharing of equipment or even farms" (p. 9). In 2008, agricultural co-operatives accounted for 44 percent of agricultural sector revenues. (Rural and Co-operatives Secretariat, 2011)

As noted in Chapter 4, GT farmers are keenly interested in co-operating with each other in a variety of ways and may be interested in forming an agricultural co-operative in the future. Agricultural co-operatives are usually fairly complex organizations and a considerable amount of planning before such an organization is formed should take place.

FOOD HUBS

According to Matson (2011), the United States Department of Agriculture defined food hubs as "a centrally located facility with a business management structure facilitating the aggregation, storage, processing, distribution and/or marketing of locally/regionally produced food products" (Matson, Sullins, & Cook, 2011, p. 9). Food hubs targets wholesale and institutional buyers such as restaurants, hospitals, cafeterias, and grocery stores. Typically wholesale and institutional buyers find it too difficult to buy directly from farmers and the food hub acts as an intermediary organization between the farmer and these buyers. While GT is unlikely to have enough production at this time to support such a venture, if agricultural production significantly increases over the next few years, organizing a food hub would facilitate institution distribution. Food hubs can be run by for-profit organizations, non-for-profit organizations, and by co-operatives.

LEASING ARRANGEMENTS

With population aging, agricultural is facing significant turnover over the next 10 years, with Canadian farm operators' average being around 55 years of age (Statistics Canada, 2012a). This is presenting succession issues, where farmers don't have children to take over the farm. Potential young farmers frequently do not have the capital necessary to invest in a farm. In urban areas with population pressures, the market value of agricultural land may exceed its value in production, with owners of prime agricultural land holding the land for contemplation and privacy rather than for agricultural production. To solve these problems, owners of agricultural land who are looking to retire and who are not ready or unable to sell have been entering leasing and other types of arrangements (partnership) with young farmers. FarmLink, a collaboration of the Canadian and Ontario Governments and the Agricultural Management Institute of Canada, provides a link between new farmers, established farmers, and farmland owners. At the time of writing, there were six farm postings in British Columbia. A wide range of sample leasing agreements are available over the internet.

[13] For more information on conversation easements, also see: http://www.omafra.gov.on.ca/english/busdev/facts/11-027.htm

CHAPTER SUMMARY

In this chapter, we review a range of infrastructure and agricultural conservation tools, arrangements, and types of organization used all over North America and beyond to support agriculture. Except for the farmers' market (not reviewed here), few of these tools are currently in used in GT. With the recent decline in agricultural productions in GT, this is understandable. However, if agriculture is going to be revived in GT, some of these tools will likely be needed to support the revival.

Photos: Courtesy of Jennifer Reeves, Skeena River Ranch

CHAPTER 8 – SUMMARY OF RECOMMENDATIONS

Norma Kerby

A. THE AGRICULTURAL LAND BASE

1. TRANSFERRING HISTORICAL KNOWLEDGE AND EXPERIENCE

Recommendation 1: Establish an archive of historical agricultural information.

Recommendation 2: Interview experienced and retired farmers, and document important agricultural information.

Recommendation 3: Facilitate exchanges of agricultural information and ideas between experienced and new or expanding farmers and food producers.

2. CLIMATE

Recommendation 4: Compile climate information relevant to local agriculture.

Recommendation 5: Facilitate workshops regarding climate factors important to agriculture.

Recommendation 6: Facilitate workshops regarding climatic farming techniques important to farming in a coastal climate.

Recommendation 7: Facilitate the availability of construction plans for greenhouses and other climatic farming techniques.

Recommendation 8: Facilitate the availability of cost-effective building materials for climatic farming agricultural structures.

Recommendation 9: Facilitate the availability of building plans and workshops regarding home and commercial cold storage facilities.

Recommendation 10: Examine the feasibility of cooperative cold storage facilities for commercial agriculture.

Recommendation 11: Facilitate research regarding the factors affecting pollination of local agricultural crops, in particular tree fruits.

3. SOILS

Recommendation 12: Facilitate workshops about the characteristics of local soils and techniques for soil conservation. Facilitate the availability of this information on-line.

Recommendation 13: Facilitate workshops regarding soil nutrients and techniques for the organic enhancement of soil nutrients.

Recommendation 14: Facilitate access to soil testing for local farmers.

Recommendation 15: Examine the potential for cooperative purchases of soil improvement materials and cover crops.

Recommendation 16: Examine the sale and movement of topsoil and compostable materials in the Greater Terrace area.

4. WATER SUPPLIES

Recommendation 17: Determine how water supplies and water regulations impact existing and potential local agriculture.

Recommendation 18: Evaluate drainage, erosion, and agricultural contamination issues associated with clay soils.

Recommendation 19: Evaluate the impacts of agriculture on groundwater quality and domestic water supplies in coarse soils with high percolation rates.

5. FLOODPLAINS AND TERRAIN HAZARDS

Recommendation 20: Document and undertake a geotechnical assessment of the patterns of bank erosion and flooding affecting the agricultural areas along the Skeena and Kitsumkalum Rivers.

Recommendation 21: Work with agricultural operators located in floodplains to reduce the impacts of flooding on land and infrastructure investments.

Recommendation 22: Provide information regarding terrain hazards to agricultural operators.

Recommendation 23: Include assessment of potential terrain hazards in determination of regulations that permit agricultural and rural land development in the Greater Terrace area.

6. Soils capabilities and the agricultural land reserve

Recommendation 24: Facilitate the availability of soil capability mapping.

Recommendation 25: Facilitate the availability of information regarding the Agriculture Land Reserve, the location of land in the Agricultural Land Reserve, and Agricultural Land Reserve regulations.

Recommendation 26: Request a review of current ALR boundaries.

7. Land use and the number of farms

Recommendation 27: Request that Statistics Canada review the agricultural operators contact list for this area before the 2016 Census of Agriculture.

Recommendation 28: Facilitate workshops and availability of information regarding BC Assessment Authority Farm Class property tax reductions.

Recommendation 29: Facilitate the compilation of accurate statistics for agriculture and food growing activities in the Greater Terrace area.

Recommendation 30: Maintain an up-to-date list of agricultural operations, agriculture land parcels, & locations of agricultural activities.

8. Important agricultural districts and agricultural activities

Recommendation 31: Assess and define agricultural districts and important farming areas within the Greater Terrace area and implement supportive bylaws and regulations.

Recommendation 32: Assess the roles of non-commercial agriculture and food production activities in the life styles and community food security for the Greater Terrace area.

Recommendation 33: Facilitate workshops and access to information about the care and cultivation of fruit trees in the Greater Terrace area.

Recommendation 34: Assess the land use needs of larger livestock in the Greater Terrace area, in particular, horses and cattle and their seasonal uses of agricultural lands.

Recommendation 35: Assess the numbers, densities, and locations of horses, cattle, and other large livestock in agricultural and non-agricultural areas of Greater Terrace.

Recommendation 36: Facilitate workshops and information regarding best management practices for the care of livestock and siting of pens and waste piles on smaller land parcels.

9. Urban food production

Recommendation 37: Review bylaws and local government policies with regards to encouraging food producing activities on private properties within urban areas.

Recommendation 38: Encourage and support community urban food growing activities such as community gardens and edible landscaping in institutional and public spaces.

Recommendation 39: Encourage and support sustainable food growing activities, food exchanges, and food preservation as part of the life style and economics of living in the Greater Terrace area.

B. Barriers to agriculture

10. Wildlife and animal problems

Recommendation 40: Discuss with provincial wildlife managers and wildlife researchers acceptable actions which would allow protection of orchards from winter moose attacks.

Recommendation 41: Work with provincial wildlife managers to develop acceptable solutions which will allow black bears and agriculture to co-exist without jeopardizing one another.

Recommendation 42: Work with the local trappers association, Provincial wildlife managers, and local farmers to develop a plan for rectifying beaver issues when they arise, including an emergency contact which farmers can call to address beaver problems.

Recommendation 43: Work with the existing animal control systems for the City of Terrace and Regional District of Kitimat-Stikine to develop a dog control plan for agricultural areas. Have a clear method of contact for farmers in emergency situations.

Recommendation 44: Work with local apiarists and farmers to increase bee pollination for fruit orchards and other crops which require open pollination. Assist local farmers in determining non-crop methods, such as supporting patches of fireweed or planting flowers which attract bees, in order to increase the numbers of pollinators on their farms.

11. Erosion and flood damage

Recommendation 45: Work with farmers and agricultural operators to identify farm land which was damaged during the 2007 floods and assist them to find funding for cleanup and rehabilitation of farm land.

Recommendation 46: Work with farmers and agricultural operators to locate major erosion problems. Assist farmers in finding funding to develop remedial plans and undertake actions to address farm land degradation and land losses to erosion.

Recommendation 47: Work with farmers and agricultural operators to identify the types of erosion-prone areas that would benefit from permanent forest cover. Support studies which could identify potential markets for botanical products from natural managed forest cover.

Recommendation 48: Work with farmers and agricultural operators to identify locations with drainage issues. Examine possible solutions to improve drainage with local, regional, and provincial governments.

12. Impacts of forest harvesting on agriculture

Recommendation 49: Work with local farmers and agriculture operators, the Provincial government, and local forest industry companies to discuss and take action regarding the impacts of forest harvesting adjacent to or upstream of agricultural lands.

13. Land clearing

Recommendation 50: Work with agricultural operators and farmers to identify funding that can be used to assist land clearing. Determine environmentally compatible methods and equipment that can be used during land clearing to minimize soil damage.

14. Soil fertility

Recommendation 51: Work with agricultural operators and farmers to provide information and workshops regarding the methods used compensate for low capability soils and the methods used to improve soil nutrients in a sustainable fashion.

15. Access to Crown Land for honey production

Recommendation 52: Work with local farmers and the Provincial government to ensure continued access to crown lands for honey production.

16. Diseases, invasive species, and disposal

Recommendation 53: Work with local farmers and agricultural operators, the Provincial government, and local animal care specialists to develop an educational program and local contact who can address issues regarding livestock diseases in the Greater Terrace area.

Recommendation 54: Work with local farmers and agricultural operators, the Provincial government, and local and regional governments to establish a management plan and regulations to control fruit tree diseases in the Greater Terrace area.

Recommendation 55: Work with local farmers and agricultural operators, the Provincial government, the Northwest Invasive Plant Council, and local and regional governments to establish and fund a weed management plan for the Greater Terrace area.

Recommendation 56: Work with local farmers and agricultural operators, the Provincial Government, and local and regional governments to establish a pesticide management program in the Greater Terrace area which allows the option of certified organic farms in certain agricultural districts.

Recommendation 57: Work with local farmers and agricultural operators, the Provincial Government, and local and regional governments to establish or encourage the establishment of a licensed composting facility in the Greater Terrace area which could handle animal carcasses and slaughter offal .

Recommendation 58: Work with local farmers & agricultural operators, the Provincial Government, and local and regional governments to determine a safe mechanism by which antibiotics used in agriculture can be safely disposed.

Recommendation 59: Work with local farmers and agricultural operators, the Provincial government, and local and regional governments, to determine safe procedures and options by which animal wastes can be safely composted on site or moved to regional composting facilities.

Recommendation 60: Work with local farmers, agricultural operators, the Provincial Government, local and regional governments to monitor use of farm land for disposal of industrial materials. Establish and enforce regulations to prevent this use. Establish a contact system by which farmers can report emergency situations when and where this dumping is occurring.

17. BARRIERS TO AGRICULTURAL OPPORTUNITIES

Recommendation 61: Identify potential mechanisms by which farming workshops, demonstrations, and educational courses can be offered on a regular basis, including possible collaboration with an academic institution.

Recommendation 62: Identify potential mechanisms by which "on the farm mentoring" might be financed as a program in this area.

Recommendation 63: Assist new potential and potential farmers in becoming aware of associations and programs which might provide useful information, materials, and project funding.

Recommendation 64: Assist new potential and potential farmers in becoming aware of possible sources of start-up capital. Lobby senior levels of government to identify the Greater Terrace area as being a priority of agricultural development funding.

Recommendation 65: Work with local farmers, agricultural operators, the Provincial Government, and local and regional governments to examine the need for slaughter facilities for large livestock and to assist small livestock producers to obtain Class D and E slaughter licenses.

Recommendation 66: Work with farmers and agricultural operators to examine options that will provide secure supplies of cost-effective feed, including options that may involve grain from the Port of Prince Rupert.

Recommendation 67: Assist the development of labeling & packaging which identifies agricultural products as being produced in the Greater Terrace area and clearly identifies the method of farming used to produce that product.

Recommendation 68: Clarify the relationships between local and regional government bylaws and regulations pertaining to the ALR and have this information available to owners of ALR properties.

Recommendation 69: Undertake a full season survey of the Skeena Valley Farmers Market to determine the demand for certain farm products and the pricing of these products. Make this information available to existing and potential farmers and food grower vendors at the Market.

Recommendation 70: Work with the Skeena Valley Farmers' Market Association to determine solutions to the lack of capacity at the Farmers' Market. Work with farmers and food producers to determine the best possible options by which they could use expanded space which would be dedicated to sale of local farm products.

Recommendation 71: Assist farmers, food growers, and the Skeena Valley Farmers' Market to examine the feasibility and sources of funding for a winter indoor farmers' market.

Recommendation 72: Work with farmers and food growers to develop bylaws and regulations that permit farm gate sales under safe conditions.

Recommendation 73: Undertake an analysis of the markets for local produce at restaurants and retail stores, and the steps which would be needed to ensure that food safety regulations were met and supplies could match the needs of these major markets.

Recommendation 74: Work with local farmers and food growers to determine storage and processing techniques that could extend the period of sale for farm produce through the winter. Examine the feasibility of a commercial or cooperative food storage facility which would allow produce to maintain food safety regulations.

18. MAKING A PROFIT

Recommendation 75: Work with local and potential large scale agricultural operations and businesses to ensure that they are able to function with a minimum of land use and regulatory conflicts.

Recommendation 76: Evaluate the potential for northwest regional agricultural markets and assist local producers in accessing these markets.

Recommendation 78: Examine the solutions to effective transportation of agricultural products to regional markets, including cooperative transportation methods for new and smaller scale farmers.

Recommendation 78: Assist farmers and agricultural businesses to examine potential products unique to this area which might be able to access major markets. Examine cooperative actions which might be able to overcome the high costs of shipping agricultural products outside of this region.

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Recommendation 83: Assist farmers, agricultural businesses, and food growers to look at cooperative methods or lease or loan ventures which would allow essential pieces of farming equipment to be brought into the area.

Recommendation 84: Work with the farming community, local and regional governments, and law enforcement to design a program to increase security of farm operations and livestock in the Greater Terrace area. Designate a specific contact sequence by which farmers can report loss or damage to farm assets.

19. IMPLEMENTATION

Recommendation 85: Establish a permanent on-line site for agricultural information about the Greater Terrace area, with links to broader agricultural. This site should be hosted by a stable entity, such as local government.

Recommendation 86: Maintain and update the on-line site on an ongoing basis.

Recommendation 87: Establish and utilize a permanent Greater Terrace Agricultural Advisory Commission.

Recommendation 88: Encourage the establishment of a permanent farmers' organization which supports activities and dissemination of knowledge to local agricultural operators and food growers.

Recommendation 89: Review and prioritize the recommendations in the Greater Terrace Agricultural Plan. Set a timeframe for action for the top priority recommendations. Work with the Provincial Government and regional and local governments to act on important recommendations.

Recommendation 90: Review and modify bylaws and other regulations in order to promote agriculture as an important land use and life-style activity within the Greater Terrace area.

Photo: Courtesy of Daybreak Farms

CHAPTER 9 – CONCLUSION AND NEXT STEPS

Lynda Gagné

This report has provided a summary of the activities undertaken to develop and agricultural area plan for Greater and the results of findings from these activities. The 2011 Census of Agriculture suggests that agricultural production in GT has significantly decreased in the last 15 years, although we also found that several important farms were missed in that Census, including Daybreak Farms, the largest agricultural operation in the area. Greater Terrace land, climate and soil are favourable to agriculture, and the potential exists for significant expansion of agricultural activity. Moreover, many residents have gardens, and the production from these gardens is not trivial. Yet local food production would need to increase many times for GT to become largely self-sufficient in those agricultural products it can produce.

We found that agricultural producers face a number of barriers, some due to local conditions and part and parcel of agricultural activities, and others due to the nature of industrial agriculture which dominates how food is produced and marketed and undercuts small-scale producers. We made a series of recommendations to support the growth of sustainable agriculture in the region.

This report and associated document is not the end of the planning process, it is the beginning. If sustainable agricultural activities are going to increase in Greater Terrace, recommendations we propose will need to be implemented.

Photo: Courtesy of Jennifer Reeves, Skeena River Ranch

APPENDIX I – CENSUS OF AGRICULTURE[14,15]

Lynda Gagné

'GREATER TERRACE' 2011 CENSUS OF AGRICULTURE BOUNDARIES

Census of Agriculture information for GT is only available in 2011. The Census of Agriculture does not refer to GT per se and the Census of Agriculture boundaries for what is termed as GT in Appendix I tables reporting Census of Agriculture information do not exactly correspond to the boundaries described in Chapter 1, but are their closest approximation. More specifically, 2011 Census of Agriculture information used for GT consists of all of the area included within the boundaries of the Regional District of Kitimat-Stikine C part 1. This area is depicted in Figure 2. The areas in white within the green areas are *included*.

FIGURE 2 – REGIONAL DISTRICT OF KITIMAT-STIKINE C PART 1

Source: (Statistics Canada, 2013)

[14] Data in the tables in this Appendix originates from the 2011, 2006, 2001, and 1996 Censuses of Agriculture and the Greater Terrace Farmers' Survey.

[15] GT Farmers' Survey data on farms that completed the survey, met the Census definition of agricultural producer in 2011, and indicated on the Survey questionnaire that they did not receive a 2011 Census of Agriculture questionnaire are included in the first column of tables in this appendix when applicable. Half of the GT farmers who answered the Survey and qualified as agricultural operators in 2011 indicated that they did not receive a copy of the 2011 Census of Agriculture questionnaire, including some of the largest agricultural producers in GT. The Census data therefore seriously underestimate GT food production by GT agricultural operators, by half or more of its market value. Moreover, Census data does not include production for personal consumption and donations.

TABLE 6 – CENSUS AND OTHER FARMS CLASSIFIED BY INDUSTRY GROUP AND SIZE

	GT Survey Data	Census of Agriculture Data						
	Active 2011 and no Census quest.	GT	RDKS		North Coast			
	2011	2011	2011	1996	2011	2006	2001	1996
Farms classified by industry group								
Cattle ranching and farming	n/a	3	11	n/a	14	26	n/a	n/a
Hog and pig farming	n/a	0	0	n/a	1	1	n/a	n/a
Poultry and egg production	n/a	4	9	n/a	11	5	n/a	n/a
Sheep and goat farming	n/a	2	4	n/a	4	3	n/a	n/a
Other animal production	n/a	20	37	n/a	39	35	n/a	n/a
Oilseed and grain farming	n/a	1	2	n/a	2	1	n/a	n/a
Vegetable and melon farming	n/a	3	5	n/a	8	13	n/a	n/a
Fruit and tree nut farming	n/a	2	3	n/a	4	6	n/a	n/a
Greenhouse, nursery and floriculture production	n/a	6	7	n/a	11	18	n/a	n/a
Other crop farming	n/a	11	28	n/a	32	26	n/a	n/a
Total number of farms	9	52	106	184	126	134	152	222
Farms classified by size[1]								
Under 10 acres	3	7	14	40	22	23	31	60
10 to 69 acres	2	29	38	49	46	46	47	59
70 to 129 acres	0	9	11	22	13	10	14	24
130 to 179 acres	1	4	15	24	15	16	18	26
180 to 239 acres	0	2	5	10	5	8	9	10
240 to 399 acres	2	1	8	19	9	7	11	22
400 to 559 acres	0	0	4	7	5	8	8	8
560 to 759 acres	0	0	4	5	4	5	3	5
760 to 1,119 acres	0	0	6	5	6	6	4	5
1,120 to 1,599 acres	0	0	0	2	0	2	3	2
1,600 to 2,239 acres	0	0	1	1	1	2	1	1
2,240 acres and over	0	0	0	0	0	1	3	0

[1]Excludes apiary.

TABLE 7 – CENSUS AND OTHER FARMS FARMLAND USE AND HAY AND FIELD CROPS

	GT Survey Data	Census of Agriculture Data						
	Active 2011 and no Census quest.	GT	RDKS		North Coast			
	2011	2011	2011	1996	2011	2006	2001	1996
Farmland use								
Total number of farms	9	52	106	184	126	134	152	222
Total farm area (acres)[1]	854	2,880	19,565	31,537	20,852	29,422	33,594	33,614
% change, 1996 to 2011					-38			
Land in crops (excluding Christmas tree area)								
farms reporting	7	32	74	131	86	96	104	153
acres	552	768	3,734	6,626	3,866	5,139	5,701	7,310
% change, 1996 to 2011					-47			
Tame or seeded pasture								
farms reporting	3	19	44	73	52	49	58	82
acres	33	390	2,556	5,795	2,624	X	6,089	6,066
% change, 1996 to 2011					-57			
Natural land for pasture								
farms reporting	3	23	56	90	65	66	76	102
acres	30	503	5,819	10,348	6,343	8,464	14,191	10,737
% change, 1996 to 2011					-41			
All other uses								
acres	239	1,219	7,456	8,768	8,019	X	7,613	9,501
% change, 1996 to 2011					-16			
[1] excludes wild areas used for bees								
Hay and Field Crops - number of farms reporting								
Wheat	n/a	0	2	7	3	1	2	7
Oats	3	1	5	20	6	6	18	21
Barley	n/a	0	1	6	2	6	7	7
Buckwheat	n/a	0	0	2	0	1	1	2
Mixed grains	0	1	4	1	4	1	2	3
Corn for grain or silage	n/a	0	0	1	1	1	0	1
Rye	n/a	0	3	5	3	0	6	6
Dry field peas	n/a	0	1	0	1	3	1	0
Alfalfa and alfalfa mixtures	2	8	23	17	23	19	24	19
Lentils	0	0	0	0	0	0	0	1
All other tame and fodder crops	5	17	43	81	45	56	49	86
Potatoes	7	4	7	22	14	16	17	28
Forage seed for seed	n/a	0	0	0	1	2	1	0
Other field crops	n/a	0	0	2	1	0	0	2

TABLE 8 – CENSUS AND OTHER FARMS WITH FRUIT, BERRIES, AND NUTS

	GT Survey Data	Census of Agriculture Data						
	Active 2011 and no Census quest.	GT	RDKS		North Coast			
	2011	2011	2011	1996	2011	2006	2001	1996
Fruits, berries, and nuts - number of farms reporting								
Apples	6	4	5	15	6	6	8	21
Pears	3	0	0	8	0	1	4	11
Plums and prunes	3	1	1	8	3	4	5	12
Sweet cherries	3	2	2	11	3	3	6	13
Sour cherries	3	0	0	6	0	1	1	7
Peaches	1	0	0	1	0	1	0	1
Apricots	0	0	0	1	0	1	0	1
Grapes	3	1	1	1	1	1	2	2
Strawberries	6	2	4	12	5	8	7	18
Raspberries	5	3	5	12	8	9	10	18
Blueberries	3	2	4	5	4	1	2	7
Cranberries	0	0	0	1	0	0	0	1
Saskatoons	2	0	1	n/a	1	0	0	n/a
Other cultivated berries	n/a	n/a	n/a	6	n/a	n/a	n/a	7
Other tree fruit and nuts	n/a	n/a	n/a	1	n/a	n/a	n/a	1
Other fruits, berries, and nuts	4	3	3	n/a	6	n/a	2	n/a

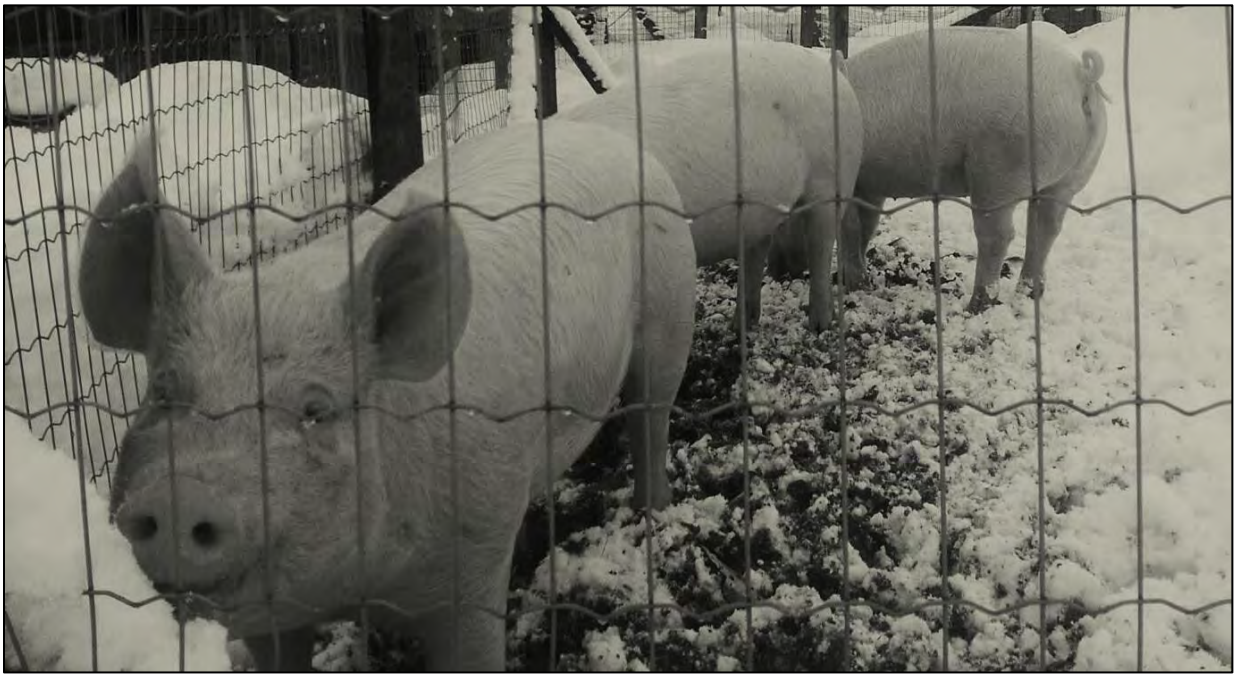

Photo: Courtesy of Maya Ehses

TABLE 9 – CENSUS AND OTHER FARMS WITH VEGETABLES

	GT Survey Data	Census of Agriculture Data						
	Active 2011 and no Census quest.	GT	RDKS		North Coast			
	2011	2011	2011	1996	2011	2006	2001	1996
Total farms with vegetables, excluding greenhouse vegetables	7	6	11	35	16	22	23	44
Sweet corn	3	1	2	11	3	5	8	15
Tomatoes	7	3	3	12	3	8	6	16
Cucumbers	6	2	2	10	3	9	8	13
Green peas	7	3	3	12	6	10	10	17
Green and wax beans	7	3	3	12	6	11	14	16
Cabbage	4	2	3	9	6	8	10	14
Chinese cabbage	3	1	1	1	2	3	1	3
Cauliflower	3	0	1	4	4	8	3	6
Broccoli	3	2	3	5	5	9	6	10
Brussel sprouts	3	0	0	1	1	2	3	4
Carrots	5	2	4	17	7	10	12	23
Rutabaggas and turnips	1	0	0	0	2	1	3	1
Beets	4	3	4	10	7	6	15	15
Radishes	5	0	0	5	1	4	5	9
Shallots and green onions	4	0	0	5	2	3	4	10
Dry onions, yellow, Spanish, cooking, etc.	6	1	1	3	4	4	5	6
Celery	4	0	0	0	2	3	0	2
Lettuce or salad greens	7	1	1	5	5	10	6	10
Spinach	4	0	0	4	2	2	2	7
Peppers	6	0	0	3	0	1	1	5
Pumpkins, squash, and zucchini	6	3	3	6	5	7	9	9
Asparagus, producing	3	0	0	1	1	2	2	3
Asparagus, non-producing		0	0	3	0	1	1	3
Rhubarb	5	n/a	n/a	6	n/a	n/a	5	10
Other vegetables	2	3	5	6	10	n/a	8	11

TABLE 10 – CENSUS AND OTHER FARMS WITH OTHER CROPS, EGGS, AND BEES

	GT Survey Data	Census of Agriculture Data						
	Active 2011 and no Census quest.	GT	RDKS		North Coast			
	2011	2011	2011	1996	2011	2006	2001	1996
Number of Farms with other crops								
Sod	0	1	1	2	1	2	6	3
Nursery products for resale	1	3	3	7	4	6	10	9
Greenhouses	2	6	8	13	12	12	16	19
Other covered area	5	6	8		12	12	16	
Greenhouse flowers	0	4	4	4	6	6	10	7
Greenhouse vegetables	n/a	2	4	10	6	6	13	14
Other greenhouse products	n/a	2	2	2	3	n/a	3	3
Mushrooms	n/a	0	0	0	0	1	3	0
Christmas trees	0	1	2	6	2	4	4	6
Forest products	n/a	0	4	n/a	5	7	n/a	n/a
Egg production, previous year								
Table eggs								
farms reporting	4	19	32	n/a	41	n/a	n/a	n/a
number of dozens of eggs	790,794	9,161	13,671	n/a	17,501	n/a	n/a	n/a
Hatching eggs								
farms reporting	1	2	4	n/a	6	n/a	n/a	n/a
number of dozens of eggs	X	X	61	n/a	X	n/a	n/a	n/a
Bees								
Honeybees								
farms reporting	1	2	3	9	3	6	5	9
number of colonies	X	X	50	244	50	19	199	244
Other pollinating bees								
farms reporting	0	1	2	n/a	3	0	n/a	n/a
number of gallons	0	X	X	n/a	3	0	n/a	n/a

Photo: Courtesy of Stuart Morris

TABLE 11 – CENSUS AND OTHER FARMS WITH LIVESTOCK

	GT Survey Data	Census of Agriculture Data						
	Active 2011 and no Census quest.	GT	RDKS		North Coast			
	2011	2011	2011	1996	2011	2006	2001	1996
Livestock								
# of farms with cattle or calves	X	15	40	78	46	52	60	85
# of cattle or calves	68	184	989	2,326	1,084	1,820	2,106	2,490
# of farms with sheep or lamb	1	4	10	17	12	16	15	17
# of sheep or lamb	X	X	X	388	304	406	496	388
# of farms with pigs	1	1	4	29	6	10	17	33
# number of pigs	X	X	X	238	49	147	316	276
# of farms with horses or ponies	1	21	45	62	48	46	49	66
# number of horses or ponies	X	131	397	336	408	388	473	371
# number of farms with goats	1	5	8	17	11	13	14	20
# number of goats	X	56	164	70	173	157	321	74
# of farms with llamas or alpacas	0	3	5	1	5	4	6	1
# of llamas or alpacas	0	X	56	X	56	43	49	X
# of farms with rabbits	2	1	4	19	6	n/a	9	24
# of rabbits	X	X	X	269	74	n/a	142	296
# of farms with wild boars	0	0	0	8	0	0	3	10
# of wild boars	0	0	0	X	0	0	X	12
# of farms with minks	0	0	0	0	0	0	1	0
# of minks	0	0	0	0	0	0	X	0
# of farms with hens or chickens	4	23	43	66	53	49	74	91
# of hens or chickens	31,895	1,454	2,090	41,016	2,751	3,302	4,812	41,846
# of farms with turkeys	1	6	11	11	14	12	17	14
# of turkeys	X	X	939	140	990	216	271	157
# of farms with other poultry	1	5	9	29	14	12	27	45
# of birds	X	24	96	311	186	126	372	435

Photo: Courtesy of Stuart Morris

The remaining tables in this appendix are based on the 2011 Census of Agriculture data alone. As noted earlier, it appears that the 2011 Census of Agriculture missed important agricultural operations located in Greater Terrace. In particular, Daybreak Farms was not included in the 2001, 2006, and 2011 Censuses of Agriculture, although it was included in the 1996 Census of Agriculture. The GT Farmers' Survey data indicates that around half of the local agricultural operations were missed in the 2011 Census of Agriculture and Census data therefore significantly underestimates agricultural production in the Greater Terrace area. Moreover, Census of Agriculture data by definition does not include farms or growers whose products are for personal consumption and not for sale.

TABLE 12 – CENSUS FARMS LAND TENURE, LAND IN CROPS AND SUMMERFALLOW, AND AREAS PREPARED FOR SEEDING

Census of Agriculture Data							
	GT	RDKS		North Coast			
	2011	2011	1996	2011	2006	2001	1996
Total farm area (acres)	**2,880**	**19,565**	**31,537**	**20,852**	**29,422**	**33,594**	**33,616**
Land tenure							
Owned	2,706	15,923	25,276	16,859	21,076	20,307	26,857
Leased from governments	X	X	5,329	1,900	5,218	7,558	
Rented or leased from others	89	1,194		X	X	5,244	6,757
Crop-shared from others	0	X	932	X	X	486	
Used through other arrangements	X	196		X	X	0	
Total number of farms	**52**	**106**	**184**	**126**	**134**	**152**	**222**
Total number of farms reporting area in crops and summerfallow	32	75	131	87	96	105	153
Under 10 acres	16	22	41	32	39	33	55
10 to 69 acres	13	33	62	34	32	43	67
70 to 129 acres	3	11	12	12	10	15	14
130 to 179 acres	0	3	7	3	8	6	7
180 to 239 acres	0	5	4	5	3	3	4
240 to 399 acres	0	1	4	1	4	4	5
400 to 559 acres	0	0	0	0	0	1	0
560 acres and over	0	0	1	0	0	0	1
Area prepared for seeding	281	1,085	935	1,142	1,278	1,854	1,197
Acres no-till or zero-till seeding	117	277	3	X	71	171	3
Acres tillage retaining most crop residue on the surface	61	417	298	X	82	114	320
Acres tillage incorporating most crop residue into soil	103	391	634	429	1,125	1,569	874

Photo: Courtesy of Jennifer Reeves, Skeena River Ranch

TABLE 13 – CENSUS FARMS LAND INPUTS AND MANURE

Census of Agriculture Data							
	GT	RDKS		North Coast			
	2011	2011	1996	2011	2006	2001	1996
Total number of farms	**52**	**106**	**184**	**126**	**134**	**152**	**222**
Total farm area (acres)	**2,880**	**19,565**	**31,537**	**20,852**	**29,422**	**33,594**	**33,616**
Land inputs, previous year							
Total number of farms using:							
herbicides	6	7	12	8	9	17	13
insecticides	1	1	6	2	1	2	6
fungicides	1	1	5	1	1	2	5
commercial fertilizer	12	24	80	28	52	63	86
lime	0	2	n/a	7	10	n/a	n/a
Manure and manure application methods, previous year							
Total number of farms producing or using manure	35	74	n/a	86	77	n/a	n/a
Farms reporting manure applied on the agricultural operation	29	60	n/a	69	48	n/a	n/a
Farms reporting manure sold or given to others	11	16	n/a	16	13	n/a	n/a
Farms reporting manure bought or received from others	2	3	n/a	4	6	n/a	n/a
Farms reporting other manure (composted, processed, dried, stored, etc.)	9	21	n/a	27	n/a	n/a	n/a
Area for manure spread naturally by grazing animals							
Farms reporting	24	51	n/a	58	n/a	n/a	n/a
acres	504	3,929	n/a	4,067	n/a	n/a	n/a
Area for solid or composted manure, incorporated into soil							
farms reporting	14	23	n/a	28	n/a	n/a	n/a
acres	62	241	n/a	256	n/a	n/a	n/a
Area for solid or composted manure, not incorporated							
farms reporting	2	2	n/a	5	n/a	n/a	n/a
acres	X	X	n/a	X	n/a	n/a	n/a
Area for liquid manure not incorporated							
farms reporting	0	1	n/a	1	1	n/a	n/a
acres	0	X	n/a	X	X	n/a	n/a

TABLE 14 – CENSUS FARMS LAND PRACTICES AND FEATURES, WEED CONTROL, AND IRRIGATION

Census of Agriculture Data							
	GT	RDKS		North Coast			
	2011	2011	1996	2011	2006	2001	1996
Total number of farms	**52**	**106**	**184**	**126**	**134**	**152**	**222**
Total farm area (acres)	**2,880**	**19,565**	**31,537**	**20,852**	**29,422**	**33,594**	**33,616**
Land practices and land features, farms reporting							
Crop rotation	9	23	36	32	46	42	49
In-field winter grazing or feeding	12	30	n/a	36	n/a	n/a	n/a
Rotational grazing	15	36	n/a	42	50	n/a	n/a
Plowing down green crops	6	18	n/a	25	21	19	n/a
Winter cover crops	2	7	9	13	10	8	14
Nutrient management planning	6	13	n/a	22	n/a	n/a	n/a
Windbreaks or shelterbelts (natural or planted)	16	28	7	35	46	20	15
Buffer zones around water bodies	12	28	n/a	32	29	n/a	n/a
Forms of weed control used on summerfallow land, farms reporting							
Chemfallow only	0	0	0	0	0	0	0
Summerfallow, tilled only	1	4	7	6	2	9	6
All irrigation use							
farms reporting	7	10	33	19	14	24	38
acres	44	58	545	80	203	337	555
Irrigated alfalfa, hay and pasture							
farms reporting	1	2	n/a	2	3	n/a	n/a
acres	X	X	n/a	X	121	n/a	n/a
Irrigated field crops							
farms reporting	0	0	n/a	3	4	n/a	n/a
acres	0	0	n/a	7	48	n/a	n/a
Irrigated vegetables							
farms reporting	4	5	n/a	10	7	n/a	n/a
acres	X	11	n/a	22	25	n/a	n/a
Irrigated fruit							
farms reporting	2	3	n/a	5	2	n/a	n/a
acres	X	X	n/a	8	X	n/a	n/a
Other irrigated areas							
farms reporting	1	1	n/a	2	n/a	n/a	n/a
acres	X	X	n/a	X	n/a	n/a	n/a

TABLE 15 – CENSUS FARMS CLASSIFIED BY OPERATING ARRANGEMENTS AND COMPUTER USE; FARM LABOUR

Census of Agriculture Data							
	GT	RDKS		North Coast			
	2011	2011	1996	2011	2006	2001	1996
Total number of farms	**52**	**106**	**184**	**126**	**134**	**152**	**222**
Farms classified by operating arrangements							
Sole proprietorship	33	68	121	81	83	87	144
Partnership without a written agreement	14	29	41	35	37	47	53
Partnership with a written agreement	2	3	7	3	1	1	7
Family corporation	3	5	6	5	12	12	9
Non-family corporation	0	0	8	1	1	4	8
Other operating arrangements	0	1	1	1	0	1	1
Computers used for farm business							
Farms using computers for the farm business	23	51	n/a	66	60	44	n/a
Farms using internet for the farm business	23	48	n/a	60	n/a	30	n/a
Farms having high-speed internet access	13	29	n/a	39	n/a	n/a	n/a
Farm labour							
Total wages and salaries							
farms reporting	7	19	n/a	23	26	31	n/a
amount in current dollars	359,783	414,300	n/a	440,183	413,594	292,664	n/a
Paid work on a year-round basis (full-time or part-time)							
farms reporting	2	2	n/a	4	n/a	3	n/a
number of employees	X	X	n/a	X	n/a	n/a	n/a
number of weeks for all employees	X	X	n/a	X	n/a	71	n/a
Paid work on a seasonal or temporary basis							
farms reporting	7	19	n/a	21	n/a	28	n/a
number of employees	X	X	n/a	X	n/a	n/a	n/a
number of weeks for all employees	X	X	n/a	X	n/a	538	n/a
Total number of employees							
farms reporting	7	19	n/a	23	n/a	n/a	n/a
number of employees	34	50	n/a	57	n/a	n/a	n/a
Total weeks of paid work							
farms reporting	7	19	n/a	23	26	31	n/a
number of weeks for all employees	549	652	n/a	750	638	609	n/a

TABLE 16 – CENSUS FARMS GROSS FARM RECEIPTS, OPERATING EXPENSES, AND FARM CAPITAL

Census of Agriculture Data							
	GT	RDKS		North Coast			
	2011	2011	1996	2011	2006	2001	1996
Total number of farms	**52**	**106**	**184**	**126**	**134**	**152**	**222**
Gross farm receipts, previous year							
Total gross farm receipts (excluding forest products sold)							
amount in millions of current dollars	1.27	2.07	2.97	2.37	2.69	2.47	3.51
Farms with gross farm receipts							
under $10,000	39	72	135	84	76	99	161
$10,000 to $24,999	6	18	30	23	31	25	38
$25,000 to $49,999	3	9	9	11	13	17	11
$50,000 to $99,999	2	4	7	4	11	5	7
$100,000 to $249,999	1	2	2	3	1	6	4
$250,000 to $499,999	0	0	0	0	2	0	0
$500,000 and over	1	1	1	1	0	0	1
Total farm business operating expenses, previous year							
farms reporting	52	106	184	126	134	152	222
amount in millions of current dollars	1.34	2.61	3.54	3.00	3.08	3.50	4.18
Farm capital, previous year							
Total value of land and buildings							
farms reporting	52	106	184	126	134	152	222
market value in millions of current dollars	22.38	59.32	51.03	68.90	49.80	45.41	58.84
Farms classified by total farm capital							
Under $100,000	2	3	31	4	15	22	44
$100,000 to $199,999	9	17	61	21	27	35	71
$200,000 to $349,999	11	22	54	28	38	46	65
$350,000 to $499,999	9	21	20	24	19	25	21
$500,000 to $999,999	19	29	15	32	23	13	18
$1,000,000 to $1,499,999	0	4	1	6	6	9	1
$1,500,000 and over	2	10	2	11	6	3	2

More information is available from the 2011 Census of Agriculture that is not included in this appendix. The Census of Agriculture data is available without charge from http://www.statcan.gc.ca/ca-ra2011/index-eng.htm.

APPENDIX II – GREATER TERRACE (GT) FARMERS' SURVEY

Lynda Gagné

TABLE 17 – GT FARMERS' SURVEY ACTIVITIES, LAND USE, AND LIVESTOCK

Sample size	**29**	**%**	**% of**
Class 8 farm	13	45%	
Sold or produced for sale in 2011 (agricultural operators)	18	62%	respondents
Received 2011 Census of Agriculture questionnaire	9	50%	agricultural operators
Class 8 farm	13	72%	
Total 2011 acreage (excluding acreage for bees)	**1,438**	**%**	**% of**
Acres in			
crops	663	46%	acreage
summerfallow	18	1%	
tame or seeded pasture	100	7%	
natural pasture	96	7%	
woodlands and wetlands	379	26%	
all other uses, including unused	182	13%	
Respondents with livestock	**Number of respondents**	**% of respondents**	**Heads of livestock, June 30, 2012**
Cattle and calves	3	10%	70
Sheep and lamb	3	10%	40
Pigs	3	10%	20
Horses and ponies	6	21%	41
Goats	6	21%	54
Rabbits	5	17%	22
Hens and chickens	13	45%	32,377
Turkeys	3	10%	48
Other Poultry	3	10%	13
Donkeys, ducks, and geese	X	X	X

TABLE 18 – GT FARMERS' SURVEY FIELD CROPS, FRUIT, BERRIES, AND NUTS

Respondents growing	Number of respondents	% of respondents
field crops		
oats	3	10%
alfalfa and alfalfa mixture	2	7%
all other tame hay and fodder crops	4	14%
potatoes	22	76%
other field crops	3	10%
fruit, berries, and nuts		
apples	15	52%
pear	5	17%
plums	9	31%
sweet cherries	7	24%
sour cherries	10	34%
peaches	1	3%
grapes	3	10%
strawberries	17	59%
reaspberries	18	62%
cranberries	2	7%
blueberries	7	24%
saskatoons	5	17%
other fruit, berries, and nuts	9	31%

Photo: Courtesy of Jennifer Reeves, Skeena River Ranch

TABLE 19 – GT FARMERS' SURVEY VEGETABLES AND OTHER PRODUCTS

Respondents growing	Number of respondents	% of respondents
vegetables		
asparagus	7	24%
beets	19	66%
broccoli	14	48%
Brussel sprouts	11	38%
cabbage	13	45%
carrot	19	66%
cauliflower	10	34%
celery	8	28%
chinese cabbage	5	17%
cucumber	17	59%
dry, yellow, spanish, cooking onions, etc.	18	62%
garlic	14	48%
green and wax beans	19	66%
green peas	20	69%
kale	16	55%
kohlrabi	11	38%
lettuce or salad greens	22	76%
peppers	12	41%
pumpkins	18	62%
radishes	14	48%
rhubarb	19	66%
rutabaggas and turnips	6	21%
shallots and green onions	12	41%
spinach	14	48%
sweet corn	9	31%
swiss chard	14	48%
summer squash	15	52%
tomatoes	22	76%
winter squash	12	41%
zucchini	18	62%
other vegetables and herbs	10	34%
other products		
sod under cultivation for sale	2	7%
nursery products grown for sale	3	10%
flowers grown for sale	3	10%

TABLE 20 – GT FARMERS' SURVEY MISCELLANEOUS PRODUCTION AND ASEETS, LABOUR, COLABORATION, EXPERIENCE, AND FUTURE PLANS

Miscellaneous production and assets	Number of respondents	% of respondents	Number of items
Square feet of heated greenhouse	3	10%	2,100
Square feet of unheated area under glass, plastic, or other protection for growing crops	16	55%	10,659
Fruit trees	19	66%	141
Eggs (dozens)	12	41%	795,522
Colonies of honey bees	3	10%	42
Has engaged in winter planting and harvesting	6	21%	
Plans to engage in winter planting and harvesting	10	34%	

Labour, collaboration, experience, and future plans	Number of respondents	% of respondents
Hires non-family labour	5	17%
Does not hire non-family labour	24	83%
Would hire non-family labour if could find skilled and reliable	4	17%
Reasons does not hire non-family labour		
Too costly	9	38%
Not enough space	3	13%
Too difficult to find skilled and reliable	2	8%
Farm is too small	8	33%
Not needed	7	29%
Obtains seeds, fertilizer, nursery plants, feed, and other non-capital inputs from		
Local suppliers	25	86%
Online or telephoner orders from suppliers outside area	23	79%
Other	11	38%
Collaborates with others to obtain inputs	19	66%
Sees potential for farms sharing equipment in area	19	66%
Has been involved in agricultural cooperative or community organization	11	38%
Is interested in agricultural cooperative or community organization to collaborate on purchasing inputs and sharing equipment	25	86%
Years farm has been operating		
1 to 2 years	8	28%
3 to 5 years	5	17%
6 to 10 years	2	7%
more than 10 years	14	48%
Plan to continue to operate for		
1 to 2 years	1	3%
3 to 5 years	0	0%
6 to 10 years	1	3%
more than 10 years	18	62%
don't know	9	31%

APPENDIX III – GREATER TERRACE FOOD SURVEY RESULTS

TABLE 21 – GREATER TERRACE FOOD SURVEY: GARDENS AND CROPS

Gardens and crops	Number of survey respondents	Proportion of survey respondents	Average size
Total respondents	122	100%	
Has a food garden	98	80%	
Size of food garden	81	66%	971 sq. ft.
Size of food garden (omit very large garden)	80	66%	683 sq. ft.
Has a greenhouse or other covered space	59	48%	
Size of greenhouse or other covered space	54	44%	217 sq. ft.
Has fruit trees	83	68%	
Average number of fruit trees			5.5
Crops grown	**Number of respondents**	**Proportion of respondents with gardens**	
Beans	57	58%	
Beets	59	60%	
Berries	74	76%	
Broccoli	26	27%	
Carrots	69	70%	
Cucumbers	59	60%	
Garlic	44	45%	
Kale	34	35%	
Kohlrabi	17	17%	
Onions (various types)	75	77%	
Peas	73	74%	
Potatoes	71	72%	
Pumpkins or winter squash	51	52%	
Radishes	38	39%	
Rhubarb	65	66%	
Salad greens	74	76%	
Swiss chard	33	34%	
Tomatoes	85	87%	
Turnips	17	17%	
Zucchini or summer squash	62	63%	
Reported other crops	49	50%	
Other vegetables reported (5 or more respondents reporting):			
Asparagus	5	5%	
Cabbage	7	7%	
Celery and celeriac	5	5%	
Corn	6	6%	
Edible flowers	5	5%	
Herbs	24	24%	
Peppers	17	17%	
Other vegetables reported (fewer than 5 respondents reporting): Artichokes, brussel sprouts, cardoons, cauliflower, chives, eggplant, grains, melons, okra, other beans (fava and soy), parsnips, Jerusalem artichokes, spinach, stevia, tomatillos			

TABLE 22 – GREATER TERRACE FOOD SURVEY: FOOD PURCHASING HABITS AND PREFERENCES

Purchasing food	Number of survey respondents	Proportion of survey respondents
Total respondents	122	100%
Bought fresh food at Skeena Valley Farmers' Market or from Greater Terrace producer in 2011		
Never	11	9%
1 to 5 times	31	25%
6 to 10 times	20	16%
11 to 15 times	22	18%
16 or more times	38	31%
Willing to pay more for local food		
Yes	83	68%
No	25	20%
Don't know	14	11%
Percentage of those asked[1] who were:		
willing to pay 5% more for local food		100%
willing to pay 10% more for local food		83%
willing to pay 15% more for local food		89%
willing to pay 20% more for local food		83%
willing to pay 25% more for local food		78%
willing to pay 30% more for local food		67%
willing to pay 35% more for local food		64%
willing to pay 40% more for local food		0%
willing to pay 45% more for local food		50%
willing to pay 50% more for local food		25%
Importance of factor in purchasing fresh food from local producer on a scale of 1 to 10, by order of importance	**Number of survey respondents**	**Average rating**
Local food is fresher	110	9.27
I want to support local farmers and gardeners	110	8.89
Local food tastes better	111	8.69
I want to support the local economy	110	8.47
Local food creates less of a carbon footprint	109	8.42
I prefer to directly connect with the people who produce the food I consume	111	7.59
Local food producers use fewer pesticides than non-local non-organic food producers	110	7.48
I enjoy the market/shopping experience	111	7.48
Local food is safer	110	7.41
Local food is less expensive	110	4.13

[1] The 83 respondents who answered that they were willing to pay more for local food were then asked whether they were willing to pay an extra randomly-assigned percentage between 5% and 50%. The number of respondents randomly-assigned to each percentage varies between a low of 4 and a high of 14.

TABLE 23 – GREATER TERRACE FOOD SURVEY: PREFERENCES FOR LOCAL AND ORGANIC FOOD AND AVERAGE WEEKLY FOOD BUDGET

Preferences for obtaining local food	Number of respondent households	Proportion of respondent households that would use method if they were all simultaneously available			
Local food distribution method		**Never or rarely**	**Once per month**	**Twice per month**	**Three times per month or more**
Shopping at farmers' market	122	9%	17%	23%	51%
Produce box delivery service	117	49%	12%	18%	21%
Year-around indoor market specializing in local food and crafts	120	16%	18%	17%	50%
Farm gate / farm stand	119	28%	27%	20%	25%
Local food display at supermarket	121	10%	11%	8%	71%

2011 approximate expenditures on foods grown in Greater Terrace (GT) or Northern British Columbia (NBC)		
Local food	**Number of respondent households**	**2011 average household spending**
Fresh produce grown in GT	64	272
Eggs grown in GT	88	74
Meat grown in GT	82	186
Meat grown in NBC outside of GT	81	269

Frequency of purchases of organic food or free range eggs		
Organic food / free range eggs	**Number of respondent households**	**Percentage of time organic or free range purchased**
Produce	120	38
Eggs (organic or free range)	120	62
Meat	117	35
Dairy products	116	23
Grains	118	27
Dried or canned staples	119	25

Average weekly food budget: total and specific items					
Food item	**All respondent households (n [1] = 93-114)**	**1 person households (n = 13-18)**	**2 people households (n = 42-46)**	**3 people households (n = 21-25)**	**4 or more people households (n = 17-25)**
Total groceries	157	82	146	167	220
Fresh and frozen produce	52	39	52	58	54
Canned goods	12	6	13	14	16
Eggs	4	3	4	4	4
Poultry	13	6	14	14	17
Beef	10	4	10	11	14
Pork	8	1	6	9	16
Lamb	1	1	1	1	3

[1] "n" refers to the number of repondents; the number of respondents differs by question.

TABLE 24 – GREATER TERRACE FOOD SURVEY: DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Demographic characteristics	Survey respondents, 2012	Greater Terrace population, 2011 Census
Age goups (20 years and older)		
20 to 29 years	9%	16%
30 to 34 years	9%	7%
35 to 39 years	11%	9%
40 to 44 years	13%	10%
45 to 49 years	8%	11%
50 to 54 years	14%	11%
55 to 59 years	15%	10%
60 to 64 years	15%	9%
65 years and over	7%	17%
Household size		
1 person	16%	26%
2 people	43%	36%
3 people	20%	15%
4 or more people	21%	22%

Education	Survey respondents, 2012	Population aged 15 years and over, Canada, 2010
High school certificate or less	13.1%	48.1%
Apprenticeship or trade certificate	23.0%	30.9%
College or university certificate or diploma	22.1%	
Bachelor's degree	16.4%	14.4%
Post-graduate certificate, diploma, or degree	25.4%	6.5%

Individual income	Survey respondents, 2011	Canadian individuals 2010
Under $20,000	17.4%	38.5%
$20,000 to $29,999	12.4%	14.6%
$30,000 to $39,999	18.2%	12.0%
$40,000 to $49,999	18.2%	9.9%
$50,000 to $59,999	13.2%	6.9%
$60,000 and over	20.7%	18.2%

APPENDIX IV – DEFINITIONS OF SUB-AREAS

Norma Kerby

The following definitions of subareas were used during analysis of land use and the agricultural land base for the Greater Terrace Agricultural Area Plan. The Greater Terrace area is large and is approximately 70 km by air from Rosswood in the north to the south end of Lakelse Lake.

Rosswood - Kalum Lake to Cedar bridge	South end of Kalum Lake to DL 1041 at the east bend of the Cedar River, including roads = Kalum Lake, Egan, Brousseau, Geier, Curtis, Columbine, Parker, Cedar River, Old Rosswood, Abbey, Carlota, Happy Ranch Farm, and South Rosswood.
S end of Kalum Lake to Deep Creek	South end of Kalum Lake to Deep Creek, including roads = Kalum Lake, Pat Roy, Lost Lake FSR, Barnes, Findley Lake (East and West), New Haven, Fern Lane, Deep Creek, Oscar, Arthur, and Har-Lee's Place.
Terrace North-Deep Creek to City of Terrace	Kalum Lake Road and adjoining roads including Dover, Pratt, Darci, Anna, Merkley, Spring Creek, Willow Creek, Johnston,Johns, Glen, Orde, Freeman, Giesbrecht, Hamer, Farko, Langer, Falcon, Douglas, Martel, Centennial, Ken Scott, Cranberry, Blueberry, Elderberry, Huckleberry, Woodland, and Fosbery.
Dutch Valley	Dutch Valley Road, Hampton Road, and Bohler Roads.
Old Remo	Lakelse River bridge to Queensway Drive, including roads = Whitebottom, Old Remo, Robin, Kozier, Skaarland, Munson, Matson, Craft, Farkvam, Thunderbird Road, and Beam Station Road to DL 5143.
New Remo	From Zymagotitz River/Hwy 16 to DL 6483, including roads = Nelson, Wichmann, Royal, Gagnon, Kilby, Calgary, and Zymacord FSR to DL 4985.
Braun's Island	Island including Ackroyd, Archer, Heppel, and Doll Roads.
City of Terrace - Graham Ave.	Roads including Frank Street, Skeena Street, West Haugland Avenue, and Graham Avenue from the 5100block to the 4500 block.
City of Terrace - West Bench	Roads including = North Eby, Dairy, Vesta, Thomas South to Gair, Halliwell West of Thomas, McConnell West of Marshal, and Kalum Lake Road.
Thornhill	Electorial Area E for standard surveys; visual survey area including roads = River Drive, Kofoed, Crescent, Old Lakelse Lake Road to Goodwin Road, Ziegler, Krumm, Creek, Laurel, Fire Creek, Miller, Johnston, Thornhill Golf Course, Queensway Drive, Kenworth, Scotton, and Lowrie.
Little Island	Island only.
Jackpine Flats	Old Lakelse Lake Drive from Goodwin Road to DL 5130, including roads = Jackpine, Attree, Layton Place, Frigerio, Roseland, Edgewood, Williams Creek, Sockeye Creek, Lodge Pole, Marion, Crystal, Woeste, Williams Creek Trail, Nystrom, and Strumecki.
Hwy 16 East Copperside to Chimdemash	D.L. 6637 south to Copper (Zymoetz) River bridge, including roads = Highway 16, Mannix Creek, Smitty's Road, Chimdemash Loop, Singlehurst Main, Usk East (Adams, Grandview, Usk frontage), Usk West (Ferry, Varner), Kleanza (Gooden, Kleanza,Singlehurst), Kleanza, Bornite Mountain, Gold Creek, Noble 5, Gossan (Skeena, Gossan Creek, Bulkley), Copperside west (Lavergne), Copperside East (Copper River, Muskat, Caribou, Beaver, Marten, Otter); subarea includes Kitselas Road and Copper City Flats on west side of Skeena River.
Lakelse	Beam Station Road after DL 5143, including roads = Beam Station, Lakeside, Mailbox Point, Catt Point, west side of Lakelse Lake, Westside, Muller's Bay, east side of Lakelse Lake, Waterlily Bay, Dakin, Lupine, Hull, Lakelse Lake Lodge, Kreston, Kroyer, First, Adel, Bruce, McBride, Mt. Layton Hotsprings, Hansen; Old Lakelse Lake Drive South of DL 5130; Highway 37 South.

APPENDIX V – WEB RESOURCES FOR FARMERS

Lynda Gagné

You will find below a series of web links to resources for famers. Our apologies if we missed important links. Web links frequently become unusable because the content is moved to another URL. If you are interested in an item in the list and the link is not working, try typing some or all of the item's words into a search engine like Google or Yahoo.

GOVERNMENT AGENCIES

1. Agriculture and Agri-Food Canada
    a. Information for producers
    b. Information on the environment:
        i. Agroforestry
        ii. Climate change
        iii. Soil and land
        iv. Water supply and quality
    c. AgriInnovation Program
    d. AgriProcessing Initiative
    e. Email subscription service
2. Farm Credit Canada (FCC)
    a. FCC Learning
    b. Producer financing
    c. Young farmers
3. BC Ministry of Agriculture and Lands
    a. Food safety
    b. Agricultural Land Commission
4. AgriFood BC: Growing Connections

OTHER AGENCIES AND ORGANIZATIONS

1. Skeena Valley Farmers' Market Association
2. Terrace Local Foods / Sustainable Living Meetup Group
3. Skeena Valley Fall Fair
4. Greater Terrace Food Association
5. Green Thumb Garden Society of Terrace Inc.
6. 4-H Club of Terrace
7. Beyond the Market
8. BC Agriculture Council
9. Farm Folk City Folk
10. BC Beekeepers
11. The Land Conservancy (Agriculture)
12. Canadian Organic Growers
13. Seeds of Diversity
14. Organic Alberta – Resources for Producers

ADVERTISING YOUR FARM IN A DIRECTORY

1. BC Specialty Food Directory
2. Beyond the Market: Find a Farm

AGRICULTURE EDUCATIONAL PROGRAMS / RESEARCH

1. Faculty of Land and Food Systems, University of British Columbia

2. Bachelor of Applied Science in Sustainable Agriculture, Kwantlen Polytechnic University
3. Agriculture, University of the Fraser Valley
4. BC Agriculture in the Classroom Foundation
5. Aboriginal Agricultural Education Society of British Columbia
6. BC Farm Women's Network
7. Vancouver Island Local Food Project
8. Post-secondary agricultural education institutions across Canada

FUNDING OPPORTUNITIES

1. Investment Agriculture Foundation of British Columbia
2. BC Agricultural Research and Development Corporation
3. BC Youth in Agriculture Foundation
4. BC Agriculture in the Classroom Foundation Programs

COMMUNITY SUPPORTED AGRICULTURE AND RELATED

1. David Suzuki Foundation's webpage on community supported agriculture
2. Farm Commons (U.S. based organization providing legal services for sustainable farmers / community-supported agriculture)
3. LifeCycles Project Society
    a. Urban Agriculture and Food Security Initiatives in Canada

WORKSHOPS, WEBINARS, AND CONFERENCES

1. FCC Learning
2. Permaculture BC
3. BC Association of Farmers' Markets
4. BC Beekeepers Conference
5. Upcoming Conferences / Workshops
6. Kootenay Permaculture Institute
7. Centre for Sustainable Food Systems at UBC Farm – Workshops and Short Courses

NEWS SERVICES, NEWSLETTERS, AND EDUCATIONAL RESOURCES

1. FCC Express
2. Agricultural Institute of Canada (AIC) Weekly Notes
3. Agriculture.com
4. Farms.com
5. US Department of Agriculture Alternative Farming Systems Information Center
6. Centre for Sustainable Food Systems at UBC Farm
7. Local Food Systems Newsletter (Colorado focus)
8. Minnesota Institute for Sustainable Agriculture
9. Beyond the Market newsletter
10. Organic and Alternative Livestock Production Systems at Purdue University
11. Penn State Extension – Start Farming (Resources for Beginning Farmers)
12. Start 2 Farm
    a. Farmer Education Program Resource Guides
13. Coastal Invasive Plant Committee Newsletter
14. Practical Answers

Pest and weed management

1. Cyberhelp for Organic Farmers
2. Integrated Weed Management: An Introductory Manual
3. Organic vegetable production - managing weeds, insect pests and diseases
4. Pest, Disease and Weed Management Plan

Noxious weeds

1. B.C. Weed Control Act: Noxious Weeds in B.C.
2. B.C. Weed Control Act
3. B.C. Weed Control Regulation
4. Invasive Plant Management
5. Invasive Species Council of British Columbia
6. Coastal Invasive Plant Committee
    a. How to control invasive plants

Supply management and farm income stabilization in Canada and British Columbia

1. Farm Products Council of Canada
    a. Supply Management
    b. National Agencies
2. Canadian Dairy Information Centre
3. AgriStability (BC)
4. 5 reasons to defend farm marketing boards
5. Dairy Farmers of Canada Responds to Supply Management Policy Paper

Animal feed(ing)

1. Grow your own poultry feed
2. In hopes of healthier chickens, farms turn to oregano
3. Raising pastured pigs – A video series for beginning farmers
4. Raising grass-fed beef
5. Oregano oil for internal parasite control in sheep, goats, and beef cattle
6. Canadian agri-food product suppliers
7. Alberta feed suppliers
8. Saskatchewan-Alberta organic producers directory

Heritage seed suppliers and seed saving resources

1. Seeds of Diversity
    a. List of heritage seeds companies

APPENDIX VI – FARMERS/GROWERS' SURVEY PARTICIPANTS

Lynda Gagné

Greater Terrace growers had the opportunity to provide their input by participating in a focus group meeting and written survey or in an online survey. We asked survey participants whether they agreed to have their names included in the list participants. Greater Terrace residents had other opportunities to participate in the consultation process. An online survey for residents was open between May 2012 and January 2013 and we conducted a public meeting on October 17, 2012. The survey was anonymous and we did not ask public meeting participants for their permission to include their name in the list of participants. The list below is therefore limited to research participants who completed the farmers/growers survey and agreed to have their names listed in this report. Many other people participated in this planning process.

Farmers/growers' survey participants:

Claus, Charles

Favron, Yvette

Freeman, Robin

Gagnon, Jon and Jaclyn

Geier, Betty

Gemeinhardt, Rina

Merrill, Lori

Hamer, Lisa and Murray

Hein, Anita

Hone, Patti and Brian

Holzbauer, Martin

Maddalena, Luigi

Parke, Norene

Peters, Rudi

Purita, Cara

Rauschenberger, Gunther and Carol

Reeves, Jennifer and Carl

Ridler, Cynthia

Robinson, Richard

Ross, Greg

Sametz, Paul

Savage, Mary

Sheppard, Trish

Stella, Carolyn and Dino

Tessaro, Judy

Versteege, Peter

APPENDIX VII – DIRECTORY OF LOCAL FARMS

Lynda Gagné

We obtained contact information from farm survey participants who agreed to have their farm included in a local farms directory. Web information on the farm, if applicable, can be accessed by clicking on the farm's name.

Since not all Greater Terrace farms participated in our survey, the information below is not a complete directory of local farms. If you are a local farm and would like to be included in future directories, please contact Tara Irwin at the City of Terrace (tirwin@terrace.ca) providing her with the following: business and/or contact names; list of available products; dates of the year when you are available to be contacted; whether customers can shop at or pick-up products from your farm, and if so, you physical address; telephone number; email address; and, website.

Local farms may also be listed in one of the following directories:

1. BC Specialty Food Directory
2. Beyond the Market: Find a Farm

Agatha Jedrzejczyk

Products: local vegetables and fruit in boxes prepared weekly throughout the growing season

By: Community Supported Agriculture Project

For more information:

Phone: 250-641-3663

Email: agathajed@gmail.com

Anita Farm, Anita Hein

Products: eggs, chicken, turkey, hatching eggs, vegetables, fruit, berries

Available: year round

Pick-up at farm: yes

Address: 519 Williams Creek Avenue, Terrace (Jackpine)

Phone: 250-615-2232

Email: anitalittlefarm@gmail.com

Bahr Family Farm

Products: root vegetables, kohl crops, tomatoes, cucumbers, beans, peas, leeks, beets, lettuce, bedding plants

Available: May to October

Pickup at farm: yes

Address: Intersection Old Remo Road and Robin Road - prefer phone calls to arrange for specific drop-in times

Phone: 250-635-7898

Current Creek Farm, Trish & Shawn Sheppard

Products: tree fruit, eggs, poultry, garden produce

Available: spring to fall

Pickup at farm: yes

Address: 6041 Chimdemash Loop, Terrace, B.C.

Phone: 250-635-5943

Email: ccfarm@telus.net

(continued next page)

Daybreak Farms, Peter Versteege, Operations Manager

Products: white eggs, brown eggs, free-run eggs, free range eggs, omega-3 eggs

Available: year round

Pickup at farm: yes

Address: 4423 Eby Street, Terrace, B.C. V8G 0B3

Phone: 250-638-0777

Email: daybreakfarms@citywest.ca

Green Thumb Garden Society of Terrace

Products: supporting individual and group gardeners with garden beds, tools, water supply, tilling, raised beds for wheelchair access

Available: all year

Pickup at farm: yes

Address: Evergreen Street near Keith Avenue (by Finning Tractor) and Apsely Street near Lakelse Avenue (by R.C. Legion)

Phone: 250-635-0617

Email: psametz@me.com

Hidden Acres Farm, Jonathan and Jaclyn Gagnon

Products: naturally grown starter plants, produce, and animals; pygmy goats, chickens, turkeys, farm fresh eggs; tomatoes, pepper

Available: April to September

Pickup at farm: yes, by appointment only - email preferred

Address: 3527 River Drive, Terrace, B.C. V8G 3P2

Phone: 250-635-1763

Email: jgagnon56@hotmail.com

Hitchin' Post Ranch

Products: lamb and meat goats

Available: Fall

Address: 5550 Giesbrecht Road

Phone: 250-615-0076

Maddalena, Luigi

Products: vegetables, shrubs, berry bushes, fruit trees, bedding plant

Available: April 1st to November 1st

Pickup at farm: yes

Address: 5013 Agar Avenue, Terrace, B.C. V8G 1H9

Phone: 250-635-4092

(continued next page)

Morning Moon Farm, Yvette Favron

Products: honey, garlic, berries

Available: year round - by appointment only

Pickup at farm: yes

Address: 253 Egan Road

Phone: 250-638-1533

Email: yvettefavron@gmail.com

Mountain Meadow Honey**, Cynthia Ridler**

Products: honey, wax, beeswax candles, toffee mead

Available: year round

Pickup at farm: yes

Address: 5112 Mills Avenue, Terrace, B.C. V8G 1C5

Phone: 250-635-9020

Email: akasamr@hotmail.com

Ridgewind Farms, Lisa and Murray Hamer

Products: hay, pasture, eggs, seasonal vegetables, manure, and compost |

Available: May 1st to October 31st

Pickup at farm: yes

Address: by appointment

Email: ridgewindfarms@hotmail.com

River Mist Farm, Charles and Ann Claus

Products: vegetables, fruit trees, berry bushes, strawberry plants; custom grafted fruit trees can be pre-ordered.

Available: April 1st to November 15th

Pickup at farm: yes

Address: 2308 Archer Avenue, Terrace, B.C. V8G 1E7

Phone: 250-638-8996

Email: charles.claus@gmail.com

Skeena Valley Apiary**, Rudi Peters**

Products: fireweed honey, bees

Available: year round - products available from August until they run out

Pickup at farm: yes

Address: 4524 Haugland Avenue, Terrace, B.C. V8G 1G3

Phone: 250-615-7404

Email: r.peters@telus.net

(continued next page)

Skeena River Ranch, Old Remo

Products: hay, seasonal produce, grass-fed beef

Available: year round

Pickup at farm: yes

Address: 1001 Kozier

Phone: 250-635-6544

Email: hay@theskeenariverranch.com

Uplands Nursery

Products: fruit trees, small fruits, seeds, topsoil, compost, bagged fertilizer, ornamental shrubs, sod, etc.

Available: year round, Monday to Saturday, closed on statutory holidays

Pickup at nursery: Yes

Address: 4628 Park Avenue, Terrace, B.C

Phone: 250-635-2603

Email: uplandsnursery@yahoo.ca

Usk Hobby Farm, Judy Tessaro

Products: berries, rhubarb, vegetables

Available: April to October

Pickup at farm: yes

Address: 6121 Chimdemash Loop / Usk

Phone: 250-635-4283; 250-635-2245

Email: judytessaro@citywest.ca

Willow Creek Heritage Hobby Farm, Carol and Gunther Rauschenberger

Products: heritage winter and summer squash; heirloom First Nations winter and summer squash species; heritage / heirloom tomatoes; seed and plant swap

Available: May to October

Pickup at farm: no

Phone: 250-631-2525

Email: crauschenberger@xplornet.com

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Photo: Courtesy of Jennifer Reeves, Skeena River Ranch