

STATE OF AGRICULTURE REPORT – AGRICULTURAL LAND USE SURVEY

Project completed by Ecology North with funding provided by
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Executive Summary:

Ecology North was contracted to conduct an agricultural land use survey in the NWT and to develop an informal State of Agriculture report based on the survey results. Over 100 agriculturalists (roughly defined as those who farm, or who are keenly involved in agriculture) were identified and targeted to complete the survey; of these 43 participated.

The survey included twenty-one multiple choice and open-ended questions to collect information on agricultural production, land use, obstacles and challenges to growth, and to solicit peoples' visions of NWT agriculture potential.

The results of the survey are highlighted in the report by subject, generally following the questions asked. The author tried to use the agriculturalists' words as much as possible to portray a sense of what people in the NWT are really thinking about agriculture.

Agriculture in the NWT has seen a resurgence of interest in the past few years influenced by a stated desire for sustainable and healthy food sources. It is true that greater funding and concurrently more training programs have raised the profile of agriculture at the same time that the notion of food security has gained prominence on the national stage.

Historically, NWT had a relatively thriving agricultural industry, with experimental farms, dairy farms, an abattoir, and large market gardens in most communities. These farms were developed out of necessity by the remoteness of the north and lack of available fresh foods. This changed with new technology, roads, planes, and cheap fuel, but the agriculture industry is coming around again as fuel and food prices rise and people realize the benefits of local, fresh and healthy foods.

NWT does not have many full-time farmers - Statistics Canada states that there are 29 farmers in the NWT (Aurora Research Institute, 2013), but there are a healthy number of market gardeners, and many who describe themselves as hobby gardeners who like to grow their own food. This survey highlights the reality that NWT agriculturalists rarely make a living at farming, but they grow food because they enjoy it.

There is a thriving non-profit sector though, that provides most of the agricultural training and education. The Northern Farm Training Institute (NFTI) ran six courses last year that created a great deal of energy in the sector, and plans for a working agricultural campus in Hay River would foster further skills and excitement. Farmers markets are expanding and are creating a ready market and simple access point for small-scale farming projects, particularly in the Capital area. Community gardens create an incubator for growing awareness and knowledge of farming skills. The government has increased its funding sources and there is considerable funding for agriculture available. There is optimism that agriculture may be a thriving industry in the north once again. *"There is incredible potential, the challenge is to recognize that potential and to act on it. There is lots of land, but it needs to be cleared. If there is bedrock, one needs to grow food on raised beds. The challenge is to see the potential, not just the obstacles"*.

But there are still many challenges that threaten to hold back the industry. Land availability and price are the biggest issues that were mentioned by survey respondents. Without a significant

pre-existing agricultural industry in the NWT, there is little previously established and cleared land. It is unclear where the best farmland exists, and there is much confusion about how to obtain farmland. Unsettled land claims, devolution, land use policies that do not recognize agriculture, and other issues confuse the matter more, making acquiring land for potential new farmers a challenge. Municipal, regional and Territorial strategic agricultural planning may be able to identify and address some of these challenges in land acquisition, at least partially. On the eve of devolution, there is further opportunity for the territorial government to create agricultural land leases, or trusts with newly devolved crown lands.

There are a host of other challenges including: the harsh climate, poor soils, and lack of knowledge of soils, lack of agricultural knowledge and skills, high transportation costs for foods, and farm inputs, the lack of government coordination, the potential for arsenic pollution in Yellowknife, the lack of knowledge of agriculture, and even competition with existing government subsidy programs like Nutrition North.

But with all these challenges, there is still a lot of optimism “*We need to grow our own food to sustain our communities and reduce our dependence on fuels. We need to develop resilient communities, knowledgeable about food security. We need to educate our children to become avid gardeners and healthy adults. Ensure that everyone who wants to grow can easily do it.*” With NWT and Hay River governments committed to funding Agricultural Strategies, NFTI looking to open an agricultural campus, community gardens thriving throughout the north, emerging farmers markets and programs incrementally providing the education and training required to fill the knowledge gap, there are certainly reasons for optimism. One thing is for certain; there is a small, but very passionate group of agriculturalists who love growing food, and who are excited about bringing this food to local tables.

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1 Introduction

1.1 Project Background

Ecology North is a Northwest Territories-based non-profit environmental and community organization that was established in 1971. Ecology North strives to bring people and knowledge together for a healthy northern environment. Current areas of focus include: climate change mitigation and adaptation, sustainable living, environmental education, source water protection, waste reduction and local food production. A common thread throughout all Ecology North programming is an emphasis on environmental, community and social well-being.

Ecology North (EN) was contracted by the Territorial Farmers Association (TFA) to conduct a survey of the agricultural community in the Northwest Territories (NWT). This survey was developed in coordination with the TFA, with the goal to consult a broad swath of farmers, potential market gardeners, hobby gardeners, and community garden champions. This report includes research into the history and state of agriculture in the NWT, including a scan of the agricultural field in the NWT, as well as a discussion of some concerns and ideas identified within the survey.

1.2 Food in the Northwest Territories

Northwest Territories (NWT) has approximately 43,000 people. Yellowknife, the largest community, has roughly 19,000 people and the majority of the non-Aboriginal population. There are several mid-sized towns, including Inuvik, Hay River, Fort Smith, Behchoko and Fort Simpson but the 28 remaining communities are predominately small, with less than 1000 people, primarily Dene or Inuvialuit (NWT Stats, 2011). The NWT has approximately 1.17 million km² of land, of which an estimated 2 million hectares are suitable for agricultural production (Aurora Research Institute, 2013).

Some smaller NWT communities are not linked with all-weather roads or electrical grids. This means that food is either flown or barged in, and hence is very expensive. These communities tend to have only one grocery store offering little to no market competition. The Nutrition North Program is a Federal Government subsidy program that is meant to reduce the cost of produce and healthy foods in these remote communities (Nutrition North, 2014). Nevertheless, NWT households still paid an average of \$9,509 for food in 2009, versus \$7,267 per household for the rest of Canada (NWT Stats, 2014). In 2012, NWT had the second highest rate of food insecurity in Canada (behind Nunavut) at 20.4%. Food insecurity is defined as “*the inadequate or insecure access to adequate food due to financial restraints*”. (Tarasuk et al., 2013).

1.3 History of Farming in the Northwest Territories

Community gardens have long been an important part of many northern communities. Before airplane resupplies, communities in the North had to be self-sufficient for food. Gardens and livestock supplemented traditional harvesting activities to provide food for the whole community. The residential schools, Hudson Bay Posts, and RCMP posts had large gardens that

produced great volumes of produce, much of which was stored for winter eating. A potato farm outside of Dettah in the 1930s and 1940s supplied all the northern exploration camps during the gold rush. In Aklavik and Yellowknife, there were dairy farms (Gilbey, 1953). NWT did have an abattoir, but the supply was not sufficient to make it successful (Milne, J. 2014). The Hay River area had dairy farms, cattle and bison ranching operations, and a hog farm, all of which eventually shut down for various reasons (Serecon, 2014). Con Mine, had acres of community garden plots for miners' families. Fort Good Hope had a large and bountiful community garden. The federal government supported agricultural development, by funding experimental farms in places like Fort Simpson, which proved that certain hardy crops grew exceedingly well in the rich soils of the Mackenzie Valley, and pigs and poultry husbandry could be supported (Gilbey, 1953).

In the last five decades the North has become less remote, and as such, less self-reliant. Road systems expanded and airports were built in every NWT community. Cheap fuel led to the import of more food, and the gardens and knowledge of gardening that once fed the communities has been too-often lost. It is only in recent years that a resurgence in local food production has been spreading across the NWT. As an NWT farmer suggests, *"The north used to have a tradition of growing lots of our own food. We have to reclaim this!"*

1.4 Agriculture in the NWT Today

Agriculture is still a nascent industry in the NWT today. There are a few farmers who have been growing food in the north for decades, but a new breed of market gardeners are emerging. The NWT has 29 farms that were reported to Statistics Canada in 2011. Of these, 14 reported planting crops, 7 reported producing fruits, and 5 reported growing vegetables (Aurora Research Institute, 2013). The NWT agriculture industry "has grown dramatically in the past decade, and sector generates approximately \$8-10 million in income per annum in the NWT" (Serecon, 2014). Unfortunately, there is still very little additional published information about the NWT farming industry.

1.4.1 Government Programs

Federal and territorial agriculture funding has spurred the expansion of agricultural training and support, as well as promoting new avenues for allowing small-scale farmers to access markets (namely farmers markets). The GNWT's Small Scale Foods Program has been actively building community gardens throughout the NWT and reports that 30 of the 33 NWT communities now have a community garden. These community gardens vary widely in terms of the number of residents involved and the total output of food production.

1.4.2 Greenhouses:

Eight communities have established greenhouses, including the internationally recognized Inuvik Community Greenhouse (Small Scale Foods Program, 2012). There is also a 4,000 square foot commercial greenhouse in Yellowknife run by Arctic Farmer (Wohlegemuth, D. 2014), a commercial greenhouse operation in Fort Smith (Serecon, 2014), and one that was identified by our survey in Norman Wells.

1.4.3 Choice North Poultry Barn

The NWT now has its own egg farm. Choice North Poultry Barn is a Hay River based company that sells over 3 million *Polar Eggs* per year (Serecon, 2014).

“At one time, locally produced eggs were sold throughout what was then the Northwest Territories and Yukon. After a change in ownership, they shut down the grading station, stopped selling them to local stores and for over a decade all of the eggs made in the NWT were shipped to British Columbia, Alberta and Manitoba. Thankfully, things have changed. A new commitment from ownership, local producers and the Territorial government has enabled us to once again provide an excellent nutritious source of protein from right here at home” (Polar Egg, 2014).

1.4.4 Non-Timber Forest Products

Non-timber forest products (NTFPs) are defined as “*products of biological origin other than wood derived from forests, other wooded land and trees outside forests. They may be gathered from the wild or produced in forest plantations, agroforestry schemes and from trees outside forests*” (Royal Roads, 2014). NTFPs with potential in the NWT include: mushrooms, teas, medicinal products, birch syrup, berries, and arts and crafts. This industry is small but it is in line with First Nations beliefs and traditional uses of the land. It is unclear still whether NTFPs are jurisdictionally a part of agriculture or forestry, but they should be considered when looking at the agricultural field in the NWT.

1.4.5 Community Groups

The Yellowknife Community Garden Collective (YKCGC) has expanded from two garden plots in 2005 to five separate locations, including a small berry orchard in the plans. They maintain a good website and have hundreds of members. The YKCGC has shown an innovative and socially-minded approach to food production: in 2013 the Collective donated over 1400 lbs of root vegetables and 162 bags of leafy produce to non-profit organizations (YK Garden Collective, 2014). They also have a match-making project where people with unused garden space allow gardeners without space to garden on their private property. In 2009, the Collective also started the first annual Fall Harvest Fair and Community Feast. While the Yellowknife Garden Collective is the most active in the Territory, there are other busy collectives located in Fort Simpson, Hay River and Fort Smith (Rapati, K, 2014).

Hay River boasts an active and long-running Farmers Market at the Fisherman’s Wharf and an indoor winter market in a school (Serecon, 2014). The YK Commons is a new non-profit formed in 2013 to revive Yellowknife’s Farmers Market and to increase access to land for urban farmers. This collective has shown that there is a large market for fresh, locally grown food and has provided the impetus for many small market gardeners to start selling their produce. The next several years are likely to see a spike in interest in local food production in the capital region due to this market.

1.4.6 Territorial Farmers Association

The Territorial Farmer’s Association (TFA) leads agricultural education initiatives in NWT and is located in Hay River, NWT. The TFA has excellent resources on their website, and

encourages agriculture through knowledge transfer as well as providing supplies, such as organic fertilizers. The TFA is developing a Northern Farm Training Institute (NFTI) to provide entry level training following a “train the trainer” philosophy in which students subsequently become trainers in their communities.

In 2013, NFTI held 6 weekend workshops with a total of 28 students (60% aboriginal). These courses were successful in part because financial support was provided for travel and accommodations, and workshops were tailored to the growing season. (NFTI, 2013). NFTI also presently operates a mobile kitchen, which provides access to canning and food preservation techniques and knowledge.

NFTI is planning to establish a working campus in Hay River to offer comprehensive, hands-on agricultural training in conjunction with NWT Literacy Council and Aurora College (Wohlegemuth, D, 2014). The Farm Institute will be a fully functioning campus and research farm that will include greenhouses, animal husbandry, market gardens and a compost facility. This facility has the potential to transform the agriculture sector in the North.

1.4.7 Aurora Research Institute

The Aurora Research Institute leads the modular farm project, called AgNorth, which is a design that uses a super insulated structure and nutrient-monitored hydroponic growth medium with spectrum-tuned LED lighting to grow plants throughout the year. These structures would allow for winter agricultural production for the NWT market (Aurora College, 2013). Prior work by Aurora College included a multi-year project collecting, propagating and commercialising native seed for use in remediation and revegetation projects.

Other northern agriculture partners include Ecology North, which has been active in local food sustainability for the past ten years, having identified it as one of their five priorities. Ecology North (EN) spearheaded a garden partnership with Weledeh School and has facilitated other agricultural education projects with youth (Ecology North website). In addition, EN completed research to assess the feasibility of berry production in the Yellowknife area. The organization also ran the Local Food Learning & Leadership Program, with a focus on “*supporting local food production by Aboriginal people and other residents in community and individual gardens*” (Ecology North, undated). The program presents agriculture as a complement to food provided through traditional harvesting activities such as hunting, fishing and gathering wild plants. “Combined with traditional harvesting, fruits and vegetables provide an integral component of a healthy, local diet” (Ecology North, undated).

1.4.8 The Market

The market for fresh produce is significant in the north. Currently, NWT residents consume between 130 and 190 kg of fresh fruits and vegetables, well below the Canadian average of 213 kgs (Aurora Research Institute, 2013). As of 2009, the average household purchased \$8,060 of food from stores and \$1,435 of food from restaurants annually. This is an estimated annual territorial expenditure of \$143.7 million on food. (Serecon, 2014). It is estimated that the entire NWT represents a market for 8 million kg of fresh produce at an estimated retail market value of about \$17 million (Aurora Research Institute, 2013).

The market for those selling locally grown foods in the NWT is mostly through direct sales either at farm gate or at a farmers market; there is little input into the wholesale food industry. However, this may be a benefit for farmers as margins are higher when middlemen are cut-out (Serecon, 2014). Other untapped market potential for farmers are direct sales to restaurants, and oil, gas and mining camps, representing substantial growth potential for the sector.

1.5 Canadian Agriculture Industry Trends

Although the NWT is in a unique situation with a blossoming agricultural industry, and as such appears to be cushioned from southern trends, it is important to note some of the major trends occurring in the sector throughout the rest of the country (Statistics Canada, 2011):

- Throughout Canada the number of farms is decreasing;
- Farm size is larger (with an average size of 778 acres in 2011);
- The amount of land being rented by farmers has increased;
- Land leased from government has declined (due largely to decrease in cattle grazing),
- More farms are incorporated,
- Almost half of farmers are aged 55 and older,
- Farmers are working fewer hours on the farm (likely as a result of working off-farm),
- 47% of farmers worked off the farm,
- Paid labour was reported on 34% of all farms,
- Gross farm receipts were up to \$51 billion dollars,
- Total operating expenses were stable at \$42 billion dollars,
- Crop farming is growing at the expense of livestock and forage farms,
- Increase in greenhouses, and cash crops,
- No-till farming is increasing,
- Irrigation decreased by 8.9%, and
- Organic farms increased to 1.8% of all farms.

Many of these national trends do not relate to the NWT, but there are some interesting comparisons to be made. In NWT the average age of a farmer is much younger – based on anecdotal evidence. An average Canadian farm size of 778 acres is, by far, larger than any farm in the NWT. Increases in environmentally friendly practices like no-till farming and organic farming are assumed to be more likely to happen in the NWT with a non-traditional farming population.

2 Project Methodology

This project started as a survey and grew to be an unofficial State of Agriculture Report. Ecology North staff began by brainstorming a list of agriculturalists, which we have defined as those actively involved in the agriculture field, including farmers, but also keen gardeners, community garden champions and market gardeners. This list was expanded by consulting with the TFA and other people in the agricultural field. Government of NWT staff, Aboriginal governments and band staff were further contacted in order to expand the list and ensure regional representation. Survey respondents were asked to recommend others to complete the survey, a snowball surveying method which yielded 40 responses, some of which had not been previously identified. The final list included 106 agriculturalists.

The survey was designed using the Survey Monkey website and administered through email and phone interviews. An initial email and a follow-up reminder email were sent to each of the contacts (if contact emails were available). If they did not respond to this email, or an email contact was not available, a phone call was made. A three strikes rule was used to avoid pestering people, who may not have the time nor interest to complete the survey. Therefore, 43 people ultimately completed the survey, either online or on the phone. Eight surveys were completed over the phone or in person with the author or other Ecology North staff writing in the respondent's responses; the remainder were completed by the agriculturalists themselves, online.

The agriculturalist list includes many people who are keen gardeners, community garden leads, prospective market gardeners, and full-time farmers. Due to time (and other) constraints, we were not able to gather information from all of the farmers in the Northwest Territories, but survey responses were collected from 15 communities. We believe this contact list will be valuable for the TFA to contact NWT agriculturalists in the future

Throughout this report, respondents to the survey are quoted. As it was decided not to identify the participants, any quote (in italics) that is not attributed is a response from the survey. The author made some grammatical and spelling changes to improve the readability of the report in some quotes.

3 Production and Agricultural Land Use Survey

3.1 Survey Design

The ‘Production and Agricultural Land Use Survey’ that was administered to NWT agriculturalists had twenty-one questions. A copy of the survey is in Appendix A. This survey was designed to be accessible with plain language such that participants could complete it within ten minutes. Throughout the report, the author has quoted the respondents’ own words.

3.2 Survey Results

Survey answers are described below. The actual survey questions are underlined in blue ink. Charts are developed by the Survey Monkey website, and are directly representative of the answers in the survey. There was a mix of multiple choice questions, open-ended questions or multiple-choice questions with some form of optional clarification at the end.

3.2.1 Participant Locations

The first two questions asked the Participant’s name? and Home community? Respondents came from 15 communities, with the majority from Yellowknife and Hay River. The majority of respondents were from the South Slave (25), the Dehcho (21) the Sahtu (21), and Yellowknife (19). Fewer agriculturalists were identified in the Beaufort Delta/Inuvik area (7) and even fewer in the Tlicho (3).

3.2.2 Why Do You Grow Food?

The third question was Why do you grow food? There were two clear underlying themes in answers to this question. Most people grow food because the food is fresher, healthier, and costs less; and/or for the lifestyle benefits of growing food, such as staying active, being outside, and enjoying gardening.

The freshness and health benefits of fresh home-grown food was the most frequent comment; over half of all respondents mentioned either health or freshness, and often both. Responses such as the following indicate that gardeners care what they eat and want to eat healthily:

- *“It is hard to get fresh veggies, the cost is high, and it’s healthier [to grow your own] than food in the store, natural no pesticides”*
- *“So I can provide my family and community with fresh organic produce”*
- *“To know what I’m eating”*

Lifestyle, fun and enjoyment of watching things grow was the second most frequent comment in the survey as to why people grow food. The following examples were common throughout these answers:

- *“For the enjoyment of growing”*
- *“Personal satisfaction”*

- *“Because I love it”*
- *“It’s so enjoyable”*

The cost of northern food was mentioned eight times by respondents, and most mentioned that fruit and vegetables are very expensive in the North, and much more so in communities off the road network. These sentiments were more common among those in small remote communities where the cost of fresh vegetables is exorbitant, compared to the larger road accessible communities. A few examples include:

- *“Small remote community. Hard to get fresh veggies, cost is high, and it’s healthier than food in stores”*
- *“Most of the food is flown in by plane and it costs a lot of money”*

Food security was another common theme, with responses such as; *“food security is important to the extent that we like to know that the type of food we are eating is healthy for our family and affordable”*, or *“learn to be self-sustaining, fresh is better”*. Participants mentioned a growing realization of the distances our food travels to reach us, and the fact that we in the north are vulnerable to disruptions in the food network. One also commented that self-sufficiency is also a hallmark of the aboriginal culture, and being able to grow your own food is similar to harvesting from the land.

Another theme was healthy living; *“to stay active and spend more time outdoors”* was mentioned seven times, and participants mentioned that gardening and growing food is an important way to get outdoors and keep fit.

A few other themes mentioned were: to sell the food, to connect with the land and culture, and to relieve stress. This quote perhaps sums up the love of the land that a true farmer has and highlights many of the comments in the section:

“Ahh... the multiplicity of reasons! I love to be outside, with hands on Mother Earth, who returns such bounty for my efforts, in the form of useable produce that feeds my (and my family and friends) body with healthy fresh-tasting good nutrition! It’s an excuse to be outside, a way of connecting with Nature, a productive activity, a continuation of my ancestors’ culture, ... Shall I go on?”

3.2.3 Self-Identification of Agriculturalists

This multiple choice question, [Which of the Following Best Describe You?](#) gave agriculturalists options to identify themselves based on lifestyle and income generated by farming. Out of 42 responses, only one respondent considered themselves a full-time farmer. There were nine (this included several who identified themselves in the other category) who supplemented their living with farming and another four who sold some produce as a hobby farmer. Therefore, only 26% of respondents actually sold any food that they grew. But there was some sentiment that people would like to sell food given the chance: *“I am striving to be a full-time farmer – it’s my passion”*.

As displayed in Figure 1, one third of respondents described themselves as ‘happy to grow food on my own property/community’. Some who described themselves in this way also managed community gardens in the smaller communities: “*I build a garden, let people use it to grow vegetables every spring*”, and “*work for the Band to garden, water, weed, started in 1982*”.

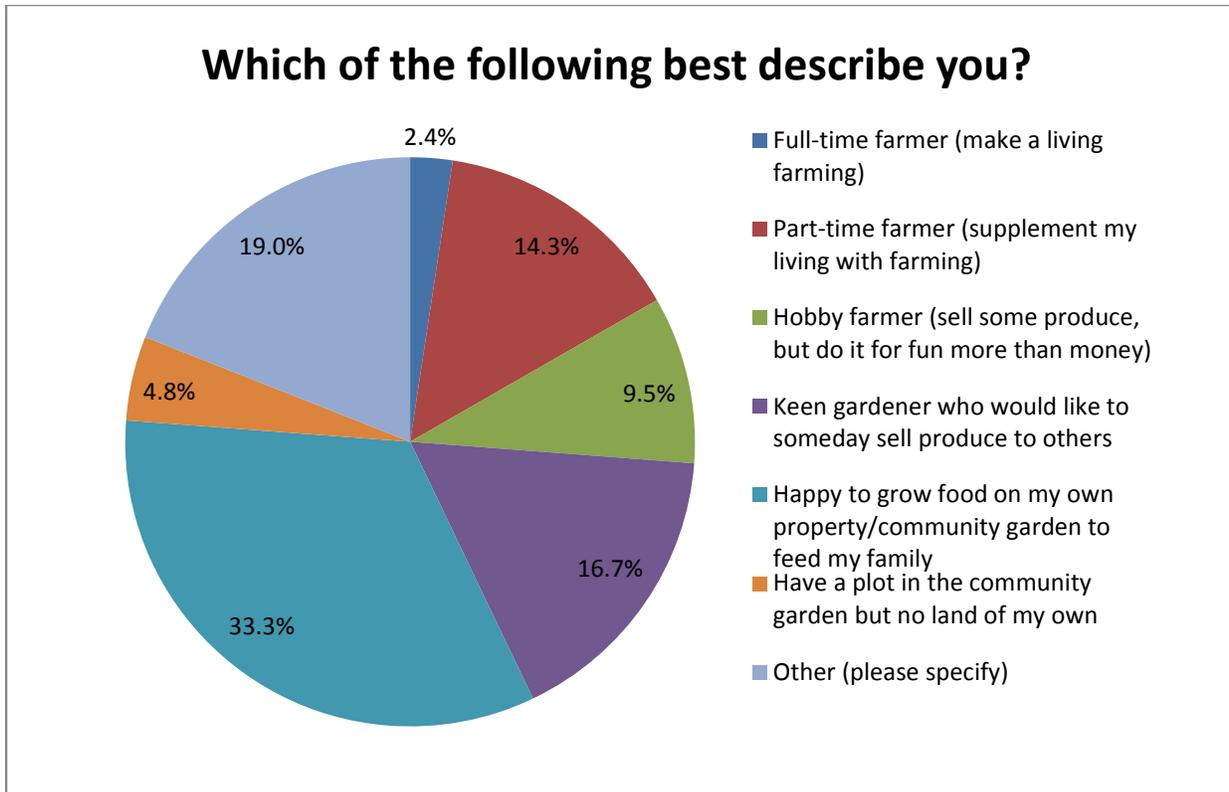


Figure 1: Self Identification of Agriculturalists

3.2.4 Commercial Farmers

When asked, [Are you a commercial grower/farmer/ do you sell produce?](#) 29% replied yes, and 71% no. The 13 respondents who said yes were then asked questions which relate to their motivation and the market, as detailed below.

[What motivated you to become a commercial farmer?](#) Respondents were given the option to mark more than one of these options, but most of the respondents seem to have only started farming by growing food for their families. Only 5 came from a farming background, and 7 consider agriculture a career choice, while 5 are just selling extra (really keen gardeners), as detailed in Figure 2. When given a chance to explain their motivation there were some valuable comments. One respondent approached agriculture from a business development side; “*Opportunity came to get involved in the poultry industry in Hay River. Have seen the opportunities in the industry and want to see expansion and development in local production*”. Others seem to have fallen into it as a hobby “*Semi-retired, looking for something to do. Took it on as a project, and enjoy doing it.*” One farmer grew food to feed their family and now look at it as a way to make a little money on the side “*raised 3 children on my own and had to grow*

food to supplement my income, now have had a garden at Dory Point for 11 years, would love to produce enough to sell as now retired and once again to supplement my pension”. But for others it is a lifestyle that they love “It’s a true passion - other than the air we breathe, water we drink food is the most important - "know your farmer" and also to show people it can be done here”.

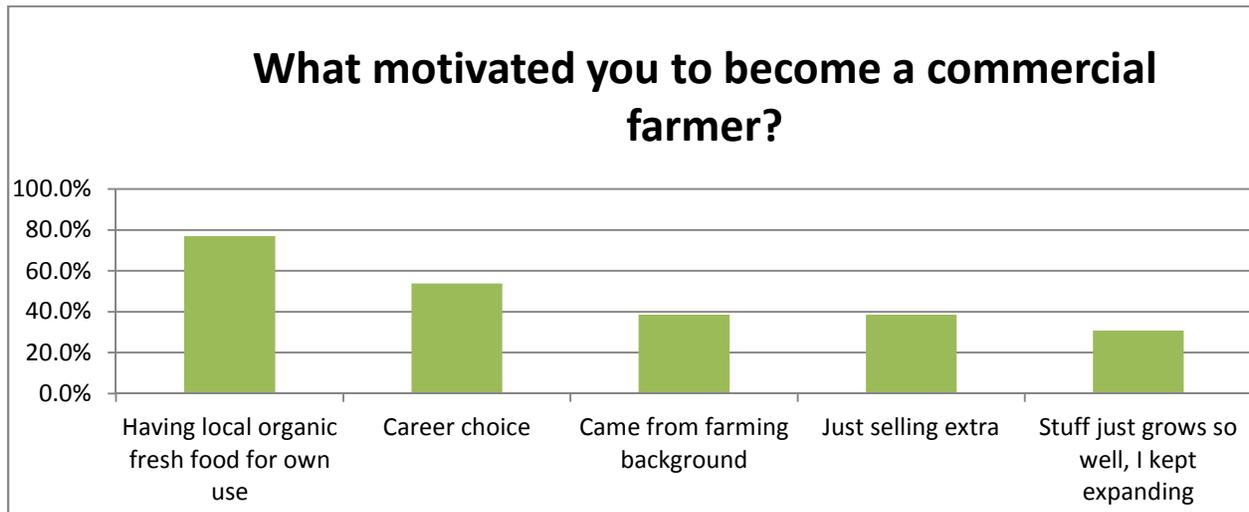


Figure 2: Commercial Farmer Motivations

How many years have you been farming commercially? Respondents who replied that they were commercial farmers were asked how long they have been farming in general and within the NWT. Responses varied from 1 year to 34 years. There were two long-time farmers who have been at it for 33 and 34 years in the NWT. The rest of the respondents have been farming in the NWT for less than ten years. Only one farmer had any previous farming experience (in this case 10 years before moving to NWT) and continued farming for another eight years in the NWT. This lack of agricultural experience suggests that farmers in the NWT are learning the trade in the north, and that greater local and regional training opportunities will likely result in more keen gardeners making the jump to selling food for a living (or at least a portion of a living).

If you had the opportunity to expand your operation, would you? This question was overwhelmingly positive. 88% of respondents said they would expand if given the opportunity. But when we asked what that would depend on, there was a long list of barriers to expansion, including:

- Money 10
- Access to land 9
- Time 5
- Labour/volunteers 4
- Market demand 2
- Clear land 2
- Machinery 2
- Energy costs 2

- Education 1
- Dirt 1

These responses highlight a range of issues, it's no surprise that money and land were at the top of the list, as agriculture, especially in the north, is capital intensive, especially where soil has to be brought in or amended, or greenhouses have to be built. *“Access to land and capital for building new barns, developing free range animal husbandry and green housing.”* The lack of land is a recurring theme in the NWT, which will be discussed further under challenges. The need to clear land was mentioned twice *“need to clear more trees”* and the cost of machinery *“mechanization is too difficult and expensive”* were both raised. Time, which always seems to be in short supply during our short intense northern summers, was noted numerous times: *“don't have the energy, and summer is so short.”* In particular, hobby farmers with full-time jobs felt the crunch: *“Time and resources- slowly building up with the little resources I am able to build. Currently no funding to help backyard gardeners”*. Labour and/or volunteers were mentioned by four people, which is not surprising given the fact that human resources are a recurring theme in the north: *“more community support. Not enough volunteers.”*

Energy costs were identified twice, with one respondent citing the high cost of electricity. One participant noted that increasing energy costs would likely shut down the greenhouses that are providing bedding plants and some food for the Norman Wells community: *“As there is no more natural gas available after this year in Norman Wells, this will be the end of the greenhouses!”* This is an unfortunate consequence of the restriction of natural gas in the community due to a slowdown in industrial production. The more expensive replacement options of diesel or propane may apparently prevent the Norman Wells greenhouse industry from being viable.

In general, most people who start growing food seem to really enjoy it and want to expand, but as one respondent mentioned *“Time, labour, money”* are needed to grow.

3.2.5 Land Information

The following four graphs show some information about the land on which people grow food. The answers to these multiple choice questions are somewhat skewed by the substantial proportion of respondents who either grow food on an urban lot or in a community garden plot (or both). Two-thirds of respondents grow food on less than 1 acre. Nonetheless there were still over 20% who grew food on titled acreages (mostly in Hay River area), and there are those who grow food on either crown land, or Band or First Nation land. Only one farmer had more than 20 acres of land in total, which is quite an interesting statistic, considering the vast amounts of land available in the NWT. Most serious farmers/market gardeners suggested that 5 to 40 acres would be an ideal size for their farm. One farmer suggested their ideal farm size would be 100 acres and another suggested that 320 to 640 acres would be their ideal sized farm. Of those who grow commercially, most suggest that they would like more land. One respondent suggested; *“a really ideal farm, would be mixed/diversified and include animals, berries, trees, and garden space, as well as natural spaces such as wetlands and woodlands. I don't think I would actually cultivate much more than an acre of garden”*.

What is the total size of your land measured in acres including land not in production?

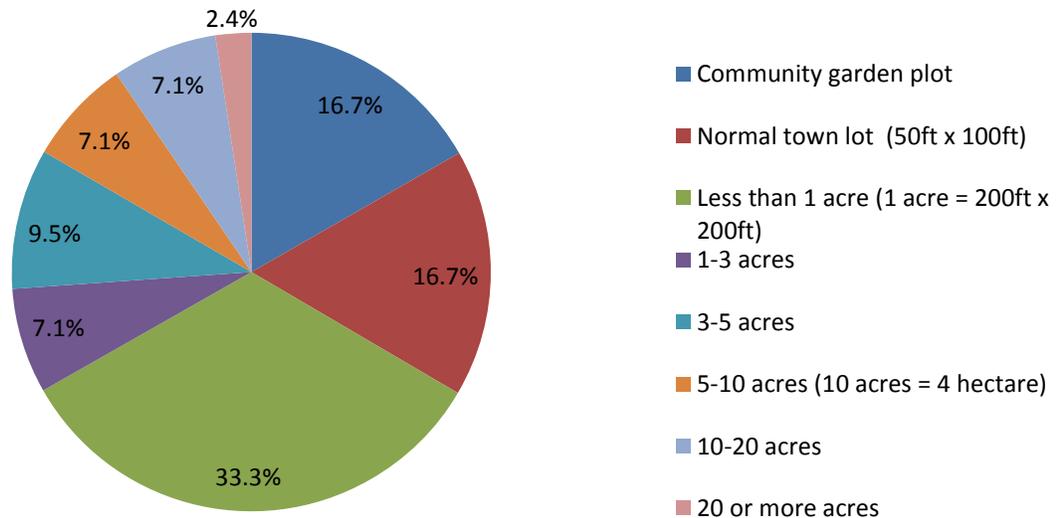


Figure 3: Size of Respondents Land Area

Participants were asked [How much of your total land is arable?](#) and [How much of this arable land do you grow food on?](#) However, the responses are muddled by the number of small landholders and lack of knowledge of what is really considered arable land. Some people suggested the land they grow on is arable, or that they are not sure about the rest of their land. Results to these questions may therefore not be particularly accurate.

How much of your total land is arable?

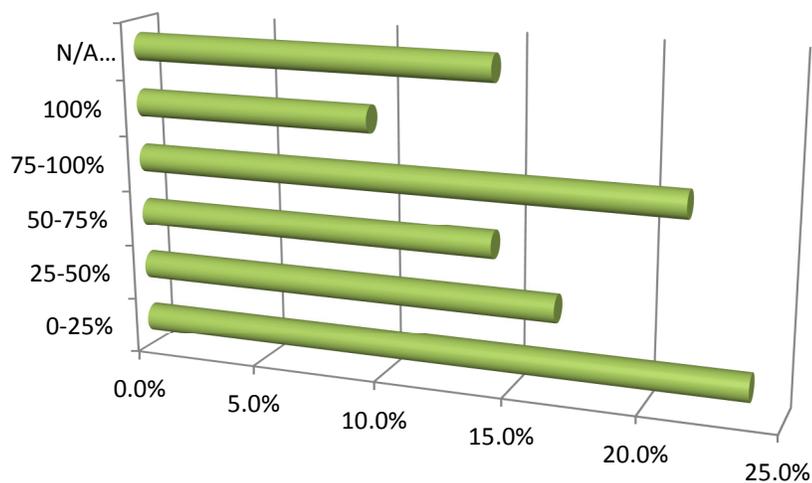


Figure 4: Arable Land

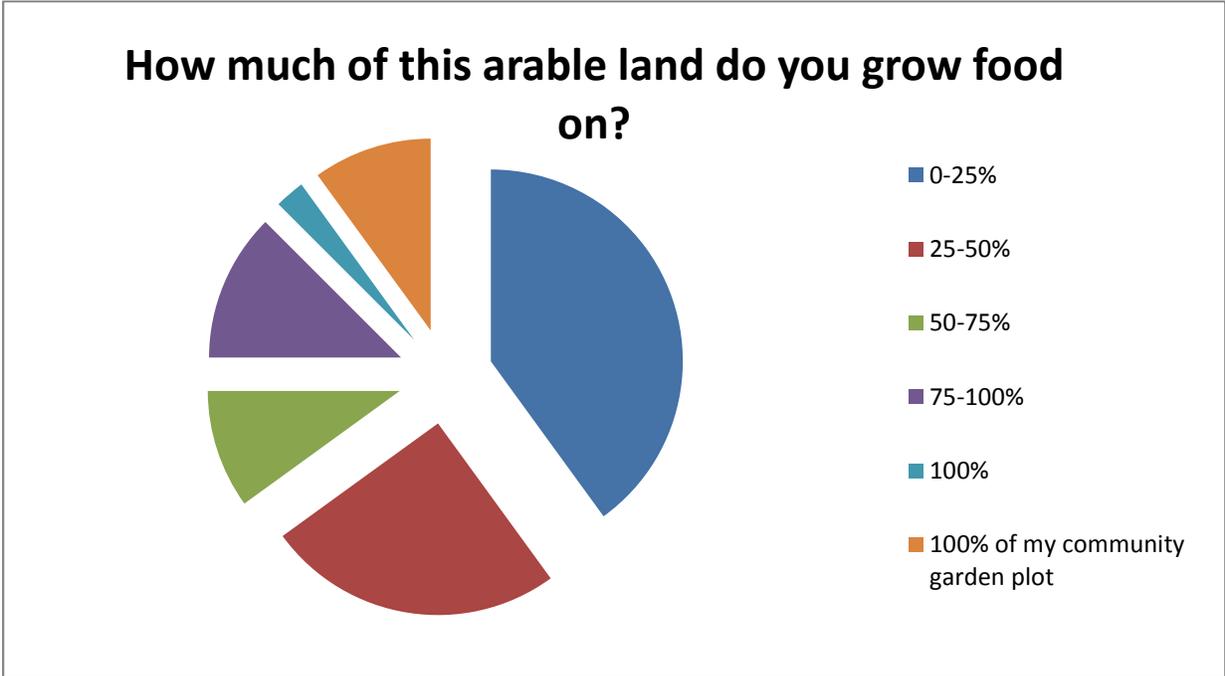


Figure 5: Arable Land Grown on

The next multiple choice question asked about ownership of the land on which people grow food [Is the land you grow food on?](#) Only 57% of land is owned by the agriculturalist, 36% within an urban setting, and the rest as acreages. There was very little leased land, and almost no government land, either Crown or Commissioners. This indicates that the Government (which controls the vast majority of land in the NWT) is not doing a good job of making land available for agriculture. Almost 15% of respondents are growing on Band or First Nation land, which suggests that the Aboriginal governments and populations are more supportive of agricultural pursuits. The 28% of respondents that garden in community gardens shows the popularity and success of NWT community gardens.

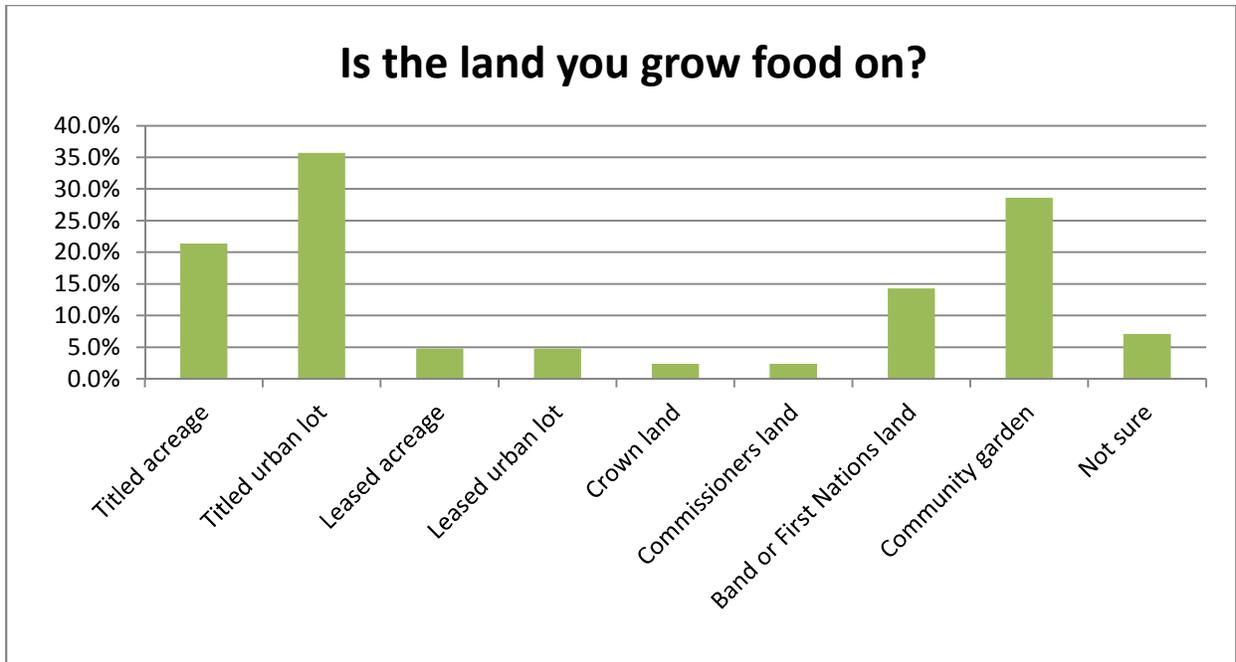


Figure 6: Land Ownership

The response to the question, [If you had easy access to more arable land, would you expand your production?](#) was an overwhelming 75% yes. This shows that there is significant demand for agricultural land in the NWT.

3.2.6 Obstacles to Accessing More Land

One of the most interesting questions in this survey was [What are the obstacles to accessing more land?](#) This multiple choice question was only asked of the 75% who suggested they would like more land, and had 29 responses. People had the option of choosing more than one response. The biggest obstacle at almost 80% was the financial cost of land. There were several other options that were chosen by around 40%, including: unclear of process to buy land, unsettled land claims make land use decisions difficult, leases not available, and land not available to buy. The high number of responses to obstacles to accessing land highlights the complexities surrounding land use in the NWT.

Respondents were given the option to specify additional obstacles and fifteen did so. Five identified land clearing as an obstacle and several mentioned building up the soil. Soils in most parts of the NWT are relatively new geologically and generally not terribly fertile (with exceptions), so it takes a considerable amount of fertilizer and organic material to build up the soil. Therefore, a long-term horizon is needed to make that kind of initial investment worthwhile: *“because growing soil is very time consuming and a multi-year event, having consistent and reliable access to the same land is most important”*. One farmer in Norman Wells is limited by space and needs to rest his land *“this year, my land needs to sit so that I can deal with weeds, therefore, I won’t have any potatoes so more land would be helpful, so I could rotate through”*. Other comments include *“land needs a lot of work to become (good). Needs to be cleared and chemistry adjusted probably”*. One person complained about the administration

requirements of the funding source “Administration of Growing Forward 2 funding is difficult and does not meet needs of people who want to grow food and who want to learn how to grow food”.

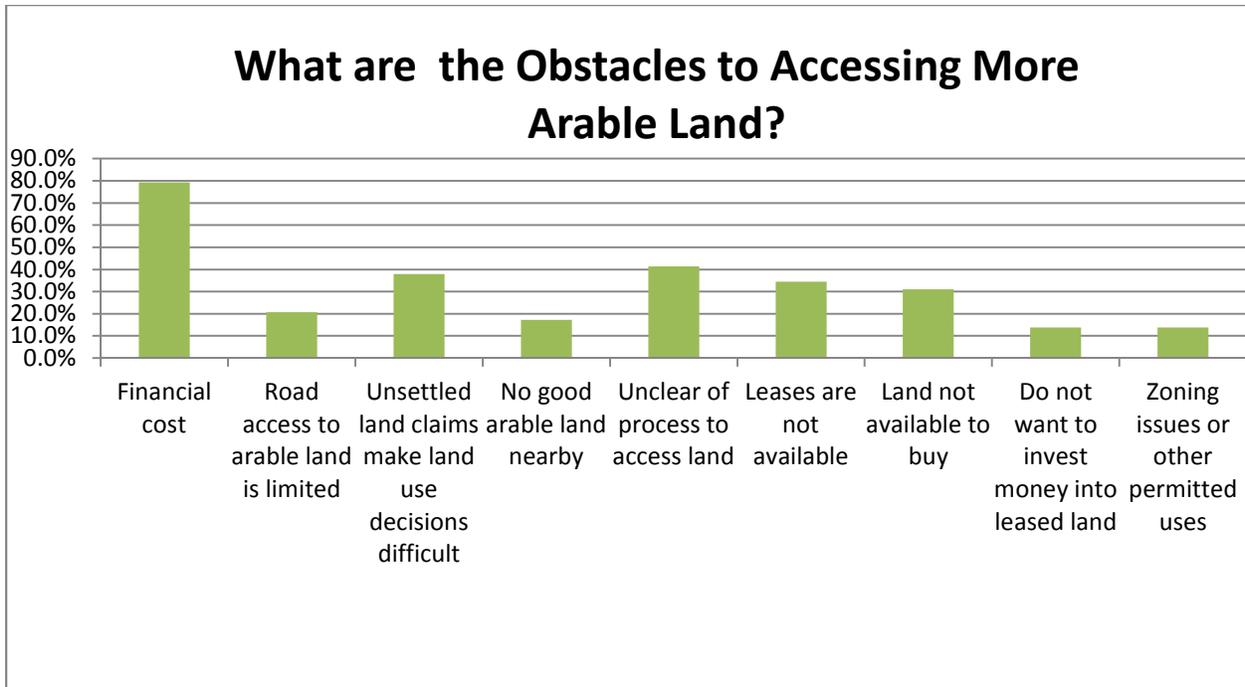


Figure 7: Obstacles to Land Acquisition

3.2.7 Challenges to Broad Agricultural Growth in the NWT

The question [What are the challenges to broad agricultural growth in the NWT?](#) was an open-ended question that was answered by 40 respondents. Responses were very passionate and covered a wide range of everyday challenges and barriers to growth. Although it is hard to categorize every answer, one of the most commonly mentioned responses with thirteen mentions was knowledge. Responses on knowledge include quotes such as:

- “Lack of knowledge from potential farmers. Lack of success stories. People don't know what is possible”
- “Unsure of what I am doing, just planting potatoes and vegetables and wait to see what grows, don't think my soil is very good as potatoes are very small but don't know what to do”
- “People are not sure how to do it and make it work in the north”
- “knowing the right kind of plants, knowing your soils.”

Such responses show that education may still be the biggest hurdle to agricultural growth.

Responses about growing conditions were some of the most common items people mentioned, including: short harsh growing season (13), poor soils (9), and lack of water (5). Some of the responses include:

- *“short growing season, dry and windy, land is not very fertile”*
- *“Most of the land here is permafrost, the soil is too high in iron & other minerals. You would have to make good dirt before you could even start to grow”*
- *“short growing seasons”*

Land issues were again a very common refrain among respondents. Access to land (9), the high cost of land (3), land claims (2), and clearing land (2) were some of the categories of land issues that were mentioned. Some responses include:

- *“The price of land is certainly a limiting factor”*
- *“land access and an agricultural land use plan outside of the municipality”*
- *“unsettled land claims / inability to lease land, high cost (dollars/ resources/ time) to clear unbroken land”*

Another issue that was commonly mentioned was the lack of government support. Some responses were short and abrupt in pointing out the challenge:

- *“the government”*
- *“support from all gov't levels”*
- *“lack of government support in truly sustainable economic development”*

Others provided suggestions for improving government, such as

- *“communications between various organizations”*
- *“we would do well to educate the people and politicians on food production”*

There were numerous other challenges that respondents mentioned, including market issues (5), with quotes such as *“Food Mail (Nutrition North) Program undercuts farmers”* or *“market size [is too small]”*. One respondent thought that the globalization of the food system undercuts local food production

“multinational marketing systems that exploit cheap labour and control almost 100% of supply and thereby dictate where and how it's sold; subsidized transportation systems (via public roads and cheap subsidized fuel) that make importing not much more expensive than local; society's cultural mindset of big box stores; industrialization of agriculture that necessitates huge capital investment so small scale can't match production”.

Some of the less frequently mentioned challenges included: perception that farming is not viable in the north (3), contaminated soils (2), transportation costs (2), not much money in farming (1), personal choices (2), vandalism (1), bugs (1), energy prices (1), labour costs (1) and lack of volunteers (1). A few choice quotes on these topics include:

- *“most people want to make more \$ than they can by farming!!”*
- *“vandalism of the water tank”*

- “in isolated communities, access to resources such as fertilizers, animal feed”
- “access to clean (non-contaminated) soil”

3.2.8 What are the Main Uses of Your Land?

The next couple of question deal with the types of products agriculturalists grow on their land.

When asked [What are the main uses of your land?](#) respondents were allowed to provide more than one of the multiple choice responses. The number one answer by far was vegetables, at 93%. Vegetables are easy to grow. They take little investment or time, are expensive to buy, and are not often fresh in the north. There is also good market for their sale with little red tape for sellers. This makes them by far the most popular food to grow. Fruit and berries were the second most popular food at 45%. Greenhouse produce at 36% was next, followed by small livestock (chickens, rabbits, goats) at 29%. There were very few agriculturalists who raised large livestock (4), grew animal feed (5), grazed animals (4), or who grew grains and cereals (1). This is likely due to a lack of large units of land, harsh winters (for overwintering large animals), short and dry growing seasons, and the lack of a real agricultural community or industry in the North. A couple of interesting other products that people mentioned they are trying to grow are cut flowers, herbs, and experimental grass crops.

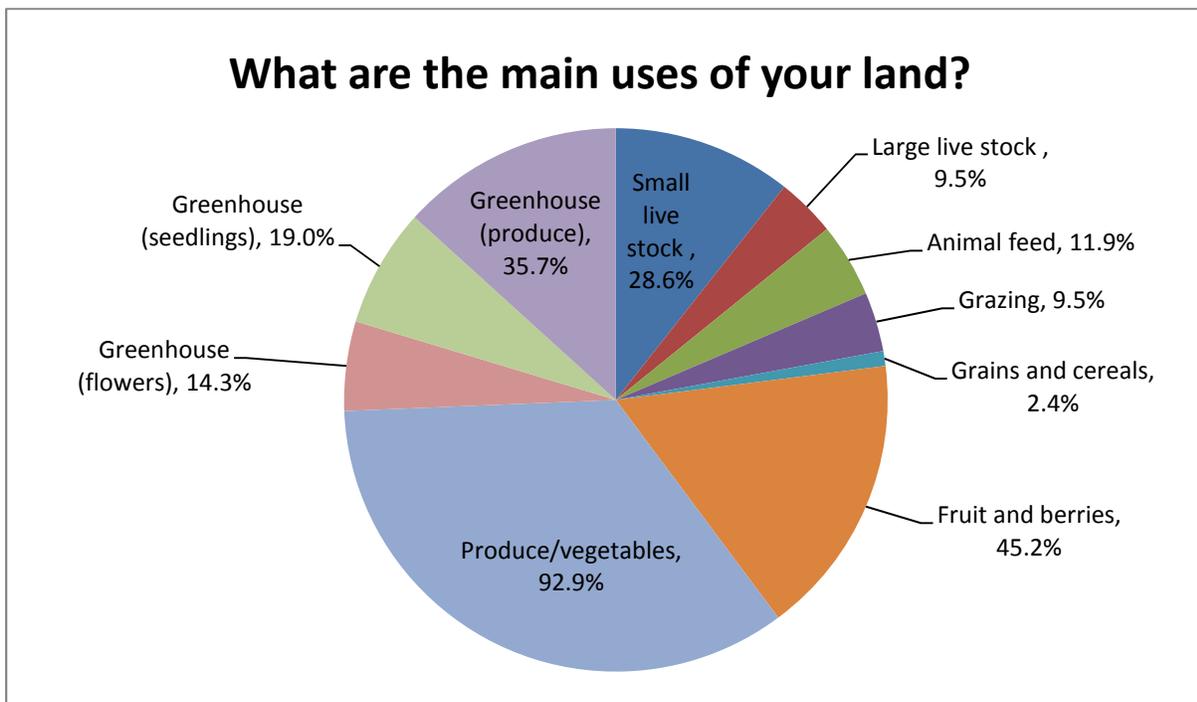


Figure 8: Land Uses

3.2.9 Types of Crops

The answers to the question [What crop\(s\) do you always plant each season? And why?](#) provides an excellent introduction to what to grow in the north. In almost every response potatoes and carrots are included. In fact two respondents stated they grew 30,000 lbs and 1,000 lbs of

potatoes respectively. Other very common vegetables most people grow include: beets, beans, kale, peas, lettuce, and tomatoes. Other popular ones are rhubarb, berries, cucumbers, celery, broccoli, radishes, cauliflower and onions. A complete list of what respondents mentioned as their most popular crops is below.

Most Popular Crops (in no particular order):

- Potatoes
- Carrots
- Parsnips
- Leeks
- Celery
- Brussel Sprouts,
- Cucumbers
- Kale
- Lettuce
- Rhubarb
- Cabbage
- Broccoli
- Spinach
- Swiss chard
- Herbs
- Beets
- Onions
- Turnips
- Peppers
- Brassicas
- Peas
- Pumpkin
- Squash
- Garlic
- Strawberries
- Cauliflower
- Radishes
- Corn
- Raspberries
- Zucchini
- Fava beans
- Cherry
- Currants
- Apples
- Nasturtiums
- Flowers

What Crops are Respondents most Proud of?

The question [What products have you grown that you are particularly proud of, or that you think may have pushed the perceived northern range of? \(feel free to explain\)](#) was asked to see if there were some interesting agricultural crops that can be grown in the NWT that people may not immediately think of as being possible. There were some great responses to this question, which really refute those who may say you can't grow much north of the 60th parallel. With so many great responses we had to include them all:

- Celery
- Brussel sprouts, 34lb pumpkin
- We have produced some nice crops of oats/green feed and hay for our cattle. We are proud to have raised cattle North of the Sixtieth parallel nearly two decades now.
- I was proud to grow pumpkins last year
- Melons, specifically Minnesota Midget I've had success with although last summer I had trouble with grasshoppers eating the leaf stems and stressing the plants.
- Tomatoes- always experience bountiful crops without cold frame or alternative protection
- Well...it's an end product...composted horse manure that is black gold soil
- Asparagus, peppers and just the general volume of vegetables able to be produced in the north.
- Corn
- We grow the most flavourful and highly nutritious vegetables North of 60
- Tomatoes - in the greenhouse, surprised at size and quantity.
- Tomatoes, flowers, melons, corn, gourds... all from seed

- I'm not particularly proud... Mother Nature does it, not me. (Although city compost helped 2013 production!) I'm pretty run of the mill. Started harvesting seeds this year, though - that made me feel good!
- My vegetables grow well but potatoes are always small
- Stevia, zucchini
- As above and when I told (by them) at gardening school who was adamant that I couldn't grow peppers here, however have grown all kinds of peppers here, not only in the greenhouse (unheated, plastic walled) but also outside in my gardens and pumpkins
- Melons in greenhouse - it can be done successfully! Garlic is also fun to grow.
- Corn, tomatoes, cucumbers
- Bedding plant flowers
- Tobacco is a warmth loving plant and I have been growing it for ceremonial use for the last four years.
- Our kale...it was fantastic!
- Different potato crops. The Red potatoes grow well, but they split when they get too big and aren't palatable to sell. Have to harvest them earlier. The whites I tend to grow now, they grow slower but handle and store better, and don't split.
- Brussel sprouts, pumpkins, tobacco (didn't grow well), cauliflower (not great)
- Melon in the greenhouse (watermelon and muskmelon), cherries and apples. Also herbs are becoming more of a focus
- Proud of just being able to grow things, had lots of success with herbs and spaghetti squash before which felt great
- Quinoa, chick peas, peppers, tomatillos
- Fall garlic
- This year I am going to plant Jerusalem Artichokes. We'll see!
- Corn grown in a rubbermaid container - 72 cobs - using coconut coir – it's a by-product rather than a renewable like peat - this year I will plant them earlier (April 1 rather than May 1). I plant them inside allow them to germinate with the lids on, then I can stack the containers inside at night and take them outside on nice days without lids
- Berries can be easily grown!

3.2.10 Barriers to Selling Your Agricultural Produce

With a captive market that faces high prices, and imported food requiring an average of ten days to make it to Yellowknife (Aurora College, 2013), NWT farmers can easily sell the food they grow. When asked [Have you come across any barriers to selling your produce?](#) Most farmers were very positive about market conditions:

- *“no barriers to selling”*
- *“I sell everything I bring to the Yellowknife Farmers Market”*
- *“There seems to always be demand for local produce in Hay River”.*

The Farmers Markets appear to be an important venue for sales:

- *“I would not sell anything if not for the Farmer’s Market”*, and
- *“The YK Farmers Market has provided the perfect avenue”*.

There were a few farmers who noted that they struggle a little with markets *“having good strong markets for produce is sometimes a challenge”*, another farmer noted that *“Many people used to come by to purchase produce, but not so much anymore. There used to be all kinds of people around. People from Nahanni Butte and Fort Liard would come for potatoes and fill up their truck but now people want their potatoes washed clean so they get them from the store”*. One intrepid farmer in Norman Wells delivers his potatoes to his clients and says there is a huge demand; he also supplies lodges and oil and gas camps, as well as people throughout the Sahtu. He suggested he could supply the entire Sahtu if he had free transport for his product. This potato farmer now has a new challenge, which is the new Nutrition North Program that replaced the Food Mail Program in 2011 and has dropped the price of imported potatoes below what he is able to produce them for. The subsidy does not apply to his home-grown potatoes.

When answering the question about barriers to selling produce, the biggest issues are not the market, but not having the resources/capacity to produce enough (59%), followed by packaging and storage and knowledge of health regulations. Not one respondent believes that there is no interest or they wouldn’t know where to start. But 18% of respondents suggested that they can’t compete with prices in the store, which is a legitimate concern with the high costs of labour and supplies, compared with the cost of food in many of the stores (in the larger communities).

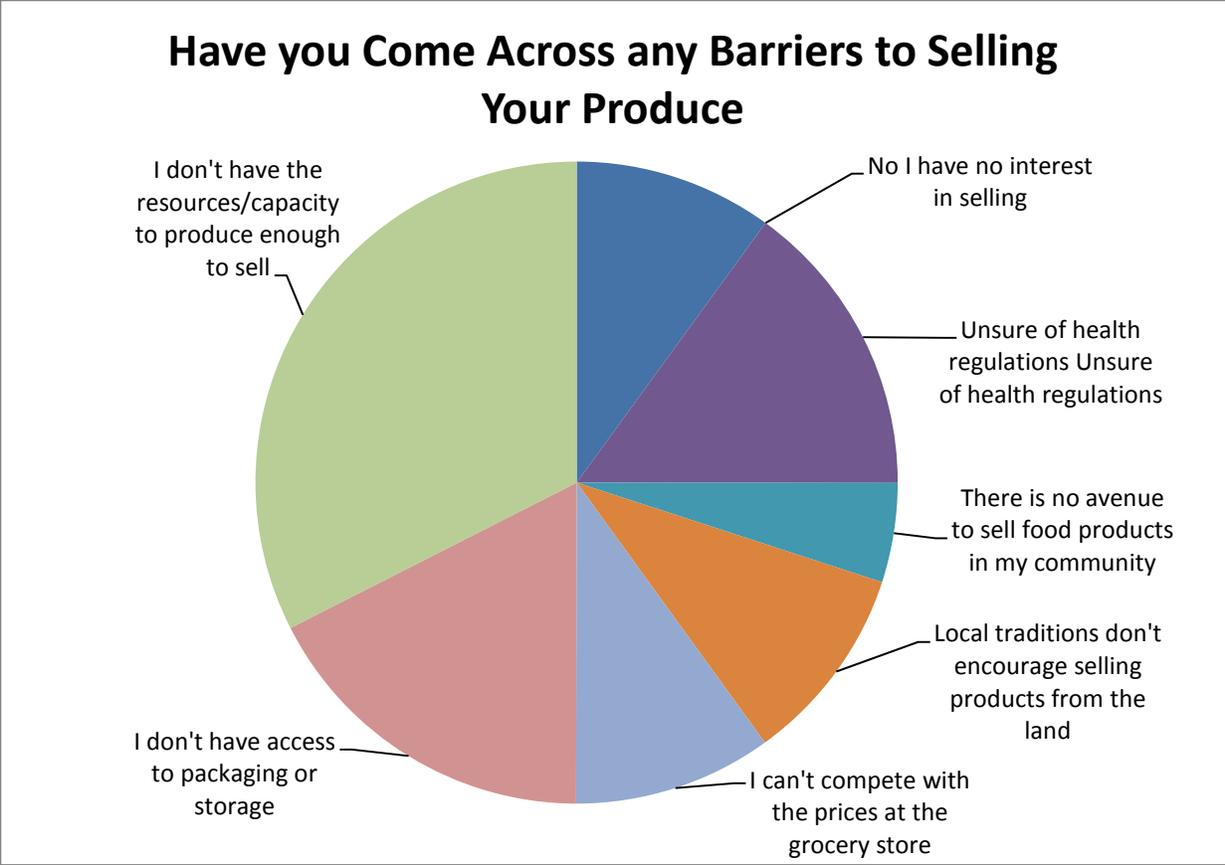


Figure 9: Barriers to Selling Produce

3.2.11 Future Vision of Agriculture in the Northwest Territories

The question [What is your future vision of agriculture in the Northwest Territories?](#) was designed to capture people’s thoughts about what the future holds for agriculture in the north. We received 42 responses with some tremendous insights, and ambitious visions of the future. Many of the visions include some hope for food security and encouraging more families to grow their own food. *“I would like to see families and communities producing the bulk of their fruits and vegetables locally and organically and raising livestock sustainably on a small scale. People taking responsibility for their health and future food security”*. This theme was repeated numerous times, and most of the responses suggest that small-scale agriculture, providing food for families and selling the surplus in farmer’s markets is the vision they see for future NWT farming.

“We need to grow our own food to sustain our communities and reduce our dependence on fuels. We need to develop resilient communities, knowledgeable about food security. We need to educate our children to become avid gardeners and healthy adults. Ensure that everyone who wants to grow can easily do it”.

There were several mentions of the importance of including harvested foods in any food based discussions. *“If NWT agriculture can be something that can feed people here, and build the*

relationship of people and food, that would be great. Self-sustainability (even to a certain point) is a great goal, along with all the wild foods and resources.” The theme of well-being and community health was also brought up several times with comments like:

“Increased personal/communal gardens in remote and northern communities implementing cold-climate gardening techniques. Increased awareness and action within aboriginal communities regarding healthfulness of locally grown vegetables, increased self-reliance”.

Some of the responses were very prescriptive with specific goals for the future such as “50 farms of about 160 acres each in Hay River” and “A food secure north where at least 10 to 15% of people in all 33 communities will have the skills to grow food locally”. There was only one response which was somewhat cynical about the future:

“I’m not sure it is viable - if people start doing things commercially, they will start using fertilizers and chemicals and no one wants that in the water around here. Who knows what will happen with global warming, maybe we will get more bugs and pests here that destroy crops and we will understand why people in the south have to use chemicals to grow large amounts.”

But for the most part people were very optimistic about the future, and the promise that it holds.

4 Discussion

In this section several of the recurring themes and interesting cases will be developed and discussed with potential solutions recommended. There appears to be a realization within government that northern agriculture provides an opportunity for tremendous positive gains for the NWT. Advantages may include: growing the economy, creating jobs, increasing tax revenues, creating opportunities for value added economic development in food manufacturing, increasing food security, encouraging healthy lifestyles and good nutrition, promoting community resilience and sustainability, reclaiming and healing the land and people, and creating educational opportunities.

The Government has responded by providing increased funding for agriculture in the NWT and a promise to develop an Agricultural Strategy. Non-profit groups have done much of the heavy lifting in the agricultural sector with the Territorial Farmers Association, Northern Farm Training Institute, The Yellowknife Community Garden Collective, the YK Commons, Hay River Commons, Inuvik Community Greenhouse and Ecology North providing interesting avenues for nurturing the culture around agriculture and providing incubation to a new breed of northern farmer. But there are still many issues, many of which will require a concerted effort by all levels of government, the non-profits and the agriculturalists who see a bright future for agriculture.

The following nine issues are highlighted below, as they were brought up during the survey, and the author thought they should be addressed in light of the rate of change occurring within the agricultural sector recently.

4.1 Land Availability

The primary issue is that of land availability. Potential farmers need access to land to grow food. Currently there are issues related to the process of buying or leasing land for agriculture. There is not an NWT-wide process through which farmers can access land, there is no government department that identifies good farmland and makes it available to potential farmers at affordable rates. There is demand for land (75% of respondents suggested they would like more land), but that demand is not being met by the supply.

Briefly described here are a few issues surrounding the complicated NWT land use situation. The majority of NWT land is government land, either federally owned crown land, or GNWT owned Commissioner's land, the latter often found around communities and roadways. There are four settled land claims in the NWT, the Inuvialuit, Gwich'in, Sahtu, and Tlicho. In these areas the Aboriginal government owns a significant portion of the land. In the unsettled Akaitcho, NWT Metis, and Dehcho regions, land use decisions have not been finalized, and there is confusion around who owns and can permit use of land.

In Yellowknife, there is also confusion as the municipality is in the area of the unsettled Akaitcho land claim. The Akaitcho have identified areas of importance, which are called set-

aside lands that include land within the municipal boundaries. This reduces the options and clarity for the municipal government to identify and zone agricultural lands.

All of this is topped off by devolution, which will come into effect on April 1, 2014 and transfers ownership of most (but not all) crown land to the GNWT. In terms of zoning and land use planning, there has often been little thought nor mention of agricultural land, and thus there is typically no agriculturally zoned land available. All of this leaves the average person quite confused about who owns what, and how you go about leasing or buying agricultural land.

One potential vision of a model for the NWT is

“I think it would be ideal to find arable land surrounding communities and designate them as agricultural land with appropriate and simplified processes for purchasing and/or long-term leasing. Property taxes and bylaws need to be structured to encourage high agricultural production and to eliminate the use of agricultural land solely for residential purposes. Tax incentives for agricultural production could be implemented. The long-term vision should be to create employment, offer healthier and fresher food, and reduce reliance on the south through significant growth in the production of local food.”

One option put forth by Jackie Milne of the TFA is land trusts;

“Milne proposed a land trust system in which property zoned and used for agriculture would be protected from commercial and especially residential construction, independent of the town council or territorial government. “Right now, there is a strong culture of land ownership,” she explained. “We need to at least look into alternatives where the money that would go to the banks in mortgage payments would stay in the community” (Hay River Hub, 2013).

One thing is certain is that land tenure, whether ownership or leases, must ensure long-term rights to protect the improvements that farmers make to their soil and property. *“Because growing soil is very time consuming and a multi-year event, having consistent and reliable access to the same land is most important.”*

An innovative option for providing accessible land came about from a Norman Wells potato farmer who uses the cleared land at the sides of the Norman Wells airstrip to plant. *“I have a unique contract where I keep the right of way beside the airstrip cleared, but I am allowed to grow potatoes here.”* Every community in NWT has an airstrip, and they are required to provide a large right of way for safety, which must be cut or cleared at the expense to the agency responsible. It would seem likely this leasing agreement could be replicated in most NWT communities. The land beside airstrips is typically flat, and generally not over permafrost. Although it is typically above the flood zones (where more productive farmland may lie in the Mackenzie Valley), the soil can be developed like our potato farmer did (he brought in manure and fertilizer by barge to increase the productivity of the land to the point that he grew 30,000 lbs of potatoes in 2013). It would be interesting to determine the logistical requirements of this arrangement and to encourage its reproduction in other communities.

Another issue that was brought up often was that of clearing the land. This seemed to present a challenge to small-scale growers in small communities, as the knowledge and equipment to remove stumps and clear the land was not present in most communities. It is possible this task just appears too daunting even, but when good land was identified, all too often it was not put to use due to forest cover. *“Volunteers and heavy equipment required to clear land, expand garden”*. Authors of the Hay River Agriculture Plan suggest that the process of clearing land normally requires approximately 18 months before a first establishment crop could be produced, and the cost of clearing, root raking and initial cultivation is in the range of \$800 - \$1,300 per acre (Serecon, 2014). This is not an insurmountable issue, but funding, knowledge, techniques and best practices of clearing land need to be made available to agriculturalists, using locally available machinery.

One thing that became clear with this survey is that land use issues are at the forefront of barriers to agricultural growth. We have lots of arable land; we have increasing skills to use it, and the human interest and ingenuity in this Territory to make it happen. Jackie Milne says it best *“With farming, it’s not the land itself that has worth, it’s what we can do with it, what we can make from it”* (Hay River Hub, 2013).

4.2 Agriculture Strategy

There was some disappointment conveyed within the survey of the historical disrespect that agriculture has received in the NWT

“Acquiring land is difficult as mentioned. Our growing season is short as has been the vision or lack thereof from some of our past politicians who have chosen not to recognize or support the health and economic benefits of producing our own food. We would do well to educate the people and politicians on food production by reviewing the history of our ancestors and their value system which included a healthy respect and pragmatic use of the land, water and animal resources. Only recently has there been more recognition that agriculture in the north could, once again, be beneficial for the people and their quest for independence from southern food suppliers.”

Fortunately, agriculture has become a growing priority for our politicians and has crept out of the shadows. The 17th Assembly has decided to invest in agriculture by developing an Agriculture Strategy and Implementation Plan: *“To ensure we are making the most of this potential, we are investing \$150,000 in the development of a comprehensive Agriculture Strategy and Implementation Plan to grow this industry across the territory”* (Ramsay, 2014).

This plan is an important first step in encouraging agriculture growth in the NWT. The GNWT will control much of the NWT’s land and its distribution now that devolution is here. This gives NWT a great deal more autonomy to create a clear plan for agricultural land reforms. Knowing how and where land is available will be a huge stimulus to the agricultural sector, particularly if the land can be kept reasonably priced with an appropriate agricultural zoning to reduce land speculation. *“The heart of it is that we want to create a strategy for land use in the Northwest*

Territories,' said Territorial Farmers Association (TFA) president Jackie Milne" (The Hay River Hub, 2014).

A second major step forward is the development of municipal agriculture plans, as one respondent to the survey states *"We need to see local municipalities and communities developing their own agriculture plans and further, to see the GNWT develop their own legislation to support the continued growth and development of the industry"*. Fortunately, Hay River has taken the lead on developing a Municipal Agriculture Strategy *"The Hay River Agriculture Plan"* was completed in February, 2014. This strategy has three strategic goals:

1. Enable urban agriculture

Policies to remove barriers to the small-scale production of food within built-up areas of the Town, in ways that do not unreasonably interfere with other uses.

2. Designate agricultural lands

Policies to actively support the use of the land with the highest agricultural potential and protect its use so that it is used primarily (or exclusively) for the production of food.

3. Support agricultural industry development

Policies that promote access to additional land and other resources for the agriculture industry, both within and adjacent to the Town (Serecon, 2014).

Hopefully, the GNWT follows in the footsteps of the Town of Hay River and develops a plan that looks at the barriers to agricultural growth and develops strategies to get by them. *"The Northwest Territories Economic Opportunities Strategy developed industry profiles in the Winter of 2012-13 and agriculture in the NWT was summarized in this fashion."*

"Agriculture in the Northwest Territories is a small but emerging sector of the economy. Motivated by high food costs, positive contributions to lifestyles, local product diversity, and increased awareness of nutritional values, participation in local food production is increasing in most, if not all, communities in the NWT. Ranging from small community gardens to commercial greenhouses, regulated egg production and harvesting of wild edibles the local food production sector has grown dramatically over the past decade. The agricultural sector generates approximately \$8-10 million in income per annum in the NWT. The industry can be divided into three categories:

- *Small scale - community and market gardens;*
- *Commercial agriculture and large scale production; and,*
- *Commercial harvest of game" (excerpt Serecon, 2014).*

Generally though, not much thought has been paid to farming in the NWT, as it has in the south where agricultural subsidies and tax breaks help farmers to keep food prices lower *"While*

producers in the rest of Canada enjoy cheaper gas, insurance breaks and often lower taxes on cultivated land, the NWT has no similar provisions in place” (Hay River Hub, 2013).

It is also hoped that strategies include all aspects of agriculture including traditionally harvested goods.

”My vision of agriculture for everywhere but especially here would be very small scale, locally based initiatives, more community shared initiative such as open berry patches, more preservation of and working with wild food initiatives and foraging. Hunting and gathering, and preservation of resources for this, needs to be considered as an essential part of the food strategy for the territory.”

It is clear we can grow almost anything in the NWT, but we need to reduce the barriers such as access to land, high costs of inputs, training, poor soil quality and some of the other factors noted. One farmer in the survey suggests the potential that farming has:

“Communities can become sustainable in some products. Look at Norman Wells, we have a greenhouse, and grow potatoes, chickens and pigs. I sell everything I grow, there is a huge demand from camps, communities. People want fresh food that they know hasn't pesticides, herbicides, and they know who grew it. No reason not to do this elsewhere, more help and resources from the GNWT would help.”

Municipal and Territorial governments have an opportunity right now to develop strategies that will lead the NWT into a new era of food security, employment and economic development. The correct mix of funding, training, programs, and reduction of red tape will help to encourage not just small-scale market gardeners, but also the small but growing food industry.

“There needs to be a balanced approach to developing locally produced goods. It is important to ensure that there are both the organic local food movement and an industry that is growing and providing opportunities for Northerners. We would like to see as many of those involved in agriculture working together to support and encourage growth. We need to see local municipalities and communities developing their own agriculture plans and further, to see the GNWT develop their own legislation to support the continued growth and development of the industry. Each region has their own strengths and we must work together to capitalize on those.”

Hopefully, government gets it right when developing these strategies, and is able to follow up to allow agriculture to live up to its potential.

4.3 Greenhouses

The northern application of greenhouse technology is in its infancy, but there are good reasons to believe that greenhouses offer one of the key pieces of the northern agriculture matrix. Simple greenhouses can extend the growing season by several months, and more complex greenhouses can operate even throughout the winter (with a lot of energy inputs). As one of the respondents suggested *“I think greenhouses would be very good due to our short growing season nice to have*

that extra protection at the end of the season”. Greenhouses improve productivity for many crops, they reduce the risk of frost events, allow more crops to be grown, and they are very popular with people and the communities.

There are currently eight community greenhouses developed in cooperation with the GNWT’s Growing Forward program (GNWT Growing Forward, 2013). The Inuvik Community greenhouse is a unique example of the ingenuity of Northerners. The Community Garden Society of Inuvik converted the old Grollier Hall Arena into a community greenhouse. There are 74 - 10 ft by 4 ft plots and a 4,000 ft² commercial area, which covers operational costs. The Greenhouse season runs from late May to the end of September and under the midnight sun they have prolific growth (Inuvik Community Greenhouse).

Tomatoes, cucumbers, peppers and lettuce account for the overwhelming majority of crops grown in greenhouses, both globally and in Canada, because they produce the most revenue per square meter based on both price and yield (Agriteam, 2013). We didn’t ask specifically what people grew in greenhouses in NWT, but some respondents told us what they grew and the list includes: tomatoes, cucumbers, peppers, herbs, melons, honeydew, cantaloupe, watermelon, muskmelon, pumpkins, and tobacco.

Energy is perhaps one of the biggest hurdles with operating greenhouses. To extend the season and to grow bedding plants, and early season produce, energy is needed to keep greenhouses from freezing. This energy can be provided by diesel fuel, electricity, natural gas, propane or biomass. Energy is extremely expensive in the north and becomes an economic roadblock to greenhouse production. The energy crisis in Norman Wells (they are running out of reasonably priced natural gas) will impact agricultural production there. There are several small greenhouses in Norman Wells, and one operator wrote *“As there is no more natural gas available after this year in Norman Wells this will be the end of the greenhouses!”*

One option to the high cost of energy is for the government to negotiate a bulk agricultural electricity rate. Another is the use of biomass energy, which shows great potential for reducing energy costs and making greenhouses more viable. *“Biomass may also provide an opportunity to reduce energy costs which is one of the key economic barriers to greenhouse development in the north”* (Agriteam Canada, 2013).

Greenhouses require skills and training that are not available in some communities, which has, in some circumstances, been the downfall of well-intentioned projects. The proposed NFTI Farm School Campus intends to offer hands-on training and mentorship in greenhouse operation, creating the northern expertise necessary for successful commercial greenhouses.

“Human resources are one of the key constraints to Greenhouse production, and it is crucial that communities/entrepreneurs establish greenhouse systems with a level of complexity that matches the level of available skills and experience” (Agriteam, 2013).

Another potential application for greenhouses is growing tree seedlings (silviculture). With the development of a forestry industry in the South Slave being pushed forward by the potential of

wood pellet production. The GNWT's Forest Management Division is completing forest management agreements with First Nation groups. *"Premier Bob McLeod said the entire production chain, from harvesters to transporters, pellet producers and tree planters, would likely create around 600 jobs for the South Slave region"* (Northern Journal, 2014). Silviculture requires less complexity and has the potential to provide opportunities for technology transfer or symbiotic food based greenhouse growth.

"Tree seedling production requires less energy, less labour and is less technically complex than greenhouse vegetables which are all positives for northern greenhouses. There are existing First Nations communities that have production contracts for seedlings with nearby mills for reforestation. In this arrangement the mill provides the seed and agrees to purchase a set number of seedlings at an agreed upon price" (Agriteam Canada, 2013).

The report on understanding sustainable northern greenhouse technologies for creating economic development opportunities and supporting food security's final conclusion on greenhouse development was:

"Based on the completed analysis, the four most important factors that needed to be considered in the successful development of sustainable northern greenhouses are:

- 1. The skills and experience required to successfully run a viable and sustainable commercial greenhouse in the north.*
- 2. Governance issues in First Nations communities.*
- 3. Achieving high price and/or productivity levels.*
- 4. Energy costs and usage which are magnified in northern greenhouses given heating and lighting requirements in the cold and dark winter in northern latitudes.*

Successful greenhouses will have strategies for addressing these as well as other issues. However, there is no one single approach or model that will ensure success for all situations. Individual greenhouse enterprises will need to identify strategies that correspond to their own situation, optimize competitive advantages and overcome disadvantages" (Agriteam Canada, 2013).

4.4 Support for Small-Scale Gardeners and Training Opportunities:

NWT agriculture sector is dominated by small-scale farming: market gardeners, and prospective market gardeners. There seems to be a small burst of energy in the gardening sector currently which is being fueled by recent funding increases, training provided by NFTI, community gardens and the expansion of farmers markets. In order to take maximum advantage of all the interest and excited gardeners there needs to be more support given to local small-scale gardening.

There were a large number of comments on the support for small-scale farmers in the NWT, some positive and some negative. Here are a few comments about education:

- *“Accessibility, I'd like people to have access to the resources and knowledge necessary to believe that they can garden for themselves. Information specific to the challenges of gardening in an Arctic climate also needs to be more readily accessible”*
- *“Develop an agri-school”*
- *“Education on food quality from the land vs store. Open people's eyes about quality of food. Offering more courses through Aurora College, the band may hold small courses through Aurora College”*
- *“Would be nice to have more agricultural programs and workshops in the communities, as opposed to travelling out of the community to do these”*
- *“Knowing the right kind of plants, knowing your soils”*
- *“Lack of facilitation (and funding) for the creation of an NWT food security network – wider collaboration and understanding is called for to achieve sustainable food sources in the north”*
- *“Time and resources- slowly building up with the little resources I am able to build. Currently no funding to help backyard gardeners”*

The educational resources required for growing northern foods are available, but not yet readily available to all those interested. The Northern Farm Training Institute was mentioned several times and seems to be the answer to many of the educational issues raised in this survey. *“Continual development of Farm Training Institute to develop community role-models and leaders in the local food movement”*. Hopefully the NFTI campus is given the funding and government support that it deserves.

Another potential product that might be valuable is the development of a simple and easily readable guidebook to help market gardeners navigate the issues around land accessibility, soils, markets, how to manage farmgate sales, Health Canada regulations *“permits for processing meat product don't exist”*, packaging, what to grow, how to access funding sources etc. This kind of product may be a valuable educational tool for prospective market gardeners.

The Community gardening program has been effective in introducing people to gardening and getting gardens started, but a few respondents suggest that there needs to be more ongoing support for the gardens once they are established. *“Programs to construct community gardens need to be backed by training and ongoing support for families taking part”*. Another suggested that there needs to be better skilled people going out to the communities. *“Recent governmental, well intended initiatives, hiring summer students with no prior skills or training in the subject of growing and teaching has resulted in minimal positive impact in the communities”*.

Soil fertility is still a major issue for many small-scale farmers, and a program to help people test and improve their soil would be helpful to encourage small market gardeners. *“Most of the land*

here is permafrost, the soil is too high in iron & other minerals. You would have to make good dirt before you could even start to grow.”

There is a “*Perception that it is not worthwhile given our climate and soils*” to grow food in the north. Other barriers such as this quote on social pressures in Fort Smith provide an interesting slant on the barriers to agricultural growth.

“I know this might be different in a smaller community but in Fort Smith, there is limited land and infrastructure to support this. It would be a lot of work to get started. Further, in this town at least, the economy is so dominated by government jobs, such jobs are seen as highly desirable and there is relatively little interest or value in more private industry like that. There is no “farmer class”, as in social demographic with a cultural history of farming.”

Education and training are two of the main challenges in developing a growing and resilient agriculture sector. Training should cover all aspects of agriculture from land procurement, to planting, growing, business management to food preparation and preserving, as well as providing training to support related and value-added industries. GNWT has responded with new funding programs that provide funding to individual farmers, as well as businesses. But non-profits continue to provide the vast majority of training and education in the NWT (often with government money), and they will need continued financial support to ensure that people receive the training they need in the communities where they live.

4.5 Arsenic Pollution in Yellowknife

Arsenic pollution in soils in Yellowknife is an issue that has the potential to impact the growth of farming in the Yellowknife area. Giant and Con Mines spewed toxic arsenic from their roasting stacks for decades, and much of the fall-out from this pollution is still in the soils of the area. There was a 1998/99 study *Arsenic Levels in Berries and Soils from the Yellowknives Dene First Nation Traditional Territory*, completed as part of the Northern Contaminants Program of Indian and Northern Affairs Canada. The study concluded that berries growing in the City of Yellowknife and on mine sites had significantly higher concentrations of arsenic than did berries from other nearby sites that were known to be free of contamination (Davey, 1999).

Vegetables are assumed to pick up arsenic in much the same way as berries do, and it is unknown if the long-term effects of eating local foods with levels of arsenic higher than CCME’s recommended levels may pose a serious health risk to Yellowknifers. There was little mention of this in the survey, but it has the potential to be a serious health issue, and potential marketing problem. One thing that brought this issue to the forefront occurred in the summer of 2013 when the Yellowknife Community Garden received soil that had seven times the recommended arsenic limit from a city contractor. The contractor replaced the soil, but the issue remains that no jurisdiction regulates soil distribution “*Neither the GNWT nor the city currently regulates the sale of soil*” (NNSL, 2013).

There is a safety factor in the regulations and some complexities around the types of arsenic found in soils which provides some assurance to gardeners:

“Chief public health officer, Andre Corriveau, said the guideline limits for contaminants issued by the government usually incorporate a tenfold safety factor, so that the actual threshold for contamination is usually higher than stated. He also said in its naturally occurring state, arsenic is not nearly as harmful as arsenic trioxide, which is a bi-product resulting from the roasting process used in gold mining” (NNSL, 2013).

But, arsenic contamination is still a serious issue for homeowners, berry pickers, and gardeners in the NWT.

Ecology North’s Stimulating Commercial Berry Production Report suggests that the following steps should be taken to reduce arsenic contamination in orchards. Agriculturalists should perhaps be looking at their gardens in much the same way:

“Studies investigating arsenic concentrations in soils and berries indicate that a few steps must be taken prior to any site being selected for the commercial production of berries:

- 1. An orchard should not be considered near old mine sites.*
- 2. Arsenic concentrations in wild berries from any desired location must be tested prior to development of an orchard, to better determine what potential arsenic concentrations would be in orchard berries.*
- 3. Soil arsenic levels at the site must be tested. Ideally, soil arsenic concentration would be less than 12 ppm to meet Health Canada’s recommendations, but could be higher as long as berry arsenic levels are acceptably lower than the 0.1 ppm arsenic concentration limit.*
- 4. Orchard berries should be tested for arsenic concentrations, with a maximum acceptable concentration of 0.1 ppm.”*

There needs to be more study and knowledge of the potential for arsenic pollution provided to gardeners and people in Yellowknife who want to provide food to the local market. One option might be a program for people who want to get their soils tested for arsenic. This could run in co-operation with the Giant Mine Remediation Project, as the cost of metals testing in soils (up to \$250/sample) is prohibitive for most gardeners (NNSL, 2013). Another might be for the government to sample soils throughout the City and provide the results in a clear plain language form so agriculturalists can determine the levels of risk and make informed decisions about where/and how to grow their foods.

4.6 Nutrition North Program

The Nutrition North program was introduced on April 1, 2011 to replace the old Food Mail program. To be eligible for the program a community must lack year-round transportation, and

have previously used the Food Mail program. There are eleven NWT communities eligible for the full subsidy, and three eligible for a partial subsidy. The subsidy applies to healthy perishable foods that are shipped by air. The rates vary depending on the remoteness of the community, and are based on the weight of an item. Sachs Harbour has the highest rate in the NWT at \$6.10/kg.

This program has seen a fair bit of criticism, particularly in Nunavut, where food security and cost are serious problems. 62% of children in Nunavut lived in food insecure households, while the situation was a little better in the NWT with a rate of 31.6% (Tarasuk, 2013). Ministers of Northern Territories wrote a letter to the Government outlining their concerns in February 2012.

“The MLAs slam the program, which is supposed to make healthy food more affordable in remote northern communities. They say it has contributed to increased prices for many goods, has made it more difficult for people in the North to make personal food orders and has diminished consumers' ability to choose what they eat” (CBC North, 2012).

One respondent of our survey who grows potatoes in Norman Wells, has been indirectly affected by this new program. *“Nutrition North program has dropped the price of potatoes, and my potatoes aren't covered in the program. Price went from \$5/lb to \$1.50/lb”*. Because the subsidy goes directly to the stores and suppliers, as a result, generally only products sourced in the south are eligible for the subsidy. *“Nutrition North program undercuts farmers (is there any way to make provisions for farmers to get this?)”*. *“I used to sell into grocery store, but now I can't”*. This subsidy directly undercuts the hardworking NWT farmer who must compete with potatoes flown in from the south with a \$2.20/kg subsidy (in Norman Wells). Fortunately, there only seems to be one farmer who indicated that they are impacted by this issue, but at the very least this creates a disincentive for prospective farmers in remote communities. Those who lobby for farmers must push the politicians to solve this issue, so that those in small remote communities are able to access the program and compete with artificially lower priced competition from the stores.

4.7 Transportation of Agricultural Goods

The GNWT has a program to subsidize the transportation of food from community to community. This subsidy helps to pay for 50% of the costs of shipping food from community to community in the NWT. The Northern Food Development Program provides support to NWT food producers to defer a portion of costs to transport produce to NWT markets. The program covers 50% of the freight costs for transporting NWT produce from one community to another with a \$2,500 maximum limit (Northern Food Development Program, 2014).

The Norman Wells potato farmer noted in his response that he *“could feed all the Sahtu communities (with potatoes), but I can't afford to send food by plane to them.”* Therefore, communication of the program has perhaps not reached all the intended recipients. This farmer is not going to grow potatoes this year, for several reasons (weeds, to rest his land, etc.), not just the competition with Nutrition North and the cost of transportation, but he still has considerable

goodwill amongst Norman Wells residents, who will continue to support him as the quality of his product is good, and they know what they are getting.

High transportation costs also impact the movement of agricultural imports, such as machinery, and particularly soil amendments such as fertilizer and manure. Our potato farmer in Norman Wells took three years to build his soil into a productive medium, through inputs first of 19 tonnes of manure, and then ½ tonne/year of fertilizer. The fertilizer was more effective and cost less to ship by barge. To help with this, the Northern Food Development Program now includes funding for input freight assistance of \$0.30/loaded kilometer (feed, seed, fertilizers, compost and amendments) for farmers to assist with the high costs of farm inputs (Northern Food Development Program, 2014).

Soil is notoriously poor across much of the NWT, and if fertilizer, manure, and compost were available in small communities at a fair price it would make the production of gardens and farms many times better. The Experimental Farm in Fort Simpson in the 1950s did test sites with various levels of fertilizer and found that fertilizers with nitrogen, potassium and phosphorus greatly improved production. In tests on six crops fertilizer trials increased production by 3 times for potatoes, 4 times for cabbage, and up to 20 times for cabbage over control plots. One note of caution is that fertilizer should be carefully applied as excess application can eventually toxify the land and reduce production (Gilbey, 1953).

As one respondent envisioned, that the future of agriculture in the NWT could include more movement of goods from productive southern regions to more remote northern communities. *“High number of small-scale organic farms with small livestock across the Territories, larger fields and grain growing in South Slave Region, shipping produce from southern regions to the northern regions through barges.”* This is a great dream, and will hopefully be made possible with help from the GNWT.

4.8 Farmers Markets

There was a great deal of enthusiasm about farmers markets, likely a result of the successful re-launch of Yellowknife Farmers Market last year. There are currently only two farmers markets in the NWT, with limited sales from the Inuvik Community Greenhouse being a potential third. The Farmers market concept creates a simple and easy access point to the market that small-scale backyard gardeners can embrace. *“The YK Farmers Market has provided the perfect Avenue”*. The Farmers Market becomes a kind of market driven incubator for market gardens, and the broader agricultural industry. Polar eggs, Sapsucker Birch Syrup, and several fisherpeople also sold their goods in Yellowknife along with a commercial greenhouse, bread bakers, value-added producers making jams and salsas etc. and numerous small-scale gardeners. One agriculturalist noted *“I hope to see, northern foods in the grocery store (especially Non GMO) foods, more farmers markets, more people aware of what they are buying.”*

The Hay River Farmers Market is more established, and has played a key role in developing a market garden industry in and around Hay River. Developing a farmers market takes a critical mass of farmers or food harvesters, funding, a good location, a large enough market and, most importantly, a group of core dedicated volunteers. People love farmers markets and knowing where their food is coming from *“I would like to see more food being produced locally, and a*

farmer's market where vegetables can be purchased would be great". This respondent summed up their vision for the future in the NWT succinctly "grassroots... no gmos... community gardens... home gardens... more farmers markets". There is currently some new funding for farmers markets, to provide water/power supply, materials and supplies -- 50% to a maximum of \$2,500, for the first year of the market only. It is hoped that both Territorial and Municipal governments recognize the importance of the Farmers Markets and provides them with the support and funding they require to expand and flourish.

4.9 Funding Sources

Funding has grown considerably for agriculture in the NWT:

"The Government of the Northwest Territories is partnered with the Government of Canada in its delivery of programs for the agriculture sector. Under the banner "Growing Forward", it is delivering programs that are simple, more effective and tailored to the needs of the NWT's agricultural community. April 1, (2013) marked the official launch of the Growing Forward 2 (GF2) policy framework. GF2 is a \$3 billion dollar investment by federal, provincial and territorial governments, and the foundation for government agricultural programs and services over the next five years. The Canada – NWT GF2 Agreement aims to build upon the momentum gained over the past decade by investing \$6.1 million into the sector over the next five years" (ITI, Agriculture & Fisheries).

This program has already made a difference in the Agriculture sector, but it is not perfect as several respondents mentioned *"Administration of Growing Forward 2 funding is difficult and does not meet needs of people who want to grow food and who want to learn how to grow food"*. Another respondent noted *"It has proven to be difficult to obtain Growing Forward funding for well documented positive impact activities"*, this respondent also suggests that the short timelines and deadlines of this program impact the success of programs *"Governmental budgetary deadlines are impacting initiatives negatively as they do not follow time frames for optimal growing initiatives"*. These concerns are common in many government programs, and it should be noted that this criticism is limited to a few individuals, and the guidelines of the Growing Forward Program, appear to be relatively easy to understand and have relatively little paperwork compared to some other Government programs. Unfortunately, Industry Tourism and Infrastructure (ITI) house a dizzying array of funding pots, which can be confusing to the average farmer. A few of the funds that are available to the agriculture sector are highlighted below.

The **Northern Foods Development Program** is administered by ITI and offers support across all food production sectors, including agriculture, fisheries, wildlife harvesting and non-timber forest products. Under the guidelines a land-based applicant should have a minimum of 1 acre under production and be able to demonstrate commercial sales (although there are exceptions).

"Investment may include but not limited to:

- Pre-design, design, construction and expansion of facilities (greenhouses, storage facilities, washing/grading/packaging facilities, irrigation, and food*

processing facilities).

- *Introduction of new equipment and technology aimed at increasing yields in a cost effective and energy efficient manner.*
- *Land development costs including inputs such as fertilizer, seeds and soil.*
- *Specialized training.*
- *Marketing, promotion, product and packaging design and development.*
- *Food transportation costs.*

For activities related to agriculture:

- *Input freight assistance \$0.30/loaded kilometer (feed, seed, fertilizers, compost and amendments).*
- *Initial small livestock to a maximum of \$1,000.*
- *Small equipment materials and supplies \$200/acre plus applicable freight costs (Fencing, covers, hoses, small pumps).*
- *Alternate energy technology 50% to a max of \$5,000.*
- *Land preparation (based on \$1,000.00 per acre for primary cultivation/\$200 per acre for subsequent cultivation, allowed to be pro-rated) to a maximum of \$5,000.*
- *Greenhouse development or expansion (based on \$2.00 per square ft.) to a maximum of \$5,000.*

Marketing Support:

- *Market assessment 75% total costs to a maximum of \$1,500.*
- *Primary processing, (washers, grading equipment, small processing, packaging equipment) 50% to a maximum of \$5,000.*
- *Inter- settlement trade (max. \$2,500 per client applies to 3rd party supported freight costs).*
- *Farmers market -- water/power supply, materials and supplies -- 50% to a maximum of \$2,500, for the first year of the market only.*
- *Packaging and promotional materials max. \$2,500 per client”*
(Northern Foods Development Program, 2014).

Another funding program that promotes agriculture in the NWT is the **Agriculture Awareness Initiative:**

“This Initiative is a program that will promote the agriculture and agri-foods sector across the NWT and provide information to all residents on the benefits of agricultural development. The Program will provide funding to producers, commodity organizers, agribusiness and public and private agencies to develop and implement agriculture awareness and education activities. Those seeking funding will need to submit an application providing detailed information on the project, plan and objectives, proposed audience and indicators of success”
(ITI, Agriculture & Fisheries website).

The **Small Scale Foods Program** is also an ITI program which provides funding and support for community gardens:

“The Small Scale Foods Program enables the installation and establishment of self-sufficient community-based gardens and greenhouses in 30 communities throughout the NWT. Existing community gardens and greenhouses will be built upon and expanded while new initiatives will be established.

Community educational activities include agricultural workshops and seminars to educate the public on starting and maintaining a community garden.

This program is targeted at communities outside of NWT regional centres who would benefit the most from these initiatives and is administered and delivered by regional Economic Development Officers” (ITI, Agriculture & Fisheries website).

ITI also houses the **Support for Entrepreneurs and Economic Development (SEED)** funding is for small business development:

“The SEED Policy provides financial support for entrepreneurs looking to start a business or improve their capacity or skills as well as small communities seeking to expand their local economies. Funding is available in five categories:

- 1. Entrepreneur Support*
- 2. Sector Support*
- 3. Community Economic Development*
- 4. Micro Business*
- 5. Business Intelligence and Networking*

All NWT registered businesses are eligible for assistance under the Entrepreneur Support category” (ITI, Business and economic development website).

This is not an exhaustive list of funding sources, but is meant to provide some guidance to farmers and prospective farmers. Contacting your regional ITI office is likely the best approach should you be looking for funding for any agriculture related activity.

5 Conclusion

Agriculture in the NWT is largely an untapped industry with great potential. There is currently a limited agricultural sector, based primarily in the South Slave worth \$8 to \$10 million to the NWT economy. Historically, agriculture was an important part of the self-sufficiency of the north, but recently there has been a resurgence in interest in food sustainability and local food production. *“Self sustainability (even to a certain point) is a great goal, along with all the wild foods and resources”.*

The Land Use Survey that this report is based on collected information from a significant portion of the NWT’s agriculturally minded population. Although there is no knowing exactly how large this community is, there is evidence it is growing. The Territorial Government may have neglected the industry in the past, but there is evidence it is starting to realize agriculture’s potential for development and they are providing increasing funding to encourage growth in the sector. Non-profit organizations continue to play a leading role in education, promotion and training of agriculture in the NWT. Community gardens have introduced many to gardening, and farmers markets are creating an easily accessible market for those gardeners to expand and start selling produce.

Access to land is the major challenge to the growth of industry. Particularly in areas of unsettled land claims, land is simply not available (only one respondent in the survey had over 20 acres of land). Hopefully, with devolution and the soon to be completed Territorial Agricultural Strategy, some of these issues can be solved with innovative land use practices that provide affordable, long-term access to land for those who practice agriculture.

Other challenges include: the harsh climate, poor soils, lack of knowledge of soils, high transportation costs for foods, and farm inputs, the lack of government coordination, the potential for arsenic pollution in Yellowknife, the lack of knowledge of agriculture, and even competition with existing government programs like Nutrition North.

One of the final questions of the survey asked what is your future vision of agriculture in NWT? There were some really inspiring answers to this question that give hope that we will solve some of these issues and come out the other end with a healthy and productive agriculture sector:

“I hope to live long enough to see the NWT settle land claim issues and grow its agriculture and renewable resources sector to the extent that we become as self-sufficient as possible from Southern Canada for our food supply. In doing so, I hope that the cost of living in the NWT will become more affordable for everyone and that the food choices will be broader and healthier; which, in the end, should have a measurable impact on the health and quality of life for all its residents.”

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Appendix A:

Agricultural Land Use Survey

1. Please write your name (survey results/and names will not be published, but will help the Territorial Farmers Association to analyze the results)

2. What community do you live in (or nearest too)?

3. Why do you grow food?

4. Which of the following best describe you?

- Full-time farmer (make a living farming)
- Part-time farmer (supplement my living with farming)
- Hobby farmer (sell some produce, but do it for fun more than money)
- Keen gardener who would like to someday sell produce to others
- Happy to grow food on my own property/community garden to feed my family
- Have a plot in the community garden but no land of my own
- Other (please specify)

5. If you had the opportunity to expand your operation, would you?

- Yes
- No

Depends on?

6. Is the land you grow food on?

- Titled acreage
- Titled urban lot
- Leased acreage
- Leased urban lot
- Crown land
- Commissioners land
- Band or First Nations land
- Community garden
- Not sure

7. What is the total size of your land measured in acres including land not in production?

- Community garden plot
- Normal town lot (50ft x 100ft)
- Less than 1 acre (1 acre = 200ft x 200ft)
- 1-3 acres
- 3-5 acres
- 5-10 acres (10 acres = 4 hectare)
- 10-20 acres
- 20 or more acres

8. How much of your total land is arable? (can you grow food on)

- 0-25%
- 25-50%
- 50-75%
- 75-100%
- 100%
- N/A Community garden

9. How much of this arable land do you grow food on?

- 0-25%
- 25-50%
- 50-75%
- 75-100%
- 100%
- 100% of my community garden plot

10. If you had easy access to more arable land, would you expand your production?

- No (skip to question #12)
- Yes

If yes, what would your ideal farm size be in acres?

11. What, if any, may be obstacles to accessing more arable land? (mark all that apply)

- Not interested in more land
- Financial cost
- Road access to arable land is limited
- Unsettled land claims make land use decisions difficult
- No good arable land nearby
- Unclear of process to access land
- Leases are not available
- Land not available to buy
- Land too expensive
- Do not want to invest money into leased land
- Zoning issues or other permitted uses

Other reason(s)

12. What are the challenges to broad agricultural growth in the NWT?

13. What are the main uses of your land? (mark all that apply)

- Small live stock (such as chickens, rabbits, goats)
- Large live stock (such as bison, cattle, horses)
- Hay or other animal feed
- Grazing
- Grains and cereals
- Fruit and berries
- Outdoor produce/vegetables
- Greenhouse (flowers)
- Greenhouse (seedlings)
- Greenhouse (hot house produce)

Other (please specify)

14. What crop(s) do you always plant each season? and why? (Please be specific)

15. What products have you grown that you are particularly proud of, or that you think may have pushed the perceived northern range of? (feel free to explain)

16. Are you a commercial grower/farmer? (do you sell produce)

- Yes
- No (skip to question #19)

17. How many years have you been farming commercially?

a) In general:

b) In the Northwest Territories

18. What motivated you to become a commercial farmer? (mark all that apply)

- Having local organic fresh food for own use
- Career choice
- Came from farming background
- Just selling extra
- Stuff just grows so well, I kept expanding

Other (please specify)

19. Have you come across any barriers to selling your agricultural produce? (mark all that apply)

- No I have no interest in selling anything
- I don't think there is interest in my products
- I wouldn't know where to start
- Unsure of health regulations
- There is no avenue to sell food products in my community
- Local traditions don't encourage selling products from the land
- I can't compete with the prices at the grocery store
- I don't have access to packaging or storage
- I don't have the resources/capacity to produce enough to sell

Other (please specify)

20. What is your future vision of agriculture in the Northwest Territories?

21. One last request can you recommend a few other people in your community who are very active gardeners, or farmers? (and contact info if possible)