

**Rebuilding food security in Garden Hill First Nation  
Community: Local food production in a northern remote  
community**

By

**Malay Kumar Das**

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Clayton H. Riddell Faculty of Environment Earth and Resources  
Natural Resources Institute  
University of Manitoba  
Winnipeg, Manitoba R3T 2M6

## ABSTRACT

Garden Hill is a remote fly-in First Nation community in Northern Manitoba with a very high incidence of food insecurity. This study examined food security and food sovereignty of the Garden Hill community by reinvigorating an environmental stewardship-driven food system. This research used community-based participatory research approach, and both qualitative and quantitative research tools to generate data and information. Findings reveal that only 3% households are food secure, 66% households are moderately food insecure, and 31% households are severely food insecure. Once self-sufficient with foods gathered from the local, natural foodshed, the community experienced a radical shift in food habits with a greater dependency on processed market foods. Such transformation in food habit and dietary balance, coupled with limited economic opportunities, made the inhabitants increasingly food insecure and vulnerable to multiple health complications. This research demonstrated the community has potentials for local food production. A pilot agricultural farm collaboratively established with a local social enterprise *Meechim Inc.* grew local food to help address the food insecurity situation.

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## CHAPTER 1: INTRODUCTION

### 1.1 Background

Canada is well known as one of the world's leading producers and suppliers of high quality foods. It is the sixth-largest exporter of agriculture and agri-food products in the world and total value from its export of agriculture and agri-food products is \$40.3 billion (Agriculture and Agri-Food Canada, 2013). However, the latest report on household food insecurity in Canada (excluding Manitoba, British Columbia, and Yukon) revealed that 1.3 million households were food insecure in 2014 (Tarasuk et al., 2016). Canadian Community Health Survey in 2012, in which all the Canadian provinces and territories participated for the last time, found that 1.7 million households, or almost one in eight households in Canada, experienced various degree of food insecurity (Tarasuk et al., 2014).

In terms of individual food insecurity, 4 million Canadians were food insecure in the same year. Among them, 1.5 million were children. That indicates, one in every eight Canadians and in the case of children, one in every six Canadian children did not get the amount and quality of food they wanted during 2012 (Tarasuk et al., 2014). The scenario is more severe in the cases of Northern Manitoba communities. Recent research found that food insecurity rates in Northern Manitoba Aboriginal communities are eight times higher than for Canada as a whole (Thompson et al., 2011a).

In 2009-2010, researchers from the University of Manitoba conducted an evaluation survey of 536 households in 14 Northern Manitoban Aboriginal communities and found that 75% of the surveyed households were deprived of a regular healthy diet (Thompson et al., 2012). According to the same survey, Island Lake communities (Wasagamack, Garden Hill, Red Sucker Lake and St. Theresa Point), being fly-in communities, had the maximum food insecurity rates

among the 14 communities. These communities are very rich with natural resources but their economic condition is impoverished (Thompson et al., 2012). The Indian Act and colonial policies reduced the decision-making power of the communities and now their government finances are co- managed or third-party managed (Ballard, 2012). Their placement on the crown's reserve land resulted in them being alienated from their own ancestral land (Ballard, 2012). Economic as well as regulatory barriers make it difficult for the communities to get their traditional foods eventually resulting in limited access to adequate food to live healthy (Thompson et al., 2011a, 2012).

Since 2005, government took different policies and programs to reduce food insecurity in Canada including nutrition support for vulnerable groups, child poverty reduction strategies and employment programs (PROOF, 2016). In addition, there are some non-government community oriented initiatives like food banks, meals or snack programs, community development programs that includes Community kitchens, community gardens, farmers' markets, and good food boxes (PROOF, 2016). Still in Northern Canada, food insecurity rates have increased over time (Tarasuk et al., 2016). Capacity building of communities, particularly in food production might solve this problem. Creating community based local food system can significantly reduce food insecurity in communities (Dunbar et al., 2009).

When interviewed, elders affirmed that even two decades back, the communities were self-sufficient and had enough access to and availability of traditional food to feed the community members (Thompson et al., 2011a). Now many barriers such as legislative barriers, increased cost of fuel and other materials, adverse effects of developmental projects on natural resources, and cultural colonization negatively impact the traditional food supply. This research sought to understand the current food system and potential for self-reliance in local food

production of Garden Hill First Nation, one of the four First Nations under the Island Lake Tribal Council. In addition, taking a community empowerment approach, this research aimed at encouraging and involving local people in agriculture and livestock production to make the community sustainable in their food production.

## **1.2: Purpose and objectives**

Under an on-going development project, the overall goal of this research was to increase the food security as well as food sovereignty of Garden Hill (GH) First Nation community by reinvigorating a food system based on environmental stewardship and local resources. The study aimed to explore the physical, social, financial, human, and natural capitals of the communities; analyzed national data, and integrated opinion of community members to build a food shed model for better and more resilient food economy and food sovereignty. Dependence only on the traditional food sources might not be considered enough to fulfill the total food requirement of the community, but utilizing the optimal production potential of traditional food, increasing local food production, the gap can be minimized.

The objectives of the study are to:

1. Measure household food insecurity of the community and compare it with previous research.
2. Analyze and map the local food production potential compared to need.

## **1.3. Research design**

Garden Hill (GH) First Nation community was my research area (see Figure 3.2). The community is located on the north-east region of Manitoba. It is a small community with lakes and pristine environment in the nearby areas. It is a very remote community with poor

transportation and infrastructure. GH is geographically far-off; can only be accessed by plane year-round and by ice road after freeze-up in the winter.

This study used Community-Based Participatory Research (CBPR) approach. Success of a research in Aboriginal community significantly depends on cordiality of response and involvement of community people. Applying participatory method is considered a key to success of research in Aboriginal community (Boston et al., 1997; Davis and Reid, 1999; Dickson and Green, 2001; Macaulay et al., 1998; Potvin et al., 2003). CBPR helps marginalized First Nation community to develop its own appropriate solution to fulfill their proper nutritional needs (Danis, 1992). The influences of a social science research on the study population might be positive or negative depending on who controls the study process (Guyette, 1983, Hall, 1979). CBPR provides the community with total control of information and decisions about their lives (Bopp and Bopp, 1985; Stull and Schensul, 1987). CBPR has three major goals: research, action and education (Hall, 1992 *cited in* Minkler and Wallerstein, 2008). Respect for the individual and human interaction is the center of CBPR (Danis, 1992).

CBPR aims to bring about some positive changes in communities and empower communities (Danis, 1992). According to Bopp and Bopp (1985), CBPR helps the Aboriginal communities to use their own cultural knowledge and wisdom in planning and developing program that is best suited for their own betterment. For equal rights and participation throughout the research process, this study practiced CBPR with OCAP (Ownership, Control, Access, and Possession) principles in working with First Nation communities (Schnarch, 2004). The study was conducted in a manner where all indigenous and non-indigenous participants and organizations had equal involvement through-out the research process including designing, planning, decision making process and ownership of the research outcomes (Israel et al., 2008).

CBPR was done in a way where it integrated findings of household food security survey, key informant interviews, focus group discussions, and semi-structured interviews. Also, this study used secondary data from multiple sources. Key informant interviews along with the secondary data sources helped to assess the potential of the community to produce different traditional and locally produced agricultural foods. The focus group discussion and open-ended interviews helped to develop a richer understanding of the socio-cultural, spiritual, economic, and infrastructure settings of the community.

#### **1.4. Research significance**

This research significantly contributes to understanding the existing food sources as well as the demand for the food to maintain the daily healthy living of the GH community members.

Through exploring all the possible sources of local and traditional foods and the community's production potential, this study helps to determine possible ways to minimize the gap between the supply of and demand for healthy foods. In addition, analyzing community's assets and barriers for local agriculture can contribute to building capacity, developing self-sufficiency in food production, and creating employment opportunities in the remote fly-in community.

This study promotes a sustainable local economy emphasizing traditional food harvesting and processing and local food production. Moreover, it considered the physical, socio-cultural, natural, and human assets of the community in relation with food security. The area of the study has an abundance of natural resources; however, economic conditions are poor (Thompson et al., 2012). This research provides a possible means to diminish the food insecurity problem of the community in socially and culturally appropriate ways without hampering the ecological diversity. It helps to invigorate the traditional knowledge and socio-cultural practices in food production, processing, and consumption. As a long-term consequence, the study helps to build a

well-functioning food production system in their own traditional ways which is vital in the context of a host of concerns in the global industrialized food system (Pappas et al., 2011).

Can the GH community feed itself in a sustained manner? This was surely a key question not only for the GH community, but also for all other First Nation communities now entrenched with severe food insecurity. This research explored the question for a small GH community. But, it will surely help to explore the limitations and opportunities to apply it in a greater scale including other First Nations and Aboriginal communities.

## CHAPTER 2: CONCEPTUAL FRAMEWORK

### 2.1. Food Security and food sovereignty

Globally, food security continues as the most vital issue when we discuss the issues of human existence and well-being of the poor people of the societies across cultures. Access to adequate healthy food is the fundamental right of every living human being. The ‘right to food’ is both a human and legal issue that ensures the right of an individual to live with self-esteem ( Food and Agriculture Organization [FAO], 2009). The concept of food security has changed over time. Since the World Food Conference held in 1974, food security analyses had a serious concentration from global and national scales down to household and individual scale (Maxwell 1996). Food security is a potential indicator to assess household’s as well as an individual’s state of well-being (Anderson, 2009). Even before the concern for ‘food security’, article 25 of the Preamble of the ‘Universal Declaration of Human Rights’ acknowledged food as basic right for all human being (General Assembly of United Nations, 1948). In the initial stage, the term ‘food security’ simply referred to the availability of food for eating (Anderson, 2009). Later, the word was used to indicate access to sufficient food to fulfill the demand for calories. But these concepts are very narrow, as availability does not mean accessibility by all and enough calories does not indicate a healthy diet (Anderson, 2009).

In the 1970s, food security was described by most of the authors and researchers as everyone’s accessibility to sufficient food to live healthy. The Food and Agriculture Organization (FAO) broadened this concept by adding the components of nutritional value and culturally-appropriate food preference to it. According to FAO (1996) food security prevails *“when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy*

*life*". Availability, accessibility, acceptability, adequacy, and action are the five universal pillars of food security. In the case of Indigenous communities, country food harvesting and sharing is considered a sixth pillar (Power, 2008 *cited in* Thompson et al., 2012).

In addition to adequate supply of foods, we observed a shift in focus from 'adequate supply' to 'nutritional sovereignty'- a state where people can produce sufficient nutritious and culturally appropriate food for themselves (Sagar et al. 2004). From the theories of Entitlement put forward by Nobel Laureate Amartya Sen, we know that food commodities can be available in a particular area even in acute food crises situations; this does not necessarily correspond to the idea that food is affordable to majority of the poor people in that area. Thus, food insecure situations are about *relationships* of individuals to the commodity groups, and hence, food insecure conditions translate readily to one's ownerships/rights over food. This ownership relation over food commodities is one kind of much-talked 'entitlement' relation and system within which the problems of food insecurity are to be viewed and analyzed. Notable here, the concept of food insecurity is essentially a concept of inequality and relative deprivation too as the distribution of resource can make a substantial dent on food security in most societies (Sen, 1986).

We can measure food security at global, national, community, household, and individual levels (Anderson, 2009). There are debates regarding how the level food security should be measured and analyzed (Maxwell, 1996). Household food security has been used mostly as an operational concept to measure food security or success of the different stages of programs, projects and policies (Anderson, 2009). Good global and national level food security grossly calculated from food production and supplies does not necessarily ensure household or individual level food security (McCalla, 1999). A food secure household can afford enough

healthy food for its members as and whenever needed. This study also uses household food security pattern as a unit of analysis. Consideration of household food security as unit of analysis in this research helps to understand the challenges and opportunities of the households of the Garden Hill First Nation community in combating high food security rate in the community.

In a similar conceptual background, food sovereignty is “*the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems*” (International Planning Committee for Food Sovereignty, 2007:1). Food sovereignty movement is rooted to peasant and Indigenous organizations that struggle for safeguarding their territories (Torrez, 2011). This is critical for the Northern Manitoba communities because access to their own territorial land has been historically compromised, as colonizers grabbed their ancestral lands for the sake of economic development at the cost of local environment. Scholars agree that multi-scale institutional structures and processes of governance, historically guided by colonial policies and bureaucratic attitude, failed to create a congenial atmosphere in which Aboriginal peoples can invigorate their own ways of empowerment and sustainable livelihoods. FAO (2009) recently added another dimension to food security issues. The organisation mentions that for Aboriginal people cultural dimension of food security is inevitable; for them it is not just for nourishing body, it is rooted to their socio-cultural embeddedness also. Cultural acceptability of food is indispensable to shaping indigenous peoples’ lives and indigenous identities.

### **2.1.1 Food security in Canada**

In Canada, food insecurity is considered as a major public health issue and an indicator of quality of life and well-being (Tarasuk, 2005; Health Canada, 2007). In 2012, ‘the United Nations Special Rapporteur on the Right to Food’ mentioned Canada’s food insecurity,

especially among the Aboriginal communities, to be appalling. According to the Canadian Council of Academics (CCA, 2014), food insecurity in Canada varies with regions and Northern First Nation communities are facing severe food insecurity. The CCA found out that in 16 Aboriginal communities in the Northwest Territories, more than 90% of the respondents experienced symptoms of severe and moderate food insecurity because of their financial constraints to buy foods (CCA, 2014).

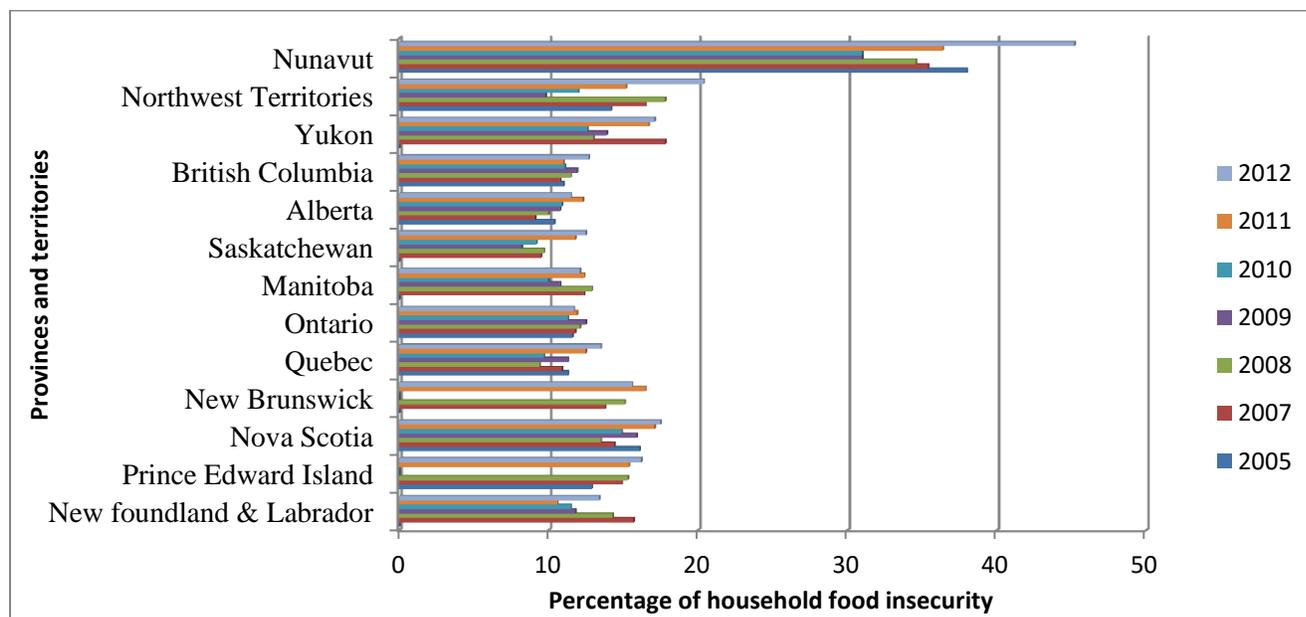
PROOF's report showed that though Canada is able to overcome the economic recession, still it is struggling with the persistent high food insecurity rates (PROOF, 2012). Food insecurity in Canada, a member of G8 countries, was apparently invisible before the 1980s. During the early 1980s, for the first time food insecurity came into light as a problem in Canada (Tarasuk, 2005). At that time, different food assistance programs were taken by community groups to battle the problem. Since then, the food insecurity rate has risen even though different assistance programs were taken by different community groups along with different initiatives by government (Tarasuk, 2005).

According to the Canadian Association of Food Banks, in 2004, the number of Canadians who used food banks in March 2004 was 841,640 which were less than half its first estimate in 1989 (Tarasuk, 2005). 46.8% household food insecurity in Nunavut indicates Canada failed to achieve significant success in reduction of food insecurity, despite immense efforts in measurement and monitoring since 2005 (Tarasuk et al, 2016). The food insecurity rate was highest for Black and Aboriginal households. Food insecurity rate among Black and Aboriginal households was 28%, almost 15% higher than the national average in 2012. Manitoba participated to household food insecurity measurement for the last time in 2012. 55,800 households were food insecure in 2012 that represent more than 12% of the total households. For

children, situation was even worse. 17.5% children were living in food insecure household in the same year(Tarasuk et al, 2016)..

Poverty and associated food insecurity in the Northern communities relates with their dietary habit of having less fruits and vegetables, and manifested through several indicators ranging from but not limited to: obesity, heart disease, anemia, multiple types of diabetes, hypertension, stress, depression, lower body resistance for disease, dental caries, and other chronic conditions which altogether indicate the necessity of adopting a holistic approach to food security and health care needs (Che and Chen, 2001; Rainville and Brink, 2001; Vozoris and Tarasuk, 2003; McIntyre et al., 2000; Willows et al., 2012). Che and Chen (2001) found that food insecurity is positively correlated with obesity. According to their study, adults in food insecure households are 1.5 times more vulnerable to obesity than those from food secure households.

However, Vozoris and Tarasuk (2003) developed different conclusions when they controlled some of the compounding variables. They found no relation between household food insecurity and obesity in case of women and lower odds for men from food insecure households. Individuals of food insecure households usually have worse physical, mental, and social health in comparison to those from food secure households (Che and Chen, 2001; Vozoris and Tarasuk, 2003). According to McIntyre et al. (2000), children in households characterized by food insecurity are more likely to report poorer health than children in food secure households. After controlling the confounders such as age, sex, education, and household income, Vozoris and Tarasuk (2003) showed that members of food insecure households had poor performance in their functional health and activities, higher level of distress and depression, as well as limited social support.



**Figure 2.1: Household food insecurity- Canada, 2005-2012**

Data Source: Canadian Community Health Survey (CCHS), 2005, 2007, 2008, 2009, 2009, 2010, 2011 and 2012 as stated in Tarasuk et al. (2014).

Studies show that household food insecurity has adverse effects on women’s physical and mental health (Laraia et al., 2006; Siefert et al., 2004; Gray et al., 2005). The level of stress is likely to be more on pregnant women from marginally secure and food-insecure households than pregnant women from food secure households (Laraia et al., 2006). As explained by Pheley et al. (2002), when a household suffers from food insecurity, it has to compromise its values and norms by altering its eating patterns, interrupting household dynamics, and adapting unethical ways to manage foods that intensify the stress and anxiety levels. Parents usually hold the primary responsibility to meet the dietary need of their children. Their incapability in doing so makes them vulnerable to a lower social standing and mental illness. Moreover, this might lead to borrowing money from others to buy food, selling valuables of the household, stealing, or adopting other illegal means (McIntyre et al. 2003).

Household food insecurity in Canada is directly related to household income (Tarasuk, 2005). Households with poor income often show severe food insecurity (Che and Chen, 2001;

Vozoris and Tarasuk, 2003). Among households with poor financial assets, any fluctuation in income level significantly affects the household food security. Changes such as additional members to the family, expulsion from work, and reduction in the ability to work due to diseases or chronic health problems have negative impacts on household food security, whereas an increase in income by additional members in labor force has positive impacts on food security status of the households (McIntyre et al., 2001).

Households that rely on welfare incomes are more likely to be food insecure (Tarasuk, 2005; Tarasuk et al., 2014). According to the report of NPHS, in 1998-1999, 58% of the social assistance recipient experienced some degree of food insecurity. The situation remains nearly same. Seven in every 10 households with major household income from social assistance experienced some level of food insecurity in 2012 (Tarasuk et al., 2014). Vulnerability to food insecurity increases if families have children less than 18 years of age (Tarasuk et al., 2014). The food insecurity rate is higher for households with single mothers. Households of Black and Aboriginal families also show higher prevalence of food insecurity in Canada (Tarasuk et al., 2014).

### **2.1.2 Food security in Canadian Aboriginal population**

Though national figure for household food insecurity slightly declined to 12% in 2014 from 13% in 2012, food insecurity in Canada's North (Nunavut 46.8% and Northwest Territories 24.1%) increased and reached to highest since monitoring began in 2005. Research revealed that being an Aboriginal increases the likelihood of food insecure by 25.7% (Tarasuk et al., 2016). Among Aboriginal households in Canada, 28.2% households were food insecure during 2012, which is more than double the national average of 12.6% (Tarasuk et al., 2014). Still, this clearly underestimates Aboriginal food insecurity as the sample of the study excludes the Aboriginal people living on reserves or Crown Lands (Thompson et al. 2012). In Canada, almost half of all

First Nations people live on reserves and they show high level of susceptibility to food insecurity (Tarasuk et al., 2014). One recent survey ( $n=533$ ) conducted with 14 different Northern remote indigenous communities revealed that 75% of the respondent adults and/or children experience food insecurity, and 33% and 42% of them experience severe food insecurity and moderate food insecurity respectively (Thompson et al., 2012).

The food security of the First Nations depends on their relationship to Mother Earth and its productivity (Thompson and Lozecznic, 2011). *The Indian Act* and other imposed systems of the settlers interrupted the traditional, social, institutional, cultural and spiritual practices of Aboriginal peoples, which had adverse effects on their food security. A study in 2011 revealed that 30% of Aboriginal people lived in food-insecure households (Willows et al., 2011). Those Aboriginal people with severe food insecurity showed poor general, mental, and social well-being. Obesity and type 2 diabetes are two major problems in Canada's Indigenous population and the incidence is revealing an increasing trend over last two decades (Fox et al., 1994; Pioro et al., 1996). In the Aboriginal communities across Canada, obesity rates are 2.5 times more prevalent than the rest of the non-Aboriginal population, and such health concerns accompanied by a general lack of specialist care in remote areas reduce their life expectancy by 5-6 years lower than other non-Aboriginal populations (Barbeau et al., 2015, *cited in* Dillabough, 2016). Not only adult, significant number of indigenous children and adolescents in Canada are now suffering from obesity and type 2 diabetes are linked with unhealthy dietary habits (Dean, 1998; Harris et al., 1996; Dyck and Cassidy, 1996; Gittelsohn, 1998).

Some of the causes of high food insecurity among Aboriginal people are higher levels of poverty, less education, less labor force participation, increase number of children within household, dependency on social assistance and welfare (McIntyre et al., 2000 and Che and Chen, 2001). Food price and access to all-weather road also matter for an income-deficient

Northern Aboriginal community. Study conducted in Northern Manitoba revealed that standardized grocery lists cost varies greatly with communities' access to road and other public transportation system. Standardized grocery lists cost is highest in fly-in community and least in stores in Southern Manitoba. There are also questions about the quality of the food items, and at times, food supply chain breaks down due to harsh weather in the North. Despite the fact that food dealers receive subsidies for freight, prices of basic food is almost 1.4 times more and fruits and vegetables is about 1.8 times more (Synthesized from Thompson et al., 2012).

Dillabough (2016) reports that current policies in Canada are not adequate in addressing food security in the Northern region of the country. She recommends undertaking a national food policy initiative, finding out options for alternative transportation options, re-evaluating the eligibility criteria for Nutrition North Canada, improving research data with inclusion of cultural determinants to food security, and supporting long-term plans to boost up local food production systems (Dilabough, 2016).

## **2.2 Foodshed analysis**

Foodshed and watershed are similar notions. It can be helpful in understanding the food distribution in a food chain and planning for new and different food systems other than conventional food systems (Peters et al., 2008). Walter Hedden, author of the book "How Great Cities Are Fed" first introduced the concept of foodshed in 1929. He mainly focuses on the economic aspects: what factors are associated with food production in the place of origin, mode of transportation, and consumption where they are being consumed (Peters et al., 2008). In 1921, when New York City was threatened by a nationwide railroad strike, the authorities realized that there was no reliable information on the food system for the city.

This situation ultimately led to the concept of a foodshed: where food is produced, how it is carried, and where and how it is consumed. Later many researchers and authors produced different concepts of a foodshed. As stated by Getz, a foodshed helps to understand the mechanism of how food systems work (Getz, 1991). Getz found that understanding of the concept helps the growth of suburban and ex-urban agriculture where foods are produced for city dwellers. Kloppenburg et al. (1996) described a foodshed as an alternative food system that is locally reliant with relatively less negative impact on agriculture. Peters et al. (2009) offered the geographic idea of a foodshed. According to them, a foodshed represents the area required to feed a certain population center and ‘foodshed analysis’ can be a significant tool for understanding all possible sources of food for a certain area and the factors involved with food production, distribution, and consumption.

Historically, people established communities in areas around which food sources were available to feed them. Even when agricultural systems developed, they formed population centers surrounding agricultural land (Pothukuchi, 1999). So a century ago in human civilization, the foodshed was mainly local. But it has changed and expanded over time. With the development of communication and transportation, as well as industrialization of the agricultural sector, it eventually became global. Food products from industrialized or semi-industrialized agriculture travel thousands of miles before they reach our dinner plates. The average distance travelled for beef is 5770 kilometers and average distance travelled for tomatoes is 2800 kilometers (Pappas et al., 2011). But, for sustainable economic growth, it is necessary to re-localize and de-industrialize our food system. Thus, the foodshed starts to be local again (Blum-Evitts, 2009).

### **2.3 Traditional food, local food and sustainability**

In recent years, locally produced food is gaining popularity because it is tastier, more nutritious, and beneficial for the local economy and environmentally friendly (Hopkins et al., 2009). The inclusion of the word 'locovore' in the New Oxford American Dictionary in 2007 also indicates its increased significance in the present day. As stated by Blum-Evitts (2009), the word 'locovore' denotes "*individuals strategically opting to purchase and consume foods that they are growing, buying from local farms, or securing from alternative local sources rather than from the supermarket*".

Global climate change, increased prices for fossil fuel, and rapid depletion of natural resources are causing people to think about producing food locally (Hopkins et al., 2009). Present agricultural systems as well as global food systems are largely dependent on oil consumption, which makes them highly vulnerable. In the USA, to provide one calorie on the plate, the food system has to burn up to 10 calories of fossil fuel (Giampietro and Pimentel, 1993). Peters et al. (2008) argued that 'localness' has a strong association with sustainability. A good deal of literature argues that local food systems are more ecologically more sound than global food systems (Pappas et al., 2011; Peters et al., 2008; Hopkin et al., 2009).

First Nations Communities have been living in close connection with nature from historic time (Paci et al., 2002). They have a very rich heritage of ancestral knowledge of their native food and their ecosystem (Kuhnlein et al., 2006). In their traditional way of life, First Nation people largely rely on the foods that are available locally. Hunting, fishing, trapping and gathering are integral parts of their subsistence livelihood systems. They have been using natural resources in a very sustainable way since time immemorial (Paci et al., 2002). Their rich set of traditional ecological knowledge can potentially benefit themselves as well as privileged

industrial world (Kuhnlein, 2006). A traditional foodshed model can solve the food insecurity problem of the communities without hampering the integrity of their ecosystem.

To achieve food sovereignty and reduce food insecurity, First Nation communities require more access to traditional foods and locally initiated food programs (Socha et al., 2011; Thompson et al., 2012). The way people grow, harvest, eat and share food truly represents how they value themselves, their community and culture (Peters, 1997). Cultivation, processing and distribution of food not only influence an individual's health but also the environmental, social and economic health of their communities (Feenstra, 1997). Community-led food activities show positive effects on all five livelihood assets (social, financial, human, natural and physical) and improve the food sovereignty of the community (Thompson et al., 2012).

#### **2.4. Community economic development effort**

So, obviously question arises: what is the best possible way(s) to sustain and feed the Northern fly-in communities where households are poor, and the compounding nature of food insecurity gets worse because of some attributes like: retail prices are very high given the geographical remoteness and higher price associated with supply chain, a very limited choice of perishable foods, extremely limited purchasing capability due to higher incidence of poverty, and a declining trend in the use of local country foods (Northern Food Price Steering Committee [NFPSC], 2003; Thompson et al. 2011c). In the face of all these grim realities and the existing commercial food production and distribution system, some community-based food production efforts would be considered ideal in addressing local food insecurity, vis-à-vis community empowerment (Thompson et al., 2012). Keeping the issue of harsh weather and short grow-out period, greenhouse technologies and the global warming trend (expected to warm Northern

regions at double rate compared to elsewhere in Canada, resulting in extra 30-45 additional grow-out days) might appear as a boon for the Northern communities (Dillabough, 2016).

Policy maker must support remote and poor indigenous communities to build socially equitable and ecologically sound local food production systems so that indigenous communities can produce their own food instead of importing food from other places (Thompson et al., 2012). Worthy of mention here, British Columbia's Community Food Action Initiative makes it mandatory for all Health Authorities to engage local people in developing Food Security Plans including details of financial support needed, community gardens, access to local farmers' markets, community planning initiatives, building community capacity, community food assessments, and the development of local food charters and policies in their community (BC Health, 2012, *cited in* Thompson et al., 2012).

The very essence of such community-based food production system should be tuned to the indigenous worldview of *Minobimaatisiwin*, an Anishinaabe word referring 'good life' or 'continuous rebirth' requiring incorporation of indigenous knowledge system in planning for the food production system, while simultaneously maintaining reciprocal relations with immediate ecosystem and responsibilities to earth (LaDuke 2002: 79, source *Ibid*). The historical political structures resulting in displacement, relocation and urbanization of First Nations communities eventually caused physical disconnectedness from their traditional lands and an increased reliance on high-cost processed foods at the expense of their health and well-being (Kuhnlein and Receveur, 1996, *cited in* Dillabough, 2016).

Commercial fishing and ancillary industry could be one of the key drivers for economic development in the Northern Manitoba. Commercial fisheries of the region caught two third of the total provincial catch by weight in 2006- 2007. Unfortunately, many First Nations commercial fishers deficient in up dated technologies and resources (Northern Development

Ministers Forum, 2010, *cited in* Thompson et al., 2012). Mentionable here, historically these Aboriginal fishers adopted resource-friendly locally-appropriate *de facto* fisheries management approach in which both commercial and subsistence fishers co-existed through mutually benefitting spatially and temporally varied fishing (Islam and Berkes, 2016). Almost every aspect of fisheries management (ranging from quota setting, gear selection, species selection, mesh size and fishing season regulation) is now controlled by Department of Sustainable Development (previously Manitoba Conservation and Water Stewardship of the Government of Manitoba) and the sales of the produce are almost exclusively regulated by Freshwater Fish Marketing Corporation (*Note*: Garden Hill Fishery obtained license to sell pickerel to a business entity in Ontario), which synergistically put adverse effects on food sovereignty and community economic development.

## CHAPTER 3: METHODOLOGY

### 3.1 Introduction

The purpose of the study is to examine local food production in order to enhance food security and self-reliance in Garden Hill First Nation, with the focus being on the process of developing a sustainable, and socio-culturally appropriate local food system. This chapter explains the approach and research objectives, the research design, and the tools and techniques applied to gather data and information, and the way information was analyzed to stand with the research objectives. This research was undertaken from the period of 2013 to 2015 with the Garden Hill First Nation community of the Northern Manitoba.

Development workers use and adopt their own methods and approach to gather data and information; scholars undertaking participatory approach believe that in society and nature, multiple-constructed realisms do exist and it is quite unreasonable to distinguish between the root causes of issues and effects of those on respondents (Guba, 1990). Participatory research techniques appeared as the best fit for this study. Philosophically, participatory or qualitative research paradigm examines the 5W and 1H (*what, why, where, when, who, and how*) of the issues being investigated in the field (Creswell 2009) in an inclusive, pluralistic, expansive and de-elitist way. This approach follows the concept that the information and experience generated through respondents' lifetime in a particular socio-cultural embeddedness and ecological setting is obviously of such a scale and quality that it can hardly be explored in full potential using any quantitative tool (Sarda and Maynou 1998).

Participatory approach allows a 'reversal of learning from the local people', thus ultimately allowing conscious exploration of the issues being investigated with opportunism and scope of improvisation, iteration, and validating (Chambers, 1994). As this approach involves the

targeted people in a more responsive and intimate way, consequently it is useful in translating research findings for local-level resource management planning, community empowerment and community-based income generating options.

On the other hand, followers of the quantitative paradigm tend to focus on the volume or amount of the concerned variables, which serves the purpose of knowledge generation for supporting decision-making. However, to substantiate my findings from participatory route, I also gathered information using selective quantitative tool like survey. Also, with a view to gain a better understanding of the local realities, as well the trend of current and past livelihood practices and patterns of the inhabitants there, I used secondary data conveniently as appropriate from research and publications on Northern communities. So, altogether this research falls under a ‘mixed method’ paradigm as I used survey (quantitative tool) and a host of participatory tools like key informant interview, focus group discussion (qualitative tool).

This research is community-based, with heavy dependence on qualitative and pragmatism approach. Pragmatism most closely describes my research as I was trying to find a solution to food security problem through introducing and popularising food produce in local agricultural farm. Pragmatism does not put emphasis on a particular philosophical standpoint, and does not specifically employ sets of methods researchers must employ; rather researchers are encouraged to employ methods considered best suited to collect information (Creswell, 2009). Another viewpoint is pertinent here. I have considered a ‘Case Study’ strategy for examining Garden Hill of the Northern Manitoba as a bounded system (a ‘Case’) considering the geographical remoteness of the study area, sensitivity of the region in terms of food security situation, good level of willingness of the local elders/community members to participate in the research, and my involvement in an on-going local food production project, which altogether eased my access to the community.

A Community-Based Participatory Research (CBPR) approach was used to conduct the study. CBPR is appropriate for the study that directed toward positive change in the targeted area (Israel et al., 2008). This study aimed to enhance the capacity of the community in growing their own food production; CBPR is the best fit for this. According to Israel et al. (2008), CBPR has nine guiding principles and this research followed those guiding principles throughout the study process.

Table 3.1: Principles of CBPR

Sl.	Principles of CBPR (Israel et al., 2008)	How this study followed the principles of CBPR
1	<i>CBPR acknowledges community as a unit of identity</i>	The Garden Hill First Nation community has the same social, cultural and spiritual norms and values, which together provides it a unique bondage and identity.
2	<i>CBPR builds on strengths and resources within the community</i>	The study figured out the strengths, resources and assets of the community as well as the barriers and challenges the community presently facing with regards to food security.
3	<i>CBPR facilitates a collaborative, equitable partnership in all phases of research, involving an empowering and power - sharing process that attends to social inequalities.</i>	From the beginning to the end of the study, the community members had equal opportunity in decision making and control over the study.
4	<i>CBPR fosters co-learning and capacity building among all partners</i>	The study helped the community in capacity building and achieving food security and food sovereignty.
5	<i>CBPR integrates and achieves a balance between knowledge generation and intervention for the mutual benefit of all partners</i>	The agricultural farm acted as an intervention and the findings of the focus group discussions translate into actions thus helping the community to reduce their food insecurity.
6	<i>CBPR focuses on the local relevance of public health problems and on ecological</i>	Food insecurity, a major concern in Northern Manitoba, is the focus of the research. It puts forward some remedies that would not create any detrimental effect on

	<i>perspectives that attend to the multiple determinants of health</i>	the ecological environment/balance of the area.
7	<i>CBPR involves systems development using a cyclical and iterative process</i>	Competencies and traditional knowledge of the community members is used at different stages of the research process such as data collection and analysis, data interpretation, dissemination, determination of intervention and policy strategies, and action taking.
8	<i>CBPR disseminates results to all partners and involves them in the wider dissemination of results</i>	After analysis, community members are expected to be informed of the outcomes in different format.
9	<i>CBPR involves a long - term process and commitment to sustainability</i>	The sustainability of the actions or program which evolves as an outcome of the focus group discussions get priority so that the program continues even after the study period.

I conducted this research in collaboration with *Meechim Inc.*, a community-owned and community-run social enterprise non-profit that aims to provide healthy food to the community. *Meechim Inc.* is a partnership between Garden Hill First Nation, Aki Energy, the University of Manitoba, and Four Arrows Regional Health Authority. Using a host of participatory techniques, I immersed myself in the everyday life-world of the Garden Hill participants through actively interacting and engaging with them in the farm activities to gain a better understanding of their perspectives and realities.

I participated in almost all the meetings from the initiation of *Meechim Inc.* to its journey as local food market organizer from September 2014 to July 2015. Community members including councilors from the local band council, relevant stakeholders, and representatives from its partner organization were present in those meeting. Along with my supervisor Dr. Shirley Thompson, I visited the community, and conducted meeting with the band office and community

members including elders regarding the design and operational aspects of the project. This gave me opportunity to come in close contact with some of the potential community members, councils and also with the chief of the band before I started my fieldwork.

Working with the First Nations in their own natural settings requires certain preparation and awareness of the culture, history and protocols. I benefitted tremendously from discussions with my committee members who are experienced in handling research with indigenous communities. I also benefitted from the book 'Working effectively with Aboriginal peoples' written by Robert P. C. Joseph, and his blog postings. I gained substantial learning on *the British North America Act, the Indian Act, the Fisheries Act, The Wildlife Act, the Crown Lands Act, and the 1969 White Paper, the Constitution Act 1982*, and Supreme Court verdicts on the Sparrow, Haida, Taku and Mikisew cases. Based on the learning from Bob Joseph's blog postings, I became aware of the conflicting worldviews of Aboriginal ('The earth does not belong to men; men belong to the earth. All things are connected' - Chief Seattle, 1854;) and non-Aboriginal populations ('Man is the measure of all things' - Protagoras, Greek Philosopher, 458–410 B.C.) (Joseph and Joseph, 2007). I was informed from his blog posts that historically, the Aboriginal-Crown relationships was critical, and the rulers exercised the doctrines of discovery, occupation, adverse possession, conquest and cession for gaining controls over the indigenous communities.

In the context of protocol, when communicating with a chief and council of a First Nation, I was reminded that I am communicating with the head of a Nation, or one of the many heads of the Nation. I did my due diligence on treaty land or traditional territory. Given all these basic awareness, and my manifestation of respect towards elders of the community, I could develop intimate relationships with everyone in no time.



Figure 3.1: First meeting with community members regarding Meechim Farm before field work

I was an outsider to Garden Hill and it is always very challenging to gain community trust for an outsider researcher. My socio-cultural background is completely different from that of the research community. Through participation in meeting and gathering in the community, I was able to build trust and relationship with the community members in Garden Hill. I got the approval to conduct this study from the Joint-Faculty Research Ethics Board (JFREB) at the University of Manitoba, Manitoba, Canada (*Appendix A*).

### **3.2. Study area**

Garden Hill First Nation community, a fly-in community, is situated on the north shore of Island Lake community and 610 kilometers northeast of Winnipeg and 350 air kilometers southeast of nearest city, Thompson (Four Arrows Regional Health Authority, 2011). Nearby communities include the Wasagamack First Nation, St. Theresa Point First Nation, and Red Sucker Lake First

Nation. These three along with Garden Hill FN were combined under single Island Lake First Nation up to 1969. The First Nation is signatory to the 1909 adhesion to Treaty 5.

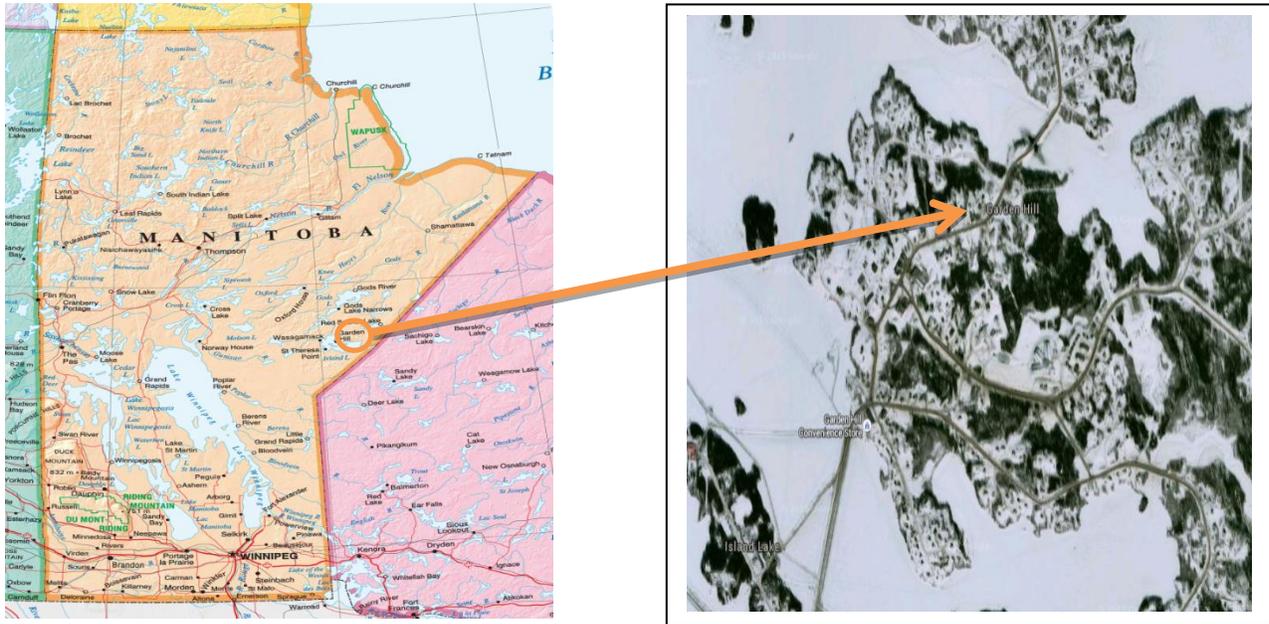


Figure 3.2: Garden Hill First Nation, Manitoba

It is a community of 2776 people with 18,180 acres of total land area (Statistics Canada, 2011). Literacy rates in the community are very low. 1940 members of the community use Ojibwe as their non-official language, and 585 members use the Cree language. Out of 1555 people aged 15 years or older, 1220 have no certificate, diploma or degree (Statistics Canada, 2013). Only 175 people have high school diploma or equivalent degree, and 160 have postsecondary certificate, diploma or degree (Statistics Canada, 2013).

According to Statistics Canada (2013), the median income of the reserve is \$8,243 and the average income is \$12,956. The infrastructures of the Garden Hill First Nation are in abysmal condition. Chlorinated water from Island Lake is directly supplied to the community via a standpipe system. Amongst a total of 502 households in the community, about 236 households have no running water. Only one house has a well, eight houses have cisterns, and the rest of the

houses have water barrels (Four Arrows Regional Health Authority, 2011). Commercial fishing and trapping is the primary economic base of the reserve. Soil texture of the reserve is sandy, highly acidic, and hence, not suitable for crop production. We observed that there was no agricultural activity on the reserve except very few community members used to do backyard gardening.

### **3.3. Data collection**

As mentioned earlier, this study used both qualitative and quantitative data collection tools. This study used surveys as quantitative data collection tool and participant observation, semi-structured interviews, key informant interviews, and focus group discussions as qualitative data collection tools to achieve the objectives of the study. It also used secondary sources of data and relevant literatures.

#### **3.3.1 Survey**

Two different household surveys were conducted in the community using survey technique developed by Health Canada (Health Canada, 2007). Dr. Shirley Thompson and her colleagues adopted the same survey tool used in previous studies regarding food security in Northern Manitoba First Nations communities. The first survey was conducted in the summer of 2015 to determine the level of household food insecurity in Garden Hill. The sample was selected purposively as the study aimed to evaluate the impacts of the Meechim project on community household food security. The period the survey was conducted corresponded with the Meechim market day; thus, participants were selected from community members who bought food items at the market.

In total, 30 participants from 30 different households participated in the survey. The survey was conducted with the help of a community member. This community member

translated the questionnaire in Oji-Cree and Cree languages to the respondents who were unable to understand English. In addition, he helped to facilitate the survey by building rapport with the respondents, as the researcher was outsider in the community. Initially, we explained the objectives of the research and the meanings of different survey questions to the participants who agreed to participate so that they can answer more precisely and accurately. The survey did not use any personal information of the respondents but had a personal identification number, which linked to a separate sheet where we listed all the participants' name, address, and contacts.

In December, I conducted another survey and a total of 39 household heads were surveyed using the same methodology used in previous survey. The survey was conducted in Meechim market place like the previous one.

### **3.3.2 Semi-structured interviews**

In this research, semi-structured interviews were conducted as a data collection tool of qualitative research. For better understanding and development of deeper insights into the research context, a face-to-face interview is appropriate (Gillham, 2000; Ritchie and Lewis, 2003). When the 'unstructured' interview is very close to observation and 'structured' interview is almost similar to a questionnaire, the 'semi-structured' interview is suitable where the depth of meaning is important (Newton, 2010). Semi-structured interviews provide very rich data (Newton, 2010). Further, the language used by the participants gives details of their perceptions and values. Moreover, the data of the semi-structured interviews can be analyzed in various ways (Newton, 2010). In case of a semi-structured interview, the respondent should be experienced and should have first-hand knowledge on the research question (DiCicco and Crabtree, 2006).

I selected participants and stakeholders for the semi-structured interviews with different backgrounds. A total of 10 semi-structured interviews were conducted. Duration of the

interviews was between 1 to 2 hours. I interviewed two farm workers who had leadership quality with knowledge on different community issues. Participants also included previous and current councils of the band, representatives from youth and employment services, representatives from NGO working for community development, and elders with traditional knowledge.

During the interview, I took note on important information mentioned by the interviewees. At the same time, I recorded the interview using voice recorder with prior consent of the interviewee. After the interview, I listened to the audio records to take additional notes that I might have missed during the interview. I asked questions on selected issues and let the interviewee respond to questions without interruption. If I felt, I needed more information or clarification, I asked additional questions. To keep the participants anonymous, I assigned number to each interviewee and in my literature instead of their name I used their assigned number.

### **3.3.3 Key informant interviews**

Key informant interviews are effective tools for gathering qualitative data, which allow in-depth interview with the respondents having real life core knowledge of the issue under discussion. These members of the community are the experts having specific knowledge and understanding on traditional practices, and can provide valuable information for the research. My supervisor Dr. Shirley Thompson interviewed 33 experienced harvesters as well as elderly people who have their real life experience and “living memory” using the methods described by Tobias (2000) and Hill (2012) in the same community for her Wabanong Nakaygum Okimawin (WNO) project on traditional land use and ancestral occupancy mapping.

Topographic maps of the area were used during the interviews. Respondents were asked where and how many different game mammals, fishes and other traditional foods they have

hunted or gathered during their lifetime, in addition to other questions. I analyzed the data collected by Dr. Shirley to identify the potential of traditional food production. Traditional land use mapping is almost completed at Garden Hill FN. Dr. Thompson and students worked with Zack Flett and Ivan Harper of Garden Hill FN and recorded 33 maps with Garden Hill FN community members. By the end of March 2015, 33 traditional land use maps, as well as thematic maps and resource maps were completed and provided to the community. An exit interview was undertaken to validate each map biography with each mapper and changed in the case anything was incorrect. This traditional land use mapping allows traditional land use to be considered fully in planning the future.

### **3.3.4 Focus group discussion**

Focus Group Discussion (FGD), now very popular and commonly used in bottom-up participatory development research is basically a group interview process with like-minded respondents. This technique draws benefit from the socially-appropriate interactions and spontaneous communications, usually in their own natural settings, between purposively selected respondents that are considered to possess particular sets of knowledge to generate relevant data and information (Kitzinger, 1995). This group interaction process helps building consensus on certain information, and also to explore and clarify respondents' opinions in ways that would not be possible by other interview tools (Kitzinger, 1995; Hay, 2005).

Interaction between members of the group triggers a chain of responses. This 'synergistic' effect of the focus group results in detail and additional information (Stewart and Shamdasani, 1990). The focus group represents the perceptions and views of the participants on the subject under study reflecting the socio- economic, cultural and political settings of the group (Kitzinger, 1995). The interaction of the group allowed a deeper exploration and reevaluation of

different views, ideas and understanding of the group members. FGD also proved useful in validating and triangulating data and information obtained through field research, especially in situations where conflicting information is generated from multiple sources. Focus groups help to empower the participants giving power to and motivating towards positive changes (Wilkinson, 1999). It helps the marginalized people to raise their voices and to find out suitable solution for their own problems. Thus, the data collection tools perfectly matched my research objectives.

My focus groups consisted of 12 members including farm workers, two community representatives and three experts who were involved with the project. The discussions took place at the farm premise as it was conveniently located for every respondent, and it was the suitable place for everyone to express their view without any outside interference. I, along with another graduate student facilitated the discussion. In focus groups, the issues related to economic viability of the farms, assets and barriers for local food production, site of the farm, water supply, support systems, infrastructures, processing and cold storage facilities, distribution system of the products, regulation related to farming, funding, community engagement, skill development, and coordination of the total process were discussed. I observed and recorded the discussion and took notes on all other information useful for the study. I recorded the discussion using voice recorder.

### **3.3.5. Participant observation**

Participant observation helps to understand the complex interaction of human being with other human being in his or her own physical environment setting. From mid-May to late-July, 2015, with a two week break in June 2015, I stayed in the project area and worked with the workers and community members. During my stay in Garden Hill, I talked with many community

members in the farm and outside the farm. Everyday many community members including children used to visit the farm. I used to attend to them, talk to them, explain to them about the farming techniques, my research, and answer their questions regarding the farming project and local food production. We distributed chicken eggs to the visitors and children.

We became familiar with and popular to most of the community members as “Farm guys”. That helped me in building rapport with people in the community. Sometimes, I visited the nursing station, convenience store, Northern Store, fish project, and band office. Several times, I made community tours with some community members when I had the opportunity to discuss many community issues. I used to take every note, record the conversations sometimes, and take images related to my research work according to my ethical protocol.

### **3.3.6. Review of the secondary data**

This study required secondary sources of data for satisfying its first objective. In addition, secondary data from different sources supplemented the research outcomes and writing of the thesis. I used secondary data from different government agencies and organizations, Non-Government Organizations (NGOs), articles published in different journals, newspaper, books and on the internet.

### **3.4. Data analysis and thesis writing**

I analyzed most of the data when I was in my research area immediately after I collected. I analyzed the survey data using the appropriate mathematical tools. I initially coded the responses of the survey following the coding system used by Canadian Community Household Survey (CCHS). As I describe my findings, I used qualifiers like ‘few’, ‘some’, ‘many’ and ‘most’. In this research from a quantitative point of view, the term ‘few’ refers to 1-5%, ‘some’

refers to 6 to 40%, 'many' refers to 41 to 90%, while 'most' referred to 91% or more of respondents' view on a particular issue.

## CHAPTER 4: FOOD INSECURITY IN GARDEN HILL

### 4.1. Introduction

Food insecurity is the status that indicates financial inability to access sufficient foods in terms of quality and quantity to live healthy (Tarasuk, 2014). In different literature food security is categorized according to intensity in different ways. Some scholars categorized it into four categories: food secure, marginal food insecure, moderate food insecure, and severe food insecure (Tarasuk et al., 2016; Zahariuk, 2014). Some other authors and institutions categorized it into three broad types: food secure, moderate food insecure, and severe food insecure (Thompson, 2011a; Health Canada, 2007). This study followed the latter category developed by Health Canada (2007).

Table 4.1: Categorizing food security status

<b>Food security status</b>		
<b>Category levels</b>	<b>Category description</b>	
	10-item adult food security scale	8-item child food security scale
Food secure	no, or one, indication of difficulty with income-related food access  (0 or 1 affirmed responses)	no, or one, indication of difficulty with income related food access  (0 or 1 affirmed responses)
Moderate food insecure	Indication of compromise in quality and/or quantity of food consumed  (2 to 5 affirmed responses)	Indication of compromise in quality and/or quantity of food consumed  (2 to 4 affirmed responses)
Severe food insecure	Indication of reduced food intake and disrupted eating patterns  (≥ 6 affirmed responses)	Indication of reduced food intake and disrupted eating patterns  (≥ 5 affirmed responses)

Source: Health Canada, 2007

## 4.2. Food security Status in Garden Hill (GH) as revealed through surveys in Jun 2015 and Dec 2015

### 4.2.1 Food security in households with children

Figures 4.1 and 4.2 show that adult food insecurity in household with children is very high in Garden Hill (GH) and the scenario appeared to become worse over six months from June to December 2015. The first survey in June 2015 revealed that only 8% of the adults were food secure which decreased to 5% during the second survey conducted in December 2015. For adult, moderate and severe food insecurity increased around 1.5 times over the period June 2015 to December 2015.

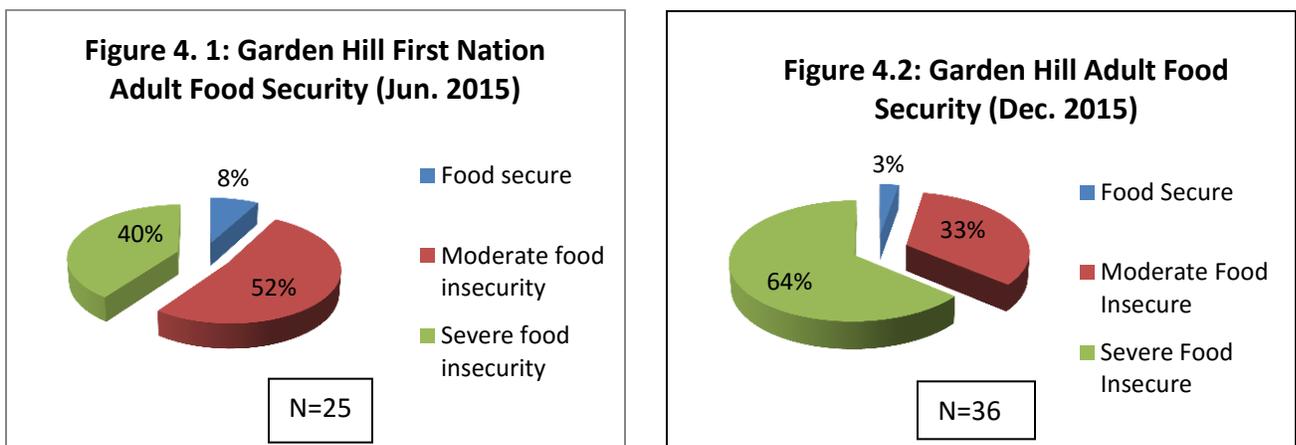


Figure 4.1 and 4.2: Adult food security in households with children in June 2015 and December 2015.

In households with children, child food security status shows a mixed trend. While the moderate food insecurity level decreased from 60% to 42%, severe food insecurity level increased significantly to reach 44% in December 2015 from its 32% value in June 2015. Overall, food security for children improved over the period as Figure 4.4 reveals child food security almost doubled during that time period. Among moderate food insecure households, as

revealed from survey results of December 2015, some households showed improvement in child food insecurity while some others showed further deterioration.

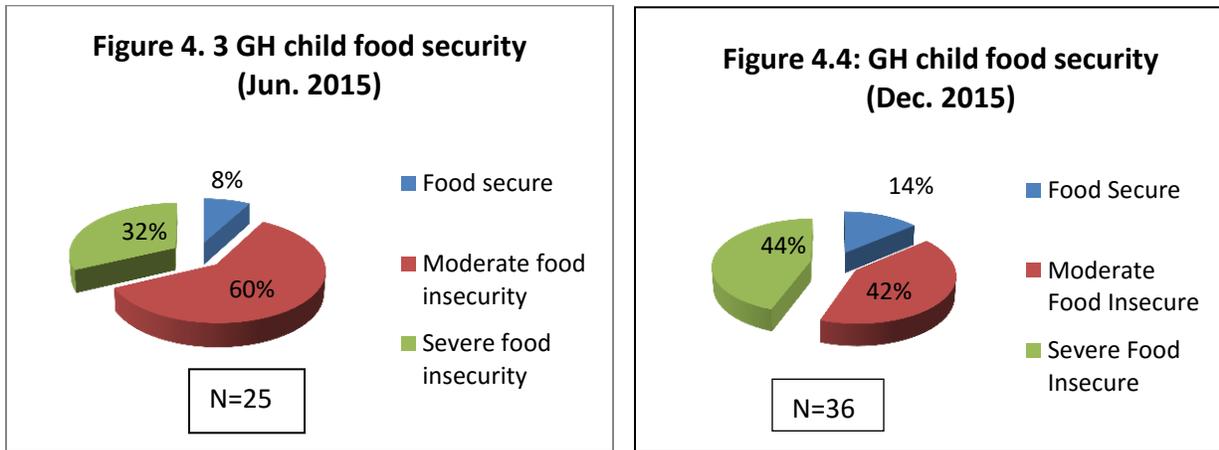


Figure 4.3 and 4.4: Child food security in households with children in June 2015 and December 2015

#### 4.2.2. Food security in households without children

Both surveys showed that no adults were food insecure in households without children and the severity of food insecurity rose considerably. Second survey depicted that 67% of adult community members experienced severe food insecurity whereas it was only 40% in the first survey. Moderate food insecurity reduced by half over the period but it did not necessarily mean improvement in household food security situation, because those households moved to the severe food insecure category.

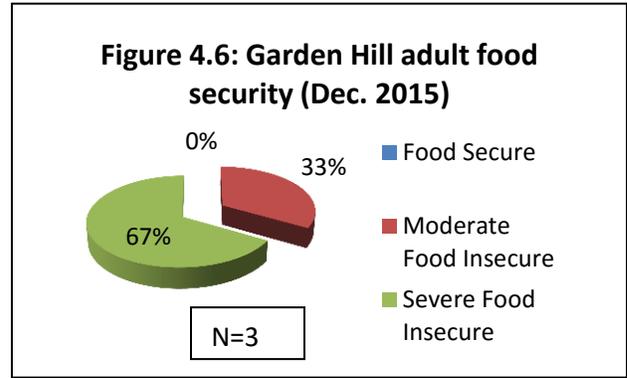
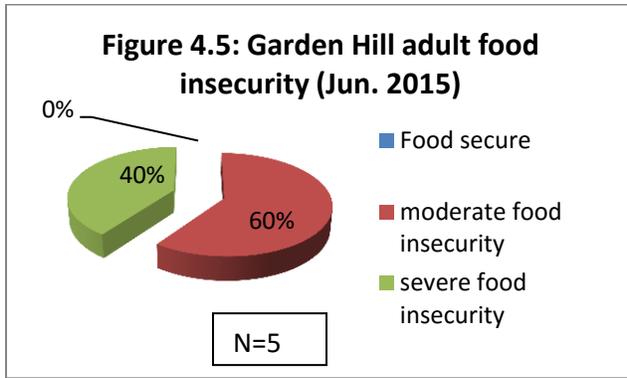


Figure 4.5 and 4.6: Adult food security in households without children in June 2015 and December 2015.

### 4.2.3. Overall households' food security in Garden Hill First Nation

The household food survey in Garden Hill First Nation Community revealed that only 7% households were food secure in June 2015, which declined substantially to only 3% in December 2015. The percentage of households experiencing severe food insecurity rose by 31% over these six months, which indicates household food security in Garden Hill is deteriorating. Though moderate food insecurity reduced, it did not indicate better food security as those households moved to worse category.

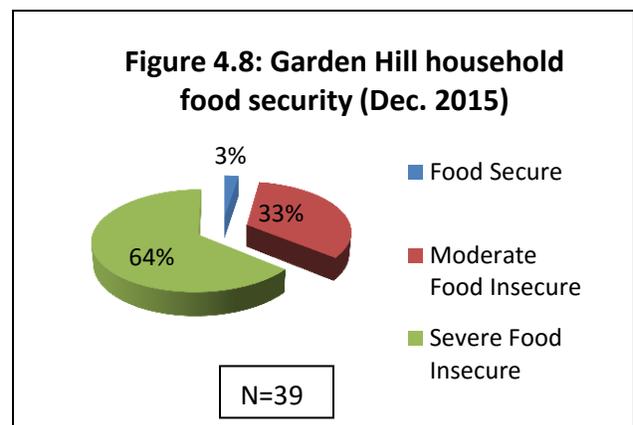
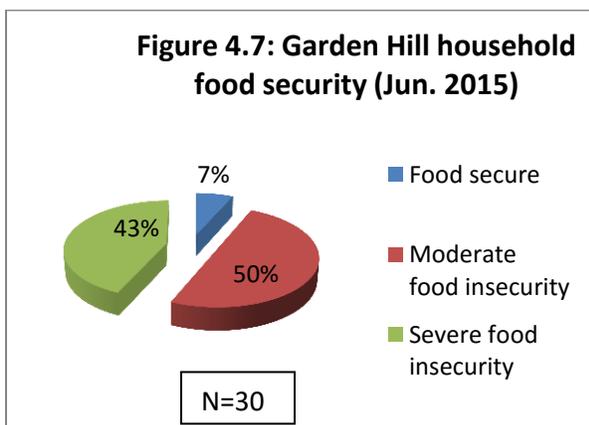


Figure 4.7 and 4.8: Household food security in Garden Hill First Nation in June 2015 and December 2015

### 4.3 Food security statuses in 2015 for combined data

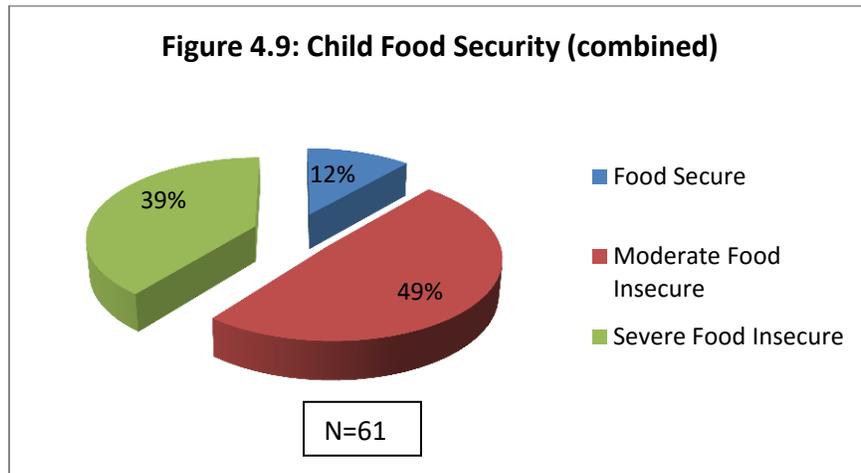


Figure 4.9: Child food security (combined)

Figure 4.9 shows child food security status for the combined data collected in June 2015 and December 2015. Half of the total households experienced child food insecurity and two fifth of them experienced severe food insecurity. Only 12% of the sample respondents were food secure.

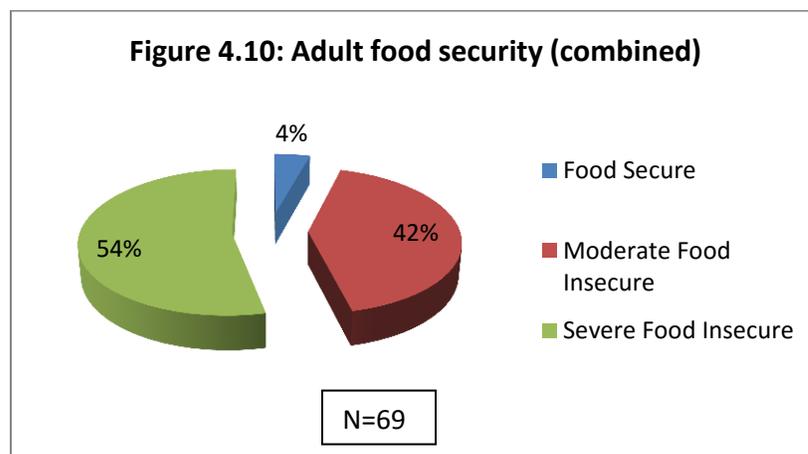


Figure 4.10: Adult food security

Adult food security was even worse than that of child ones. In respect to adult food insecurity, more than half of the total respondents (55%) experienced severe food insecurity while only 4% were food secure.

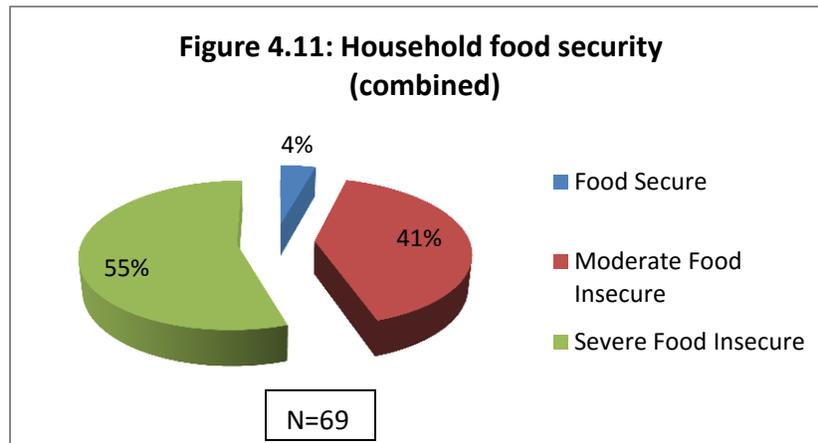


Figure 4.11: Household food security in Garden Hill

Aggregated data from these two surveys conducted in June 2015 and December 2015 indicated that household food insecurity in Garden Hill First Nation community worsened over time. In 2009/10, Dr. Shirley Thompson and her colleagues conducted a survey in this community (using same survey tool) along with other 13 communities in Northern Manitoba. They found 37% of the total surveyed households experienced severe food insecurity, 51% households experienced moderate food insecurity, and only 12% of households were food secure in Garden Hill (Thompson et al., 2012). The earlier survey found 79% adult food insecure households for communities without road access including Garden Hill, and 69% households for communities with road access. With regard to child food security, it revealed that 66% and 46% households were food insecure for communities without and with road access respectively. Health Canada (2007) found 9.2% overall Canadian households with food insecurity. In households with children, food insecurity rate was even higher (44.4%). In those households,

adult members in 49.8% households were food insecure and children in 5.2% households were food insecurity as revealed in their Canadian Community Health Survey Cycle 2.2 Nutrition. Zahariuk (2014) conducted a survey in four communities of Island Lake First Nation including Garden Hill and found almost similar results for Garden Hill. The study found only 5% households were food secure, and 2%, 38% and 55% households were marginal, moderate, and severe food insecure respectively.

Data obtained and analyzed over the time scale from 2009/2010 to 2015 (Thompson et al. 2012; Zahariuk, 2014, and the survey conducted in June 2015 and December 2015) revealed that food security trend is declining over time in Garden Hill First Nation. Since Canada started measuring household food insecurity data in 2005, it showed that over the period from 2007-2012, number of food insecure households increased every year and reached a peak of 1.7 million households in 2012 from <1.4 million food insecure households recorded in 2007 (Tarasuk et al., 2014). Though over the period severe food insecurity remained almost the same, levels of marginal and moderate food insecurity demonstrated an increasing trend.

#### **4.4: Severity of household food insecurity**

Almost one-third of the respondents said they were often worried about running out of food before they got money to buy the same. Also, one-third often could not afford balanced diet; their food did not last long, and there was hardly any money left to buy more at some points of time (Figure 4.12). Around two-third of the respondents replied they sometimes experienced the same thing. Very few respondents said they never experienced these food insecure situations. More than half of the respondents cut the size of the meal or skipped the meal as there was no money to buy food, and among them 18 out of 69 respondents did it almost every month (Figure 4.13 and 4.14).

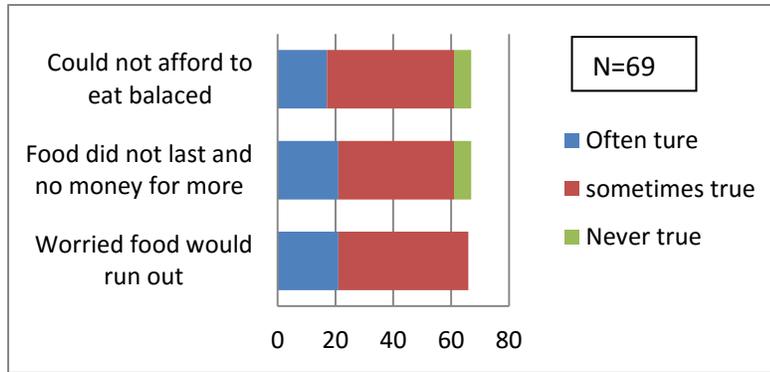


Figure 4.12: Responses of participants for some questions in food security survey.

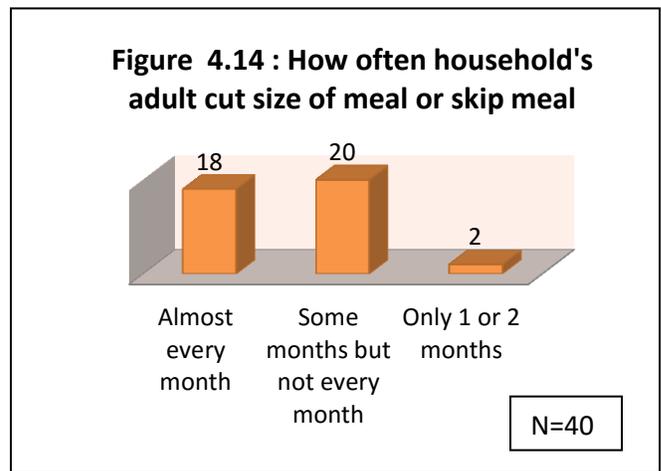
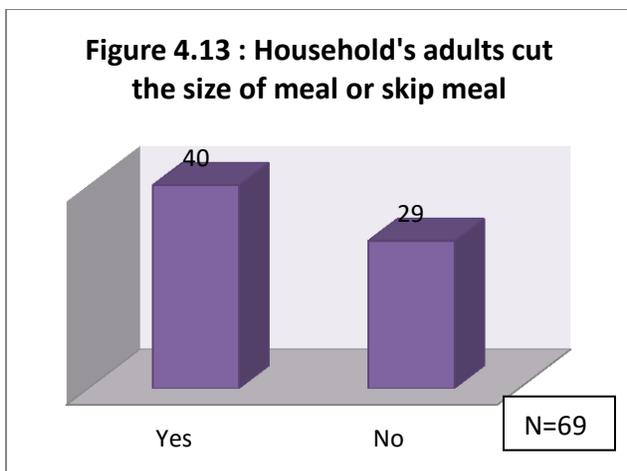


Figure 4.13: Respondents cut size of meal or skip meal    Figure 4.14: Frequency of cutting size of or skipping meal

Figure 4.15 shows that one-third of the total respondents presumably lost their body weight as they could not afford enough healthy food to eat, which had serious health consequences. More than one-third of the respondents stated that they experienced whole day fasting in the last 12 months for their inability to manage food to eat. Among them, nine respondents faced such situation almost every month, and 13 of them experienced the situation some months but not every month, which is an indication of severe food insecurity in the GH community.

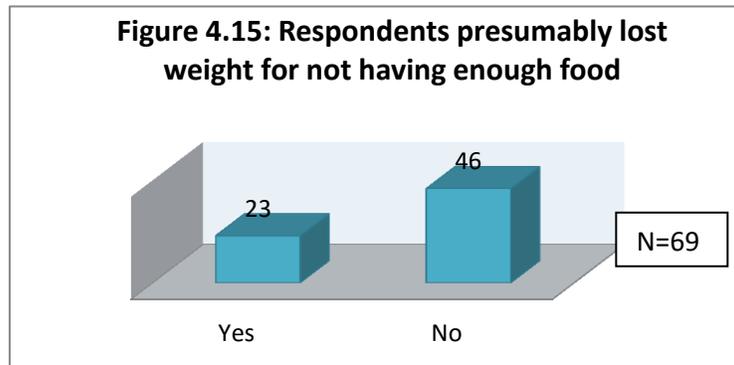


Figure 4.15: Respondents lost body weight as they could not eat enough food

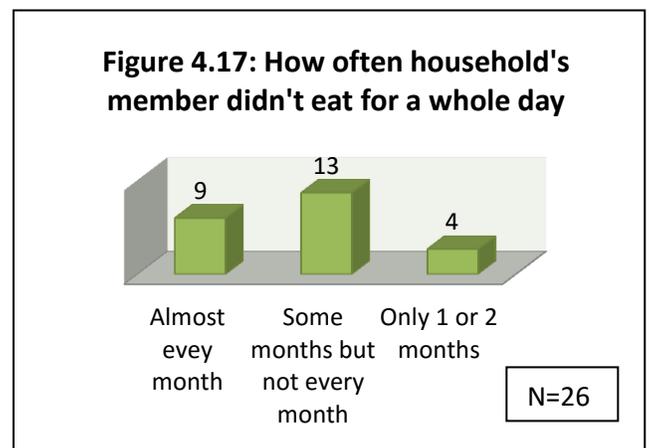
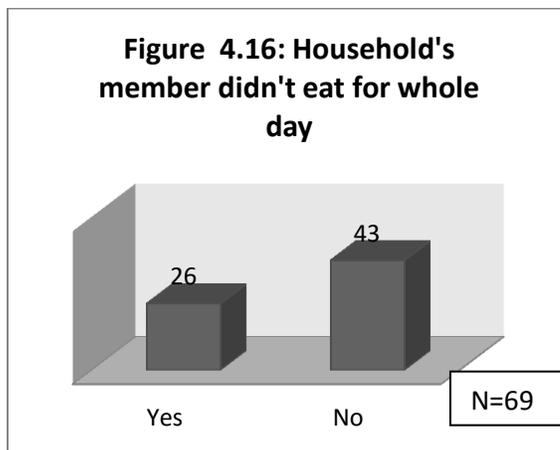


Figure 4.16: Respondents did not eat for a whole day      Figure 4.17: Frequency of not eating for whole day

Figure 4.18 shows one-third of total households with children often depend on cheap and unhealthy food to feed children, as they did not have enough money to buy healthy food. Half of the total households sometimes fed their children with cheap unhealthy food due to economic inability. One-fourth of total respondents were not able to feed children with balanced diet and three-fifth of them stated sometimes they experienced such difficulties. Figures 4.19 and 4.20 show that in 22 households out of 61 with children, children skipped meals as adults could not obtain food for them. Among those 22 households, children of five households skipped meals almost every month, 13 households skipped meals some months and four households skipped

meals one or two months. Children in almost one-fifth households were forced to fast for whole day as household's adults could not buy them food to eat which is an indication of severe household food insecurity.

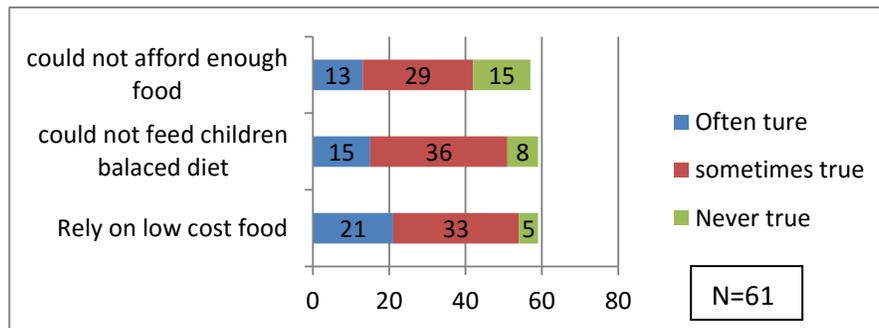


Figure 4.18: Responses of household having children to questions related to child food insecurity

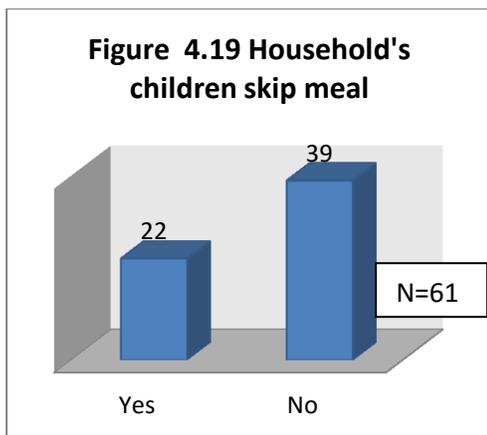


Figure 4.19: Households with children skipping meal due to lack of food and money

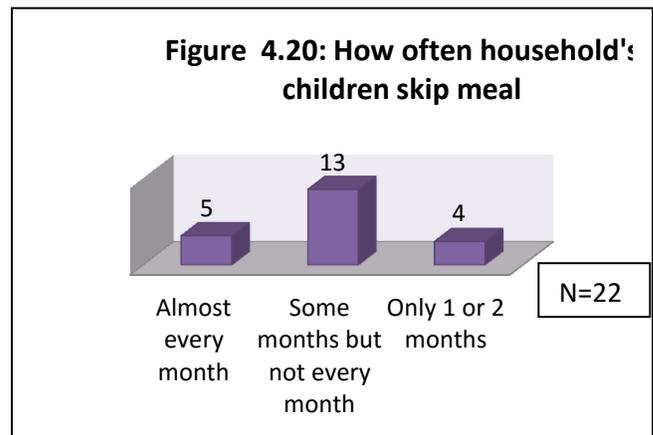


Figure 4.20: Frequency of skipping meal by households

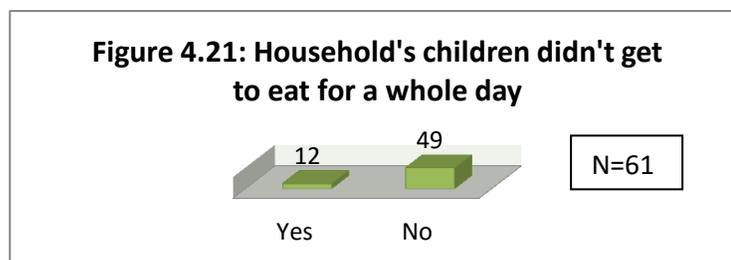


Figure 4.21: Households where children did not for a whole day

#### **4.5 Causes of food insecurity**

Inclusion of the term “economic access” in the definition of food security indicates there is a strong relationship between household income and food (in) security. The community has very limited economic activities. Statistic Canada (2013) data shows household yearly income of more than 60% households is less than \$30,000. In our survey, conducted in January 2016, out of 39 respondents only 32 mentioned their household income. We asked about the monthly household income. Most of the respondents were working in the informal sector and they did not have fixed wage or salary.

Data reveal only 13 respondents representing 40% of the respondent size had a yearly income more than \$20,000. This lack of income contributes to high food insecurity in the community. Tarasuk et al. (2016) found a relationship between household income and food insecurity using Canadian Community Health Survey data after adjusting household size. They stated that household income and food insecurity are negatively correlated meaning prevalence of food insecurity increases when household income decreases and vice versa. More than 70% of the participants of GH perceived that increased food cost was one of the the main barriers to eat healthy and 20% thought the lack of fresh produce as barrier to access healthy food (Zahariuk, 2014). Food prices in the local store are very high and due to their limited financial means they cannot afford them.

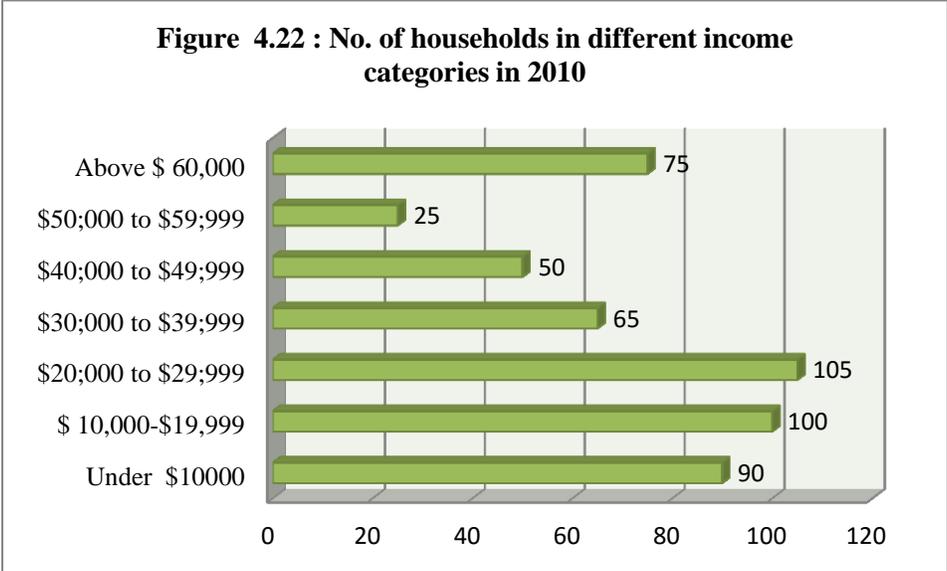


Figure 4.22: Yearly household income in Garden Hill First Nation (Source: Statistics Canada 2013)

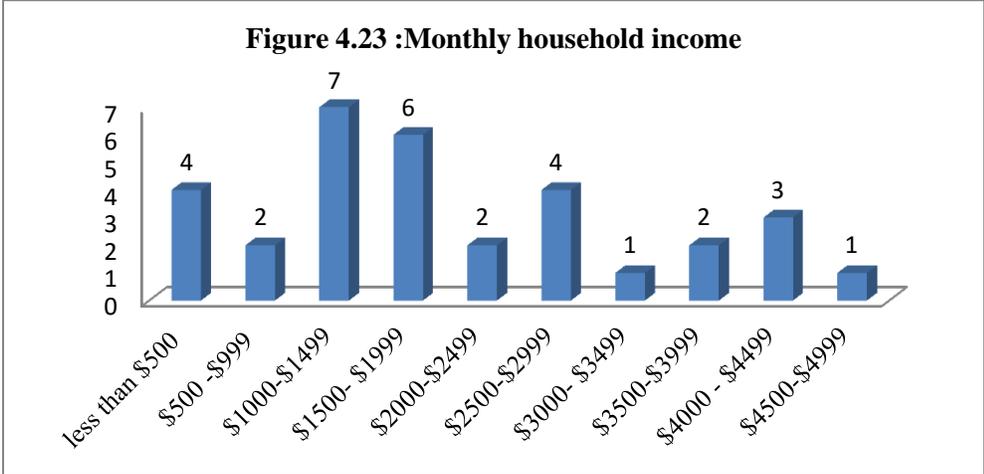


Figure 4.23 Monthly household incomes as revealed through survey

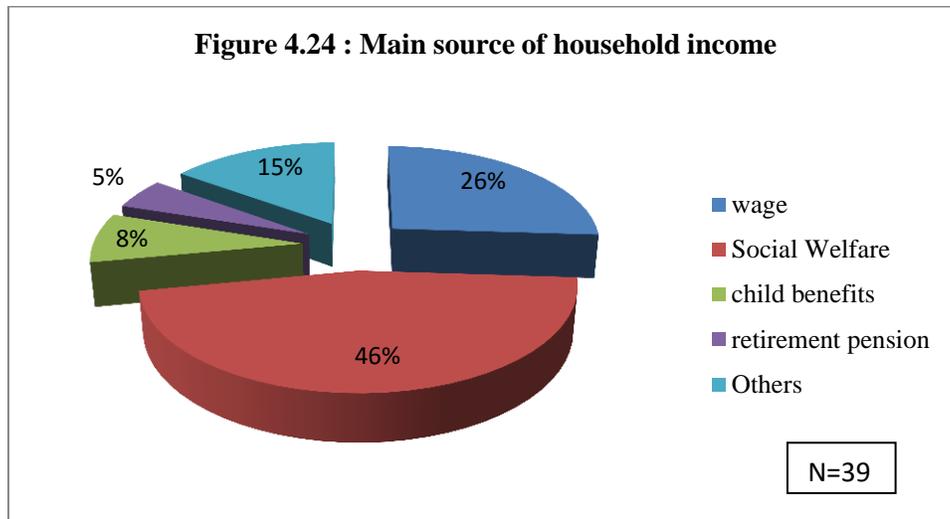


Figure 4.24: Main source of household income

Source of a household income is a strong indicator of household food insecurity (Tarasuk et al., 2016). The likelihood of food insecurity increases for the households that largely depend on social assistance as main source of household income. Figure 4.24 shows that 46% of the respondents mentioned social welfare was their main source of income and 8% household relied on child benefits. Only 26% households mentioned of wage as their main source of household income.

Table 4.2 shows the community has a very high unemployment rate. The employment rate is 29.6% whereas the unemployment rate is 25.2%, with many people dropping out of the labour force and not being counted due to limited opportunities for employment. The table also shows about two-thirds of the total population are not in labour force.

Table 4.2: Labour force status in Garden Hill (Source: Statistics Canada, 2011)

<b>Characteristics</b>	<b>Total</b>	<b>Female</b>	<b>Male</b>
Total population aged 15 years and over by labour force status	1555	750	805
In the labour force	615	260	355
Employed	460	215	245
Unemployed	155	50	110
Not in the labour force	945	490	450
Participation rate	39.5	34.7	44.1
Employment rate	29.6	28.7	30.4
Unemployment rate	25.2	19.2	31

Geographic isolation and associated lack of access to transportation is also considered a major cause behind severe food insecurity. Garden Hill does not have an all-season road and is only accessible by plane. A survey in 14 Northern communities showed that food insecurity is much higher in fly-in communities compared to communities that are accessible by road and train (Thompson et al., 2012). As the Government of Manitoba (2013) mentions, “Geography and hunger go hand-in-hand”. The number of grocery stores in the community, accessibility to urban market place by road and public transit access are some of the major factors that exert negative impacts on food security (Thompson et al., 2012). With more grocery stores in a

community competition would be expected among them, which in term benefits consumers to get quality product in cheap price (Thompson et al., 2012).



Figure 4.25: Location and road condition of Garden Hill First Nation.

Most of the roads in the community are gravel roads with lot of potholes. When the roads become wet after rain or melting of snow, they become so muddy that vehicles often get stuck. During winter, if the weather condition remains good, it takes 12 hours to travel to Winnipeg from Garden hill. Through winter road to travel to Norway House and Thompson, it takes four hours and six and half hours respectively (Conversation with community members).

#### 4.6 Conclusion

Garden Hill First Nation community is facing exceedingly high rate of food insecurity. Surveys conducted in the community in different times indicate that over time incidences of food insecurity increased. This is very alarming. Without sincere committed efforts from all levels of governance for addressing the issue immediately, the food insecurity situation might aggravate further with far reaching negative impacts on physical and mental health conditions of the community members. Adult, children and adolescents suffering from food insecurity can develop depression, asthma and other physical and mental conditions that cannot be cured up anymore in

their adult age (McIntyre et al., 2013). It simultaneously increases health care expenses of government (Tarasuk et al., 2016). Factors responsible for higher food insecurity such as poverty, poor employment rate, and limited access to fresh and nutritious foods should be addressed to abate the situation. Both provincial and federal government as well as the community leaders should come forward and work together to tackle food insecurity in Garden Hill.

## **CHAPTER 5: ANALYZING AND MAP LOCAL FOOD PRODUCTION POTENTIAL AND NEED**

### **5.1 Introduction**

The community, Garden Hill (GH) First Nation, has access to both conventional food as well as traditional food. Once the people there were self-sufficient with foods, historically they gathered food from local natural sources; now they mostly rely on market foods exported from the southern Manitoba. This transformation from traditional proactive food-gathering/harvesting culture to a reactive sedentary culture with dependence on processed market food is partly attributed to meet residential school requirements, followed by individual food habits and preferences determined by factors including culture, sex, seasonality, educational status, household income, household size, affordability, influence of different media and availability of foods in the locality (Kuhnlein and Receveur, 1996; Willows, 2005).

Long-term impacts of colonization, government's administrative and regulatory barriers, and little interest of young people to their own traditional cultural foods are some of the fundamental causes that together significantly influence on this shift (Thompson et al., 2011a). Some of the respondents of my 2015 survey mentioned that 70-90% of their household foods came from conventional stores. Improving food security of a community requires a better understanding of the prevailing realities that shape the community members' food choices (Willows, 2005). There is no remarkable terrestrial agricultural activities, no local food industries, and hence, the whole community is mostly dependent on imported market food. Lack of resources and equipment needed for food-gathering activities (like hunting, fishing, trapping, etc.) has resulted in a decline in food collected from natural resources. Cultural colonization from residential school indoctrination, cash economy, and other dominant societies' intrusions

changed their societal views. The introduction of a monetary system replaced the traditional trust-based barter system with a cash economy; now most of the Garden Hill people are dependent on social welfare and child benefit as their only source of income. The cash economy has had significant negative impacts on their dependency on conventional foods.

This chapter explores the food system of GH including market and traditional food sources, present and past history of agriculture, community assets and barriers to agriculture, possible initiatives for making the community more food self-dependent.

## **5.2 Traditional food:**

Traditional foods are those that are culturally accepted and available from local natural sources (Willows, 2005). Kuhnlein and Chan (2000) defined traditional food system as “*the food system that includes all of the food species that are available to a particular culture from local natural resources and the accepted patterns for their use within that culture*”. It also includes the socio-cultural meaning of those food, culturally accepted ways of gathering and processing those foods, how the community people use them and, its nutritional values and impacts on health of the people who use them.

As I have been told by the elders of the GH community, the harvesting of traditional food for centuries built a strong relationship of people with their land. The foods from the land are integral to their symbolic and spiritual values, self-esteem, pride, and cultural identities. Food also links human health to its immediate ecosystem, and simultaneously helps strengthen the social bond among the participating members. Noteworthy here, the elders use the word ‘land’ as a value-laden term in a holistic manner; to them land also depicts territory, covering rivers, lakes and also the air. Provisioning of traditional food is negatively impacted by the lack of access to locally defined traditional lands, non-availability and compromised quality of targeted flora and

fauna, changes in the migratory routes of the desired animals due to climate change and other anthropogenic pressures, lack of fundamental prerequisites needed for harvesting, and gradual loss of generational indigenous knowledge from elders to the present generations due to the forces of colonization. Some GH elders suggested that the life skill needed for food gathering needs to be incorporated into school curriculum with practical lessons.

It is mention worthy here that there are significant costs associated with gathering of traditional foods, and many low-income households cannot afford to buy the equipment which they need. Earlier, under Food Mail Program, equipment necessary for food gathering from nature were subsidized, but with the introduction of Nutrition North Canada, the scope of subsidy was removed. However, in Nunavut, the territorial government provides supports to cover costs of fuel and equipment needed for food gathering from the wild (Epp, 2011; Pal et al., 2013; Food Secure Canada 2015; Burnett et al., 2015, *cited in* Dillabough 2016).

As I observed, today's reality is- younger indigenous generations have undergone a significant nutritional transition from traditional food to market food that led to a host of increasing burden of chronic diseases and unhealthy lifestyles. This situation is attributed to the fact that traditional foods are rich in protein and nutrition, and low in fat with immense pharmacologic and therapeutic benefits. As well, harvesting and gathering is labour-intensive keeping one physically fit, while the market-based processed food is generally high in fat and sugar, poor in dietary contents, and eventually force the consumers to a sedentary lifestyle. Elders in the community argue that a subsistence pattern of managing low-cost traditional diet, together with active lifestyle, can prove as 'health shield' against a host of chronic diseases such as diabetes, cardiovascular diseases, obesity, cancer and many other negative health conditions that the younger generations face today. Persistent contaminants in the food chain in the

Northern region add negatively to the gravity of the already deteriorating health situation of children, pregnant women, new born babies and fetus.

Scholars agree that indigenous people experienced radical dietary shift with greater dependency on market foods compared to traditional foods (Kuhnlein and Chan, 2000). Once the community that was food self-sufficient and healthy with sole dependence on traditional food available from local sources, is now struggling with a very high incidence of food insecurity (Thompson et al., 2011a). Elders said that they were healthy with the food from hunting, fishing, gathering, trapping, and gardening (Thompson et al., 2011a). All members of the families were actively involved in activities ranging from acquisition to preparation and distribution of traditional food among community members (Thompson et al., 2011a) that helped to keep them active, happy and healthy. According to Northern Food Prices Project Steering Committee (NFPSC, 2003) report, even in the late 1950s, except flour, sugar and some other similar items, Northern communities could rely on their own foods. Colonization forced them to depend on colonizer's foods (LaDuke, 2002) and reduction in traditional food practice eventually resulted in a vicious cycle of increased dependence on market foods and adoption of southern food practices (Thompson, 2011a). Community members saw treaty as an important factor in this dietary shift and their reliance on others as indicated by this quote below:

*“The treaty says that government is a big white mother. It says, if grass grows, river flows, and the sun shines, they will take care of us. Sometimes in between there, our people tend to be more dependent on that what I see from personal level. Today we call commercial livelihood, commercial life. Before we took what we needed; if we had more, we shared”.* –

Interviewee 6, GH.

One of the respondents explained that their indigenous ways of thinking are no longer taught and so people look to capitalism rather than their own territorial land to feed them: *“At that time we were thinking about preparation of our next meal. Now we are thinking about availability of some money to have McDonald fast foods rather than going to lake and have some fish for next meal”*. – Interviewee 6, GH.

Though elders wanted their descendants to follow traditional food practice to the same extent, their involvement in making it happen is reducing day by day. *“Young generations are not interested to go for hunting, fishing and trapping. They are more inclined to conventional or processed food.”* – Interviewee 3, Garden Hill. Traditional knowledge of acquiring foods, processing and preparing for meal is not transmitting to new generation, as parents are not teaching their kids about that particular knowledge.

*“Even some parents don’t feed their kids with fish. They don’t know how to make fillet of fish. That’s how they are losing their own traditions and even their language too.”* – Interviewee 1, Garden Hill. As mentioned by respondents, sources of traditional foods are not decreasing. In some cases, they moved from one area to another area, but overall population are not depleting over time. Most of the community members extract resources in a very sustainable way. They treat nature as mother and their way of living life teach them to take care of mother earth. *“In the past, we used to go around for hunting duck, but now we have to go further, as population (human population) increases”*. – Interviewee 1, GH.

Traditional land use maps and thematic maps (*Appendix C*) of GH First Nation, developed by Dr. Shirley Thompson and her colleagues, show that their ancestral territory extended beyond provincial boundary and some areas belonged to Ontario. They hunt a wide variety of game mammals and birds including moose, caribou, muskrat, deer, rabbit, bear, duck,

geese, grouse, and swan. In addition to hunting different birds, they also collect different birds' eggs. They have a huge trapping area where they trap beaver and other animals. Fish found in different lakes include walleye, trout, white fish and sucker. Moreover, they gather different types of berries, and other foodstuff along with many medicinal plants.

A total number of 242 moose sites were identified by 34 people where people had hunted moose. In addition, they identified 312 other areas where they hunted different species such as caribou, muskrat, deer, rabbit, and bear and trapped 373 beavers. They caught huge number of fish and gathered different type of berries and medicinal plant. Though the supply is still relatively abundant, less number of people compared to the past, go for hunting, trapping, fishing, and gathering. Government regulations and associated costs of gas and other equipment discourage people to hunt, fish, and trap. Waterways near the community are under the jurisdiction of Manitoba Sustainable Development of the provincial government and their stringent regulations and enforcement activities hinder the country food use habit of First Nation Reserves (Thompson et al., 2011a). The schools could not use wild foods in their school lunch programs and feast, even though they have limited budget, as the local Public Health Inspector did not allow foods such as meat and fish unless inspected by him directly. In a community with high incidence of poverty and unemployment rate, even recovering the cost of hunting and trapping appear to be difficult as selling wild meat is not allowed by law (Thompson et al., 2011a). Hunting and trapping ventures are expensive as most of their trap lines are located far away from their community.

### **5.3 Conventional food/market food**

Among conventional food items breads, flours, cooking oils, cereals (oats), corn flakes, potatoes, sugar, onion, butter, chicken meat and eggs, milk, apple, banana, beef, carrots, chips, pops,

orange, and apples are the most common. Stores keep very small quantities of healthy food items like vegetables and fruits as these items are easily perishable, and prices of those items are beyond most of the community members' buying capacity. The contemporary market food has, to varying degrees, replaced the traditional food (details later), many of which are low in iron, calcium, folacin, vitamins, fibres and high in fat and sugar contents. There are considerable evidences and literature that point to the issues indigenous health problems are intricately related to their diets (Campbell et al., 1994; Delormier and Kuhnlein, 1999; Kuhnlein et al., 1996; Lawn and Harvey, 2003).

Such transition from traditional dietary habit to market-based one is complex, multi-dimensional and dynamic in nature, and a host of economic beneficiaries are directly or indirectly involved exerting societal level influence (Willows 2005). When I asked community members what type of food they wanted to grow locally, most of them answered in favor of vegetables and seasonal fruits. Their answers reflect that they are willing to eat fresh vegetables and fruits but as the prices of these foods are beyond their buying capacity, they cannot afford to have those food items (*source*: Focus group discussions with GH community members, 2015). Absence or limited amount of vegetables and fruits in their daily diet is an indication of food insecurity (Che and Chen, 2001; Scheier, 2005). In stores, junk foods are cheaper compared to healthy foods. Most of the community members largely consume junk food due to their availability and easy accessibility, coupled with the difficulty and high expense of healthy alternatives. Figure 5.1 shows prices of most of the food items are two to three times higher than those in Winnipeg. Milk and potatoes show almost four times higher price in GH compared to Winnipeg.

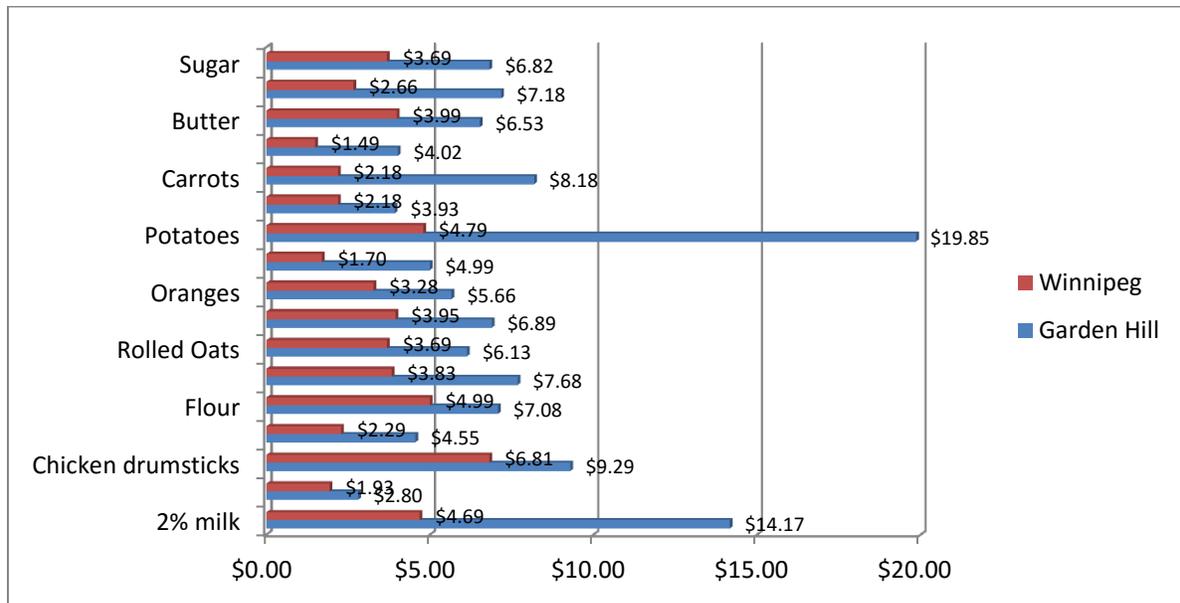


Figure 5.1: Comparison of food prices. Source: Zaharuik (2014)

### 5.3.1. Sources of conventional foods

Northern Store in Stevenson Island is the main source of market foods. As stated by Thompson et al. (2011a), “Northern Store is the latest reincarnation of the Hudson Bay Corporation”. As I mentioned, availability and prices of food items in Northern Stores indirectly encourage people to eat unhealthy foods. They had limited stock of vegetables and fruits. Most of the vegetables and fruit, they are selling, are not fresh. People also know food items in Northern Store are not fresh, but they buy from there having no other alternatives in the locality. Here is a quote:

*“When they know someone got potatoes, carrots, etc., the produce are not assumed that fresh as these are harvested somewhere far and transported from Winnipeg, not from the soil of the North. We miss the smell of fresh harvest”* – Interviewee 1, Garden Hill. The community has one conventional store that rarely sells basic grocery items required by community members. So, Northern Store does monopoly business. One of the community members expressed his

frustration: *“Everyone buys from the Northern Store, no one wants to grow anything. If there were other stores, we would buy from there”*. – Interviewee 2, Garden Hill.

The community has to spend an additional \$10 dollar for water taxi every time they go for groceries in Northern Store. Situation becomes even worse during thawing and freezing up period in spring and beginning of winter when the adjacent lake becomes unsafe for water taxi (Thompson et al., 2011a). Besides conventional store in GH and Stevenson Island, some people ordered food items from Winnipeg through Social Service Center. They have a grocery list to buy for clients like welfare recipients and they deduct money from their welfare cheques. Harris Meats and Groceries, which is a store in Winnipeg supplies food items. Sometimes food items ordered from Harris Meats and Groceries through social services are not as fresh as they are supposed to be because food items get stuck in airport. Nutrition North Canada provides subsidy for this kind of bulk food packages. Nutrition North Canada gave a subsidy on 635,680 kg food worth of \$915,275 between April 1, 2014 and March 31/2015 for the four communities in Island Lake (Government of Manitoba, 2016). Besides, GH school provided healthy snacks and lunch to student at a lower price by ordering food in bulk from Winnipeg (Thompson et al., 2011a).

### **5.3.2 History of agriculture**

GH First Nation is signatory to the 1909 adhesion to Treaty 5. They are the last indigenous people in Manitoba that signed a treaty (Fallding, 2010). Government promised them a better life by supporting them with agricultural equipment, cows and livestock to become farmers. They were promised ammunition, twine for fish nets, everyone \$5 per year which was then \$100 in current market dollar value (Fallding, 2010). First Nation people have treaty right to terrestrial agriculture (Thompson et al., 2011a).

One community member said to me about how they harvest nature: *“We are food gatherers”*. Some respondents said that their parents and grandparents used to do gardening. They did gardening along the shores on lands that had abundant clay with some peat; they used composted fish fertilizer and irrigated from the lake. They did gardening in marsh areas too. Thompson et al. (2012) in their study of 14 Northern communities reported those communities had enough foods to live healthy from a combination of gardening, fishing, hunting, and gathering. Though now a day, many of the community members are not involved in gardening, but almost all of them reported their grandparents used to do gardening. In the words of respondents from GH community:

*“I know my dad used to have rows and rows of good sized potatoes. But you just don’t go there and bury them; you have to take care of them. Sometimes, I used to go there when I was small to de-weed them. Also water them when it doesn’t rain. Small farming area- I could go all the way around – each row”*. – Interviewee 1, GH. *“In Garden Hill, there used to be a lot of gardens around here. My kids’ generation doesn’t know about it, but I, parents, and grandparents know about this. They grew potatoes, peas, carrots”* – Interviewee 1, GH. Having a strong history of agriculture in their past, now the community has no or very little agricultural activities. Knowledge of agriculture did not transmit to present generation as it was broken down by the impacts of residential model school.

### **5.3.3 Present agriculture and livestock**

When talking to community people, they replied they are not aware of any agriculture in this area but some people used to do backyard gardening in the community. Some replied they tried and gave up as there were no support systems needed for agriculture (equipment, seeds, financial support, and agriculture friendly infrastructures). For some people, lack of knowledge on

agriculture practices and technology is also a major hindrance for growing food locally as there was a generational gap in knowledge transfer. One of the respondents commented: *“I did some years ago; it’s a lot of work. I am not sure of trying it anytime soon”*. – Interviewee 4, GH.

**Meechim:** Research revealed that households from Island lake communities thought that the high cost of food and shipping, unavailability of fresh foods, and lower income and employment opportunities are the major barriers in accessing healthy food (Zaharuik, 2014). *Meechim*, a social entrepreneur, aims to address all these issues by establishing a local agricultural farm and pop up market in GH. *Meechim* is an Oji-Cree word, which means “food”. This *Meechim* project is a partnership project of GH First Nation, Aki Energy, University of Manitoba, and Four Arrows Regional Health Authority. The provincial investment for *Meechim* was \$300,000 from Government of Manitoba to develop a local food hub (Government of Manitoba, 2015). This local food hub was created to establish an agricultural farm that encourages community people in backyard gardening and small scale agriculture, as well as, selling their traditional food harvesting at the local *Meechim* market.

Aboriginal and Northern Affairs Minister Eric Robinson explains the importance of producing food and community based strategies for food like *Meechim*, stating: *“Investing in community-based strategies to expand local production of healthy foods has proven to be a more sustainable model with stronger local economic benefits including jobs. Competing with northern retailers will also bring the cost of healthy foods down, leading to better outcomes and freeing up household budgets.”* (Government of Manitoba, 2015). Food insecurity is comparatively low in Nelson House, which had its own country food programs among 14 Northern communities. Respondents of the study also reported community gardening and

production of chicken and livestock as significant food-related community economic development programs (Thompson et al., 2011a).



Figure 5.2: Farm site in its very initial stage on May 2015

It was a challenge to grow agricultural crops in a mix of rocky and clay soil. Meechim farm grew different fruits and vegetables such as potatoes, carrots, peas, beans, corns, tomatoes, apples, and raspberries, as well as, raised chicken and turkey for both meat and eggs.



Figure 5.3: Composting of fish to build soil

As mentioned earlier, GH community had a past history of agriculture. For many community members, Meechim is nothing, but re-ignition of agriculture in their community and they had no doubt about their success in producing crops locally by themselves. Farm manager, Robert Guilford, described Meechim: *“It’s like re-stimulating; you have heard their grandparents had gardens. They are now too dependent on the Northern Store, and groceries bought by them are mostly pops. So, it’s like making it cool again. There is a desire, but no skills. If we can get the young people keen on it, make their elders relearn, we can expect a change for sure. There is no reason they can’t grow food; they just have to figure out the combination”*.

Meechim can play a crucial role in motivating people for farming. Those people working in the farm are very positively motivated and by seeing those, other people also become motivated. It empowered the youth.

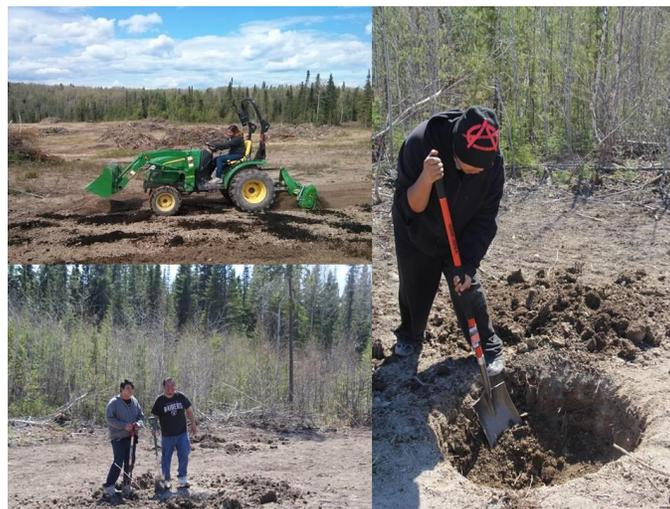


Figure 5.4: Community youth working in farm

Some community members believe they can produce local crops. To do so, community people should be engaged in every stage of the farming. Once they get involved with the farm, they would support and co-operate. At the initial stage of the farming, most of community people

were not fully informed what was going on in Meechim farm. But once they grasped on what was going on, they started supporting the farm. Now, the money that goes to Northern Store or any store-all that revenue just evaporates out. But if the community can produce food locally, money would circulate within the community.

Most of the community members are unemployed or underemployed. Many of them do not know how to work; they lack any job experience. Farm represented hope for the community in many ways. Community member would get fresh meat and eggs from the farm. Farm means healthy, fresh, and cheap food to the community. Many community members expressed their positive views about the farm. Here are some quotes:

*“I would buy locally if there is a supply; they taste good if the products are from the ground”.* – Interviewee 1, GH.

*“This is a great idea for keeping the money in circulation. At least give people work, because that’s people need here – works. A lot of people don’t know how to work, they have no job experience. So they really need this type of initiative”.* – Interviewee 2, GH.

*“Project is positive in a lot of ways; it creates employments, knowledge in farming – we didn’t even know the land was farmable”.* – Interviewee 4, GH.

Employment opportunities for young people in the community are extremely limited and they waste most of their time doing nothing creative or positive. The farm created job opportunities for them and provided hope for doing something positive. *“I am not doing bad stuffs anymore, not waiting around in welfare cheque- not for me. I am focused on work, it keeps me busy”.* – Interviewee 2, GH. All of the workers of the farm started their own backyard

gardens using knowledge they learnt from the farm. The farm also provided those seeds and plants for their backyard garden.

### 5.3.4 Total food requirement for Garden Hill First Nation Community

Canada’s Food Guide helps us in determining the amount of different types of foods an individual or a household needs a day. Canada’s Food Guide was introduced for the first time in 1942 to prevent nutritional deficiencies and promote the health of Canadian people (Health Canada, 2007). From that, we can easily get an idea about total food requirement of a community in a month or even in a year. Figure 5.5 shows how much of each different food makes a serving and how many servings from each food type a person is required per day depending on his/her age and sex. It also shows the recommended Food Guide Servings for an individual of 2 years or older. Table 5.1 shows total amount of each type of food required by Garden Hill in a day. It shows every day, Garden Hill is in need of 16,215- 20,390 servings of vegetables and fruits. That means, to live healthy GH community needs 486,450- 611,700 and 5,918,475-7,442,350 servings of vegetables and fruits in a month and in a year respectively. One serving of vegetable and fruits consists of 125 ml (½ cup) of fresh, frozen or canned vegetable or 125 ml (½ cup) of cooked or 250 ml (1 cup) of raw leafy vegetable or 1 fruit or 125 ml (½ cup) of fresh, frozen or canned fruits or 125 ml (½ cup) of 100% fruit juice.

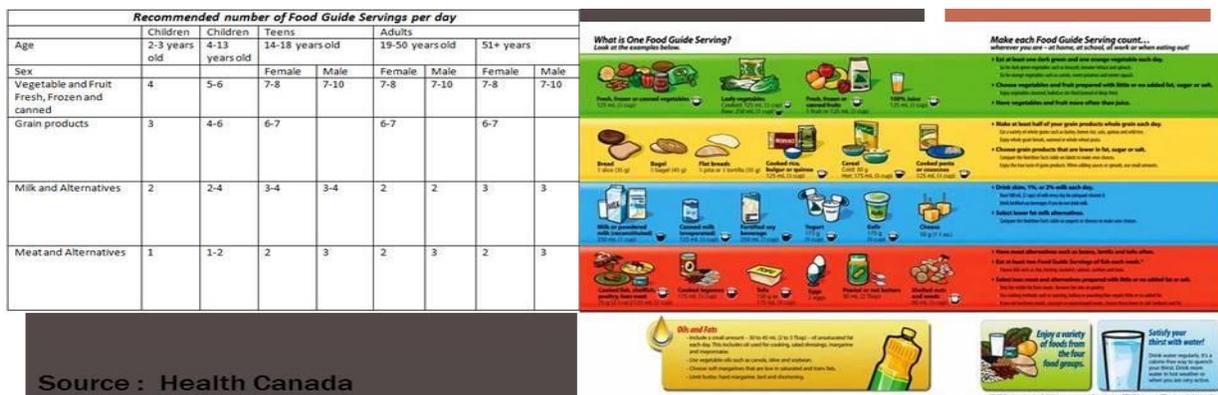


Figure 5.5: Recommended number of Food Guide Servings per day for First Nations, Inuit and Métis by Health Canada.

Table 5.1: Total amount of Food Guide servings required for GH First Nation community

Recommended Food Guide Servings per Day									Total Food Guide Servings required for GH per day
Age group in years	2 to 3	4 to 13	14 – 18		19 - 50		51 +		
Sex			Female	Male	Female	Male	Female	Male	
<b>Population in Garden Hill</b>	175	765	135	150	535	570	130	150	
<b>Vegetables and Fruits</b>	700	3,825-4,590	945-1,080	1,050-1,500	3,745-4,280	3,990-5,700	910-1,040	1,050-1,500	16,215-20,390
<b>Grain products</b>	525	3,060-4,590	810-945	1,050-1,200	3,210-3,745	3,990-4,560	780-910	1,050-1,200	14,475-17,675
<b>Milk and alternatives</b>	350	1,530-3,060	405-540	450-600	1,070	1,140	390	450	5,785-7,600
<b>Meat and Alternatives</b>	175	765-1,530	270	450	1,070	1,710	260	450	5,150-5,915

Similarly GH needs a total of 14,475- 17,675 servings of grain products every day, 434,250- 530,250 servings every month and 5,283,375- 6,451,375 servings in a year. One serving of grain products can be either one slice (35 g) of bread or ½ bagel (45 g) of bagel or 35 g of flat bread or 125 ml (½ cup) of cooked rice/bulgur/quinoa or 30 g cold or 175 ml (½ cup) hot cereal or 125 ml (½ cup) of cooked pasta or couscous. It requires 5,785- 7,600 servings of milk and alternatives each day equivalent to 173,550-228,000 servings in a month and 2,111,525- 2,774,000 servings in a year. Around 250 ml (1 cup) of milk or powdered milk or fortified soy beverage, 125 ml of canned milk (evaporated milk), 175 g of yogurt, kefir, and 50 g

of cheese makes one serving of milk and alternatives. For meat and alternatives, the community requires 5,150- 5,915 servings per day; 154,500 -177,450 servings per months and 1,879,750- 2,158,975 servings per year.

According to Health Canada (2010), this recommended number of Food Guide servings help children and teenager to grow and develop properly; it provides all the necessary vitamins and minerals to maintain normal physiological functions of the body, and also helps in preventing diseases such as obesity, type 2 diabetes, heart disease, cancer and osteoporosis.

### **5.3.5 Community assets and barriers for livestock and agriculture**

The community is blessed with immense natural resources, huge manpower, and long tradition of helping each other. GH has lot of natural resources including land, forest, and lakes. Land can be used for farming. From forest they can get wood to build their own house. Many community members hunt and trap different game mammals such as moose, rabbit, beaver etc. from the forest. It is also a good source of different types of berry and medicinal plants. The lake provides an enormous source of fish and the nearby lake water can be used for irrigation of crops in farm. They hunt duck, geese and other birds from lake and marsh lands. People thought they have natural resources for producing foods and their past history also supports that view. But, the community lack physical resources now needed to hunt and gather.

Soil test of the farm conducted by *Meechim* revealed that the soil was not good enough for crop production as it had highly acidic soil and was deficient in nitrogen and phosphorous. Still, some respondents strongly suggested that soil is not a barrier at all. They said they had seen their parents and grandparents gardening with this very soil type. GH community has strong social bonds. Prior to introduction of money, people used to share their food and other stuff with

other people. Hunting as a practice still remains as a group activity; community members are seen to share food they get from hunting, fishing and trapping.

There is a critical need for youth employment that could benefit from being trained and employed for implementing project like Meechim. Chief and council are under the control of Indigenous and Northern Affairs Canada (INAC). They want to satisfy INAC, but need new policies that would help boost community development. In my observation, at present the band office lacks substantial bottom-up well-orchestrated plan for fostering economic development.

Community lacks equipment for farming and they do not have money to buy them. They lack proper knowledge for farming. For livestock production, in addition to machineries and knowledge, unavailability of feed/fodder is a major barrier. Young people lack motivation for producing their own foods. Here are some reflections from a youth about what the community wants: *“We need more funding to hire more people, we need more equipment, more trailers, more ladders. We need a high tech greenhouse.”* - Interviewee 3. Another person commented about youth feeling very negative about their work ethic: *“Everyone you see here is lazy or they don’t know how to grow their food stuff. But if they are taught or have the resources then most of us would be engaged in growing- especially better than the old people. The young ones are lazy; it’s all about money. They are not motivated”*. – Interviewee 2, Garden Hill. The supervisor for the farm had hope for the enterprise and felt the youth were developing skills: *“The current project can motivate people to do their own gardening; if a person really wants to break away and be independent of them, it is achievable. The workers here, I encourage to think differently – think critically, educate for own skill development and benefits in future’*. – Interviewee 3, Garden Hill.

Community did not have financial assets. There is no bank or financial institution in the community and they have very limited access to credit and other financial benefits. There are no co-operative except fishing co-operative. Most of them could just buy basic necessary goods and not even sufficient and healthy food. They could not make any savings. Most jobs in GH are seasonal including maintaining winter road, and working as labourer in commercial fisheries. Only a few jobs are permanent namely employment in the education system, band office, administrative office and health system. As well, financing any food production operation is a problem. One respondent comment: *“The finance is a problem for me for instance, I have to get a loan application, and pay back. There is not always a guarantee that I will get my return. Anyone who wants to start something must use the winter road, that’s a big barrier. All season road, we don’t have one. For instance, Perimeter won’t put a used tiller into the aircraft, anything used. Except, you take through the winter roads”*. – Interviewee 4, GH.

### **5.3.6 Effects of developmental project**

Development around mining is threatening their areas but no hydro development. There is no dam in the community, but they know some communities, including Nelson House, are affected by the hydroelectric dam. So, the community has a very negative perception about dam and mining. They are not interested in any major development project in and around the community. There is one construction company currently working in the community named Arnason Industries Inc. Some respondents told me that the company destroyed their berry picking areas, though some community members view it positively as the company provided some employment opportunities to the community. *“I know the hydroelectric dam has affected us, but it’s in the Nelson House and that area, it ruined our traditional wild games, livelihoods, trappings, and*

*fish availability. But there is no dam here, that's why people are hesitant about the dam and mining project. We don't want any major development project here". – Interviewee 1, GH.*

### **5.3.7 Solution to grow food locally**

Combating food insecurity at community level requires government initiatives as well as local initiatives. In March 2013, Government of Manitoba made an action plan on food security after holding a public consultation that ranked food insecurity as the second most vital issue that should be taken care of for poverty reduction and social inclusion (Government of Manitoba, 2013).

#### **5.3.7.1. Government Initiatives:**

Aspects of food security and food sovereignty of Aboriginal communities are significantly affected by multi-scale government policies and regulations (Thompson et al., 2011a).

Government can play a vital role by adopting First Nations friendly regulations related to public health safety and sale of wild meat and fish. Besides, developing infrastructures and more food related community economic development programs can help in alleviating food insecurity of remote First Nations communities. Almost every respondent voiced out to me that government should provide more fund for community based food production programs and community based economic development programs. Funding should be continuous. Multiyear funding is necessary for full phase sustainable development projects in the community.

Federal and provincial government should work concertedly in developing community focused policy. Integrated and comprehensive community-focused policies should be in place immediately that would reveal noble intentions and sincere commitments of the governments in favour of real progress of indigenous communities. As an immediate need, government should

arrange need-based training program to train people on income generating trades. Provincial government can make a green house in the community to grow plants even in winter.

### **5.3.7.2 Community initiatives**

Community can create more awareness in producing their own food showing their food production program (*Meechim* project) using social media, local TV, and culturally-appropriate networking and knowledge exchange. In school, students can be informed about it, and they can inform their parents at home. Community needs to be proactively involved with different community development projects like *Meechim*. They can learn farming techniques by engaging themselves in this type of project and then replicate the experiential learning for attaining self-sufficiency in food production. They should keep away any political control or interference out of this type of project intervention.

For community development, adopting holistic approach is a must. When talking to people, they expressed that community could start a non-profit corporate business entity for the First Nation. This would not be under the supervision of department of Indigenous and Northern Affairs Canada. Community development should be considered from business perspective, not merely from political considerations, and through centric decisions made by state bureaucrats. Everything including fisheries, farm and land development would be under supervision of this corporate body. Thus, it would be able to create multiple beneficial ripple effects and no resources would be wasted. For example, by-products and waste from the fish processing plant could be used in farm as fertilizer to improve quality of the farm soil. The farm would buy fish from fisheries. Money would go to fisherman directly without interference from cross-scale regulatory institutions. They needed to buy gas. They could develop a co-op gas station. It would develop a holistic business approach so that money would circulate within the community.

Non-Profit Corporation can have a surplus like any other profit making company, but it must invest this surplus or profit into their own business, which would further community development. It can build its own sawmill; from the products of sawmill it can build its own carpentry. Such a non-profit entity would also support local students to develop private entrepreneurship. If a student wants to open a refrigeration shop, this non-profit organization would help him to set up his/her own business to repair and fix refrigeration. Most of the secondary school graduates, following completion of their education programs, come home and look for employment. They lack vision, proper job orientation, motivation and necessary capital to undertake business interventions. If they are guided and supported with inputs, they can start their own business and create opportunities of jobs for others.

#### **5.4 Conclusion**

Dependency on imported food, along with limited economic opportunities in the community, makes them very vulnerable to food insecurity. Remoteness and lack of all season's road make the situation even worse. Monopoly of Northern Store, limited availability of fresh vegetables and fruits, high cost for healthy foods compels them to depend on unhealthy foods. Local initiatives to grow their own food can widen the availability and their access to healthy foods. Their history of agriculture also encourages programs like *Meechim*. People want to eat healthy and fresh. Locally produced crops and vegetables and chicken products have huge potential of market in the community.

Historically, the community people use an extensive area for hunting, trapping, fishing and gathering. Still they have sufficient access to those areas. But, lack of interest from young people and lack of resources for traditional food practice make it difficult to get traditional foods. Local people revealed huge enthusiasm and supportive mentality for growing food locally. All

they need is sufficient fund, appropriate leadership and government support for local food production program. Government needs to motivate people in agriculture and educate them or train them in producing their own foods. Multi-year funding in local food program can help in capacity building for local food production and make the community food self-sufficient. Foods produced in *Meechim* farm are safer compared to food stuff imported from Winnipeg and other cities as local produces involve less travel, and also, less processing and distributing channels are involved before they reach to customers.

## CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

### 6.1 Major Findings

#### 6.1.1 High food insecurity

Garden Hill (GH), a remote Northern Manitoban fly-in First Nation community, has very high incidence of food insecurity. Survey conducted on 69 households revealed that 96% of the total households remained food insecure in the last 12 months. 88% households with children were food insecure in the same period. Surveys conducted over time in the GH community reveal that household food insecurity increased gradually. Food insecurity exerts very high negative impacts on individual's social, mental, and physical health. Consequences of food insecurity include chronic heart disease, obesity, type-2 diabetes, and many more. Key respondents informed me that there are children aged 7 years and upward in the community who are already suffering from diabetes.

Prevalence of food insecurity in the community is a vicious cycle with multiple interrelated causes and effects. Food insecurity eventually leads to poor health condition of an individual who eventually cannot work properly, meaning that the dependent family is trapped into further deteriorating food insecure condition. Some of the visible causes of food insecurity in the GH community are: low household income, poor employment rate, geographic isolation, and lack of access to public transportation. But it has causes that are deep-rooted in cultural colonization GH community faced historically, shift in individual food habits, climatic and environmental changes, as well as influences of globalization and corporate bodies on young generation life.

### **6.1.2 Food System in the Garden Hill**

Located in a rich developed country, GH First Nation's poverty scenario display the role of inequitable laws and access to food and other natural resources creating a complex situation of poverty. The issue of under-development in the GH community is primarily a class phenomenon, created by inequitable treatment of indigenous people at different epochs of Canadian history (Alamgir, 1978). Most of the community members suffer from a deep sense of insecurity- a dire consequence of historic multi-scale feudal and colonial forces in a historical perspective.

What is distressing to note from the field study with GH community members is the higher proportion and absolute number households trapped in food insecure situations. Social, economic, political, and regulatory forces are obvious which create a process of pauperization, and tend to push down many food insecure families trapped below the poverty line, and confine them 'in a state of quasi-equilibrium oscillating' between the poverty line and extreme form of food insecure condition (Alamgir, 1978). Unless stringent community-based food production efforts are undertaken with supports from multiple governments, the process of pauperization cannot be easily halted. Mentionable here, the decision-making process related to development of the GH area is extremely hierarchical in nature, and major administrative and resource allocation political authorities are culturally and attitudinally far away from the realm and realities of the GH community.

In the past, the community was self-sufficient with traditional foods gathered from the surrounding natural sources. Traditional foods include trapped and hunted animals, fish, and fruits and vegetables including medicinal plants. Traditional land use maps of GH First Nation community reveal that community people in their past practiced their traditional food gathering activities over a huge area even beyond the *de facto* and *de jure* provincial boundaries. Besides

traditional food, community members had their own agricultural garden mainly along the shoreline. They shared whatever they got from the Mother Earth. There was no or hardly any existence of monetary system in the community. Money was introduced in the name of child tax benefit and social welfare, and the state-introduced monetary benefits radically changed the long-held traditional barter or food exchange system.

At present, people are apparently more dependent on processed food; a fair majority of them are reluctant about hunting, trapping or fishing. Due to attributes like inflation, geographical isolation, and lack of year-round transportation system, price of all essential commodities escalated, but unfortunately, the prescribed amount of social welfare from the state did not keep pace proportionately. Traditional knowledge on hunting, trapping, and fishing transferred from generation to generation is on decline being attributed to residential model school and other colonial effects. Administrative and regulatory barriers of cross-scale governments along with high prices of equipment/resources required for hunting, fishing and trapping and lack of supports for such activities from the government lead to reduced access to traditional foods and characteristically more dependence on market foods.

Along with lack of all seasons' road and high transportation costs for foods, limited number of grocery outlets and stores' monopoly business strategies make food insecurity worse and complicated. Consequently, people cannot afford healthy foods they need most, rather they started depending on unhealthy junk foods. Their dependence on imported market foods make them more vulnerable to food insecurity. The grocery store in the community keep very few items compared to what the community members need, thus forcing them to purchase grocery items from Northern Store in the neighboring island. Every trip to Northern Store costs them roughly 10 dollars per person. Again, in Northern Store, healthy foods including milk, eggs,

vegetables, and fruits are very expensive compared to unhealthy food such as chips and pops. So, people with extremely limited financial capacity tend to purchase bulk cheap foods instead of small quantities of healthy foods with the same level of price, a vicious cycle that people cannot get rid of easily soon.

Though the community has huge land area, there is no or insignificant agricultural activities to produce their own foods. Besides land, they have water all around which can be used easily for irrigating crop field, and trash fishes following their biological degradation can be used for developing the quality of soil. People in the community have strong social bonding, which is also an asset for community gardening or community based food programs. In contrast, they have some barriers from producing their own food locally. Financial constraint is a major issue. Household income of most of the individuals is so minimal; they can barely afford their basic needs, let alone saving for investment in farming. Remoteness, poor transportation and infrastructural support for agriculture make it further difficult to produce foods locally. For a fly-in community without all seasons roads, it is very difficult to ship equipment or their required materials for farming. Lack of state-of-the-art knowledge on agriculture, and motivation make the new generation less enthusiastic for agriculture. All these factors contributed to their higher household food insecurity.

*Meechim Inc.*, a social enterprise, is trying to reduce the household food insecurity by making the community self-sufficient in food production. It is a partnership project of GH First Nation, Aki Energy, the University of Manitoba, and Four Arrows Regional Health Authority to form a community-driven farm, Meechim farm. The farm aims to establish a local agricultural farm for crops and poultry production as well as establish a local outlet where it can sell healthy foods in cheap prices including their own farmed products and traditional recipes developed by

local experts. It intends to create holistic effects by producing and selling local fresh, healthy cheap foods, providing employment opportunities to community people, and capacity building of community and keeping money circulation within the community. The profit made by the farm is expected to be reinvested for other community development works to make the project more sustainable. In its very first year, it could generate enthusiasm among community people, and motivate the young generation. More importantly, the farm has become a symbol of hope to the community. Community started believing that they can produce their own foods overcoming all the challenges they have now.

Food insecurity is a complex issue in the GH community, and given its geographical isolation, cannot be solved easily without adopting a participatory food production system by the community members themselves. To overcome food insecurity by building upon community's capacity in their own food production requires long term planning, laudable local level leadership initiatives, and active participation from cross-scale governments and local community. Adoption of both immediate and long-term well-orchestrated rural development plan is *sine qua non* in this regard. Given the dire food insecurity situation, I would like to propose that governments should come forward to fund community food programs, train people for agriculture and livestock production, and provide equipment and other logistic support for individuals who are interested to set up their own farms. Government and bank can provide loan or credit facilities to people on liberal conditions so that people in the community can avail loan.

Band office can take more and more community-centered and community-friendly policies and programs involving young generation. GH community should come forward and actively participate in community-based food programs and develop their skill. Once a section of enthusiast people get trained, they can demonstrate the appropriate farming techniques as

appropriate locally, and teach other people in food production locally. School programs can teach young people who also can train their family members to do backyard garden or backyard poultry. Beside these, community can take holistic approach, where they can share their assets with each other in different sectors such as agricultural farm, fish co-op, and other personal or community entrepreneurs. Agricultural farms can use/recycle by-products and by-catch of fish co-op to improve quality of soil; on the other hand fish co-op can use storage /cooler of agricultural farm as and when needed.

## **6.2 Recommendations**

1. Include agricultural farming course in school curricula to teach young kids and make them interested in producing crops locally.
2. More funds from cross-scale government should be channelized for country food program involving community members.
3. Rather than recruiting for short time, long-term employment for the farm employees should be encouraged, so that they can develop their skill and train other people.
4. Government should train young people who are not employed and not going to school anymore in indigenous food systems including horticulture and animal science.
5. Government should provide equipment and other infrastructural support for the entrepreneurs in the locality.
6. Credit facilities /micro credit should be channelized without collateral by government or bank financial institutions.
7. Educate children for healthy eating at school, so that they can practice it at their family too.

### **6.3 Future research Areas**

Food insecurity is increasing in the GH over period as revealed by the surveys conducted by S. Thompson, Zahariuk, and the present research. This research found that the availability of traditional food did not reduce significantly, but contribution of traditional food in their daily meal reduced substantially. One of the major factors is the lack of financial resources. To find out what other reasons attributed to this, and solution to revive traditional food pattern might be a future research interest. Future research should also concentrate on indigenous knowledge of traditional food production system, soil improvement tools and techniques, cropping cycle.

### **6.4 Research Limitations**

1. *External Researcher:* As a researcher I was very new to this community and my socio-cultural background is different from that of the community.
2. *Time constraint:* I had been in the community for a limited time. For a social science researcher, this time was not sufficient to explore the food system of the community precisely and elaborately.

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APPENDIX A: ETHICS PROTOCOL APPROVAL



**Research Ethics  
and Compliance**  
Office of the Vice-President (Research and International)

Human Ethics  
208-194 Dafoe Road  
Winnipeg, MB  
Canada R3T 2N2  
Phone +204-474-7122  
Fax +204-269-7173

APPROVAL CERTIFICATE

April 6, 2015

**TO:** Malay Kumar Das (Advisor S. Thompson)  
Principal Investigator

**FROM:** Susan Frohlick, Chair  
Joint-Faculty Research Ethics Board (JFREB)

**Re:** Protocol #J2015:012  
"Understanding local food system in Garden Hill Community: A feasibility study on community based poultry production"

Please be advised that your above-referenced protocol has received human ethics approval by the **Joint-Faculty Research Ethics Board**, which is organized and operates according to the Tri-Council Policy Statement (2). **This approval is valid for one year only.**

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Secretariat in advance of implementation of such changes.

**Please note:**

- If you have funds pending human ethics approval, please mail/e-mail/fax (261-0325) a copy of this Approval (identifying the related UM Project Number) to the Research Grants Officer in ORS in order to initiate fund setup. (How to find your UM Project Number: <http://umanitoba.ca/research/ors/mrt-faq.html#pr0>)
- if you have received multi-year funding for this research, responsibility lies with you to apply for and obtain Renewal Approval at the expiry of the initial one-year approval; otherwise the account will be locked.

The Research Quality Management Office may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba *Ethics of Research Involving Humans*.

**The Research Ethics Board requests a final report for your study (available at: [http://umanitoba.ca/research/orec/ethics/human\\_ethics\\_REB\\_forms\\_guidelines.html](http://umanitoba.ca/research/orec/ethics/human_ethics_REB_forms_guidelines.html)) in order to be in compliance with Tri-Council Guidelines.**

[umanitoba.ca/research](http://umanitoba.ca/research)



**Research Ethics and Compliance**  
Office of the Vice-President (Research and International)

Human Ethics  
208-194 Dafoe Road  
Winnipeg, MB  
Canada R3T 2N2  
Phone +204-474-7122  
Fax +204-269-7173

**RENEWAL APPROVAL**

May 6, 2016

**TO: Malay Kumar Das (Supervisor: Shirley Thompson)**  
Principal Investigator

**FROM: Lorna Guse, Chair**  
Joint-Faculty Research Ethics Board (JFREB)

**Re: Protocol #J2015:012 (HS17481)**  
**"Understanding local food system in Garden Hill Community:  
A feasibility study on community based poultry production"**

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Please be advised that your above-referenced protocol has received approval for renewal by the Joint-Faculty Research Ethics Board. **This approval is valid for only year and will expire April 5, 2017.**

Any significant changes of the protocol and/or informed consent form should be reported to the Human Ethics Coordinator in advance of implementation of such changes.

[umanitoba.ca/research](http://umanitoba.ca/research)

## APPENDIX B: CONSENT FORMS



Consent for interviewing the community members and poultry production experts on local food system in Garden Hill and feasibility of community poultry production

### INFORMED CONSENT FORM

Project title: Understanding local food system in Garden Hill Community: A feasibility study on community based poultry production.

Principal Investigator: Malay Kumar Das, Master of Natural Resources Management Candidate, Natural Resources Institute, Clayton H. Riddell Faculty of Environment, Earth and Resources, University of Manitoba, [dasm@myumanitoba.ca](mailto:dasm@myumanitoba.ca)

Research Advisor: Dr. Shirley Thompson, Associate Professor, Natural Resources Institute, Clayton H. Riddell Faculty of Environment, Earth and Resources, University of Manitoba, 204-474-7174, [s.thompson@umanitoba.ca](mailto:s.thompson@umanitoba.ca)

This consent form is only part of the process of informed consent. A copy of which will be left with you for your records and references. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

1. Project Description: As a partial fulfillment of my Masters of Natural Resources Management degree at Natural Resources Institute of University of Manitoba, I am conducting this research. This research aims to improve the food security status of the Garden Hill First Nation community by establishing a community poultry farm. Besides contributing in their nutritional improvement, it will boost up the local economy.
2. Funding: The research will be funded by research supervisor Dr. Shirley Thompson through the Meechim Inc..
3. Procedure: If you give your kind consent to take part in this study, you will be asked to answer some question on local food system of the community and about the scope, challenges, demand and impacts of poultry production involving community members.
4. Location and Time Requirements: The total time to complete the interview might range from 40-60 minutes. The interview will be recorded with an audio-recorder

- with your consent so that I will not miss any point of this interview. I will also take note but your name will not be identified unless you wish it to.
5. Voluntary Participation /Withdrawal: Participation in this study is strictly voluntary. You may choose not to participate or may end the interview session at any time without dire consequences. You may also decline to answer question(s) during the interview.
  6. Confidentiality: The collected information of the interview will remain confidential. All collected data will be coded and kept in a safe lock at the university office. Only the principal investigator and research supervisor will have access to the data. Your personal information will be withheld in any report published from the study. After 6 months of the completion of the study approximately July, 2016 information containing personal data will be destroyed. Interview notes and audio recordings will be also destroyed.
  7. Compensation: Participants of the study will not receive any sorts of compensation for participating in this study.
  8. Result Dissemination: Information provided by you may be published in my thesis report at the University of Manitoba as well as in academic papers and documentary. Any publication resulting from this research will be shared with the community under investigations, regional government agencies, as well as other participants requesting these materials. Community will be notified about the outcome of the study through local television/radio stations and local gathering. If community has any obligation to this format of dissemination, we will follow their lead. The content and format of the thesis will be discussed in the community and we will seek their suggestions/feedbacks. We will try best to develop consensus with the community regarding content.
  9. Risks and Benefits: There is no known risk associated with the participation in this study. Benefit of study will be the set a background and accumulate resources for a potential poultry farm/to successfully conduct a feasibility study of a poultry farm.
  10. Feedback: If you wish to have any notes or recording of the interview, I will be willing to provide it to you.
  11. Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject, in no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. Participation in this study is strictly voluntary. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. However, you may not be able to withdraw your information when the thesis is underway, which is approximately 15 October 2015.

- 12. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.
- 13. The University of Manitoba may look at the research record to see that the research is being done in a safe and proper way.
- 14.
- 15. The Joint-Faculty Research Ethics Board has approved this research. If you have any concerns or complaints about this project, you may contact any of the above named persons or the Human Ethics Coordinator (HEC) at 474-7122 or email Margeret\_bowman@umanitoba.ca.

16. ....  
 Signature of the Participant Date

17. ....  
 Signature of the Principal Investigator Date

18. If you have consent, I would like to audio-record this interview. Otherwise I would record your information by hand.

19.

I agree

I don't agree

20. Please provide your contact address and contact information below if you would like to receive an audio-file of this interview.

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**Natural Resources Institute**

70 Dysart Rd,  
Winnipeg, Manitoba  
Canada R3T 2N2  
General Office (204) 474-7170  
Fax: (204) 261-038  
[http://umanitoba.ca/institutes/natural\\_resources/](http://umanitoba.ca/institutes/natural_resources/)

Consent for Household survey on local food system in Garden Hill and feasibility of community poultry production

**INFORMED CONSENT FORM**

Project title: Understanding local food system in Garden Hill Community: A feasibility study on community based poultry production.

Principal Investigator: Malay Kumar Das, Master of Natural Resources Management Candidate, Natural Resources Institute, Clayton H. Riddell Faculty of Environment, Earth and Resources, University of Manitoba, [dasm@myumanitoba.ca](mailto:dasm@myumanitoba.ca)

Research Advisor: Dr. Shirley Thompson, Associate Professor, Natural Resources Institute, Clayton H. Riddell Faculty of Environment, Earth and Resources, University of Manitoba, 204-474-7174, [s.thompson@umanitoba.ca](mailto:s.thompson@umanitoba.ca)

This consent form is only part of the process of informed consent. A copy of which will be left with you for your records and references. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

1. Project Description: As a partial fulfillment of my Masters of Natural Resources Management degree at Natural Resources Institute of University of Manitoba, I am conducting this research. This research aims to improve the food security status of the Garden Hill First Nation community by establishing a community poultry farm. Besides contributing in their nutritional improvement, it will boost up the local economy.
2. Funding: The research will be funded by research supervisor Dr. Shirley Thompson through the Meechim Inc..
3. Procedure: If you give your kind consent to take part in this study, you will be asked to answer some question on local food system of the community and about the scope, challenges, demand and impacts of poultry production involving community members.

4. Location and Time Requirements: The total time to complete the survey might range from 40-60 minutes. I will also take note but your name will not be identified unless you wish it to.
5. Voluntary Participation /Withdrawal: Participation in this study is strictly voluntary. You may choose not to participate or may end the survey session at any time without dire consequences. You may also decline to answer question(s) during the survey.
6. Confidentiality: The collected information of the interview will remain confidential. All collected data will be coded and kept in a safe lock at the university office. Only the principal investigator and research supervisor will have access to the data. Your personal information will be withheld in any report published from the study. After 2 years of the completion of the study approximately January, 2017 information containing personal data will be destroyed. Interview notes and audio recordings will be also destroyed.
7. Compensation: Participants of the study will not receive any sorts of compensation for participating in this study.
8. Result Dissemination: Information provided by you may be published in my thesis report at the University of Manitoba as well as in academic papers and documentary. Any publication resulting from this research will be shared with the community under investigations, regional government agencies, as well as other participants requesting these materials.
9. Risks and Benefits: There is no known risk associated with the participation in this study. Benefit of study will be the set a background and accumulate resources for a potential poultry farm/to successfully conduct a feasibility study of a poultry farm.
10. Feedback: If you wish to have any notes of the survey, I will be willing to provide it to you.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject, in no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. Participation in this study is strictly voluntary. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. However, you may not be able to withdraw your information when the thesis is underway, which is approximately 15 October 2015.

The University of Manitoba may look at the research record to see that the research is being done in a safe and proper way.

This research has been approved by the Joint-Faculty Research Ethics Board. If you have any concerns or complaints about this project, you may contact any of the above named

persons or the Human Ethics Coordinator (HEC) at 474-7122 or email  
[Margeret\\_bowman@umanitoba.ca](mailto:Margeret_bowman@umanitoba.ca).

.....  
Signature of the Participant Date

.....  
Signature of the Principal Investigator Date



**Natural Resources Institute**

70 Dysart Rd,  
Winnipeg, Manitoba  
Canada R3T 2N2  
General Office (204) 474-7170  
Fax: (204) 261-038  
[http://umanitoba.ca/institutes/natural\\_resources/](http://umanitoba.ca/institutes/natural_resources/)

Appendix A (3): Consent for focus group discussion on local food system in Garden Hill and feasibility of community poultry production

INFORMED CONSENT FORM

Project title: Understanding local food system in Garden Hill Community: A feasibility study on community based poultry production.

Principal Investigator: Malay Kumar Das, Master of Natural Resources Management Candidate, Natural Resources Institute, Clayton H. Riddell Faculty of Environment, Earth and Resources, University of Manitoba, [dasm@myumanitoba.ca](mailto:dasm@myumanitoba.ca)

Research Advisor: Dr. Shirley Thompson, Associate Professor, Natural Resources Institute, Clayton H. Riddell Faculty of Environment, Earth and Resources, University of Manitoba, 204-474-7174, [s.thompson@umanitoba.ca](mailto:s.thompson@umanitoba.ca)

This consent form is only part of the process of informed consent. A copy of which will be left with you for your records and references. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

1. Project Description: As a partial fulfillment of my Masters of Natural Resources Management degree at Natural Resources Institute of University of Manitoba, I am conducting this research. This research aims to improve the food security status of the Garden Hill First Nation community by establishing a community poultry farm. Besides contributing in their nutritional improvement, it will boost up the local economy.
2. Funding: The research will be funded by research supervisor Dr. Shirley Thompson through the Meechim Inc..
3. Procedure: If you give your kind consent to take part in this study, you will be asked to participate in the discussion on different issues related to poultry production involving community members.
4. Location and Time Requirements: The total time required for the discussion might range from 1 hour to 1 ½ hours. The discussion will be recorded with an audio-

- recorder with your consent so that I will not miss any point of this discussion. I will also take note but your name will not be identified unless you wish it to.
5. Voluntary Participation /Withdrawal: Participation in this study is strictly voluntary. You may choose not to participate or may end the discussion session at any time without dire consequences.
  6. Confidentiality: The collected information of the discussion will remain confidential. All collected data will be coded and kept in a safe lock at the university office. Only the principal investigator and research supervisor will have access to the data. Your personal information will be withheld in any report published from the study. After six months of the completion of the study approximately July, 2016 information containing personal data will be destroyed. Interview notes and audio recordings will be also destroyed.
  7. Compensation: Participants of the study will not receive any sorts of compensation for participating in this study.
  8. Result Dissemination: Information provided by you may be published in my thesis report at the University of Manitoba as well as in academic papers and documentary. Any publication resulting from this research will be shared with the community under investigations, regional government agencies, as well as other participants requesting these materials.
  9. Risks and Benefits: There is no known risk associated with the participation in this study. Benefit of study will be the set a background and accumulate resources for a potential poultry farm/to successfully conduct a feasibility study of a poultry farm. Please be clear that the principal investigator cannot guarantee that any participant will not breach the confidentiality of other participants' information. Any information that is considered confidential to you should not be discussed in the focus group; you can share the information personally with the with me if you feel comfortable about it.
  10. Feedback: If you wish to have any notes or recording of the discussion, I will be willing to provide it to you.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject, in no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. Participation in this study is strictly voluntary. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. However, you may not be able to withdraw your information when the thesis is underway, which is approximately 15 October 2015.

The University of Manitoba may look at the research record to see that the research is being done in a safe and proper way.

The Joint-Faculty Research Ethics Board has approved this research. If you have any concerns or complaints about this project, you may contact any of the above named persons or the Human Ethics Coordinator (HEC) at 474-7122 or email [Margeret\\_bowman@umanitoba.ca](mailto:Margeret_bowman@umanitoba.ca).

.....  
Signature of the Participant Date

.....  
Signature of the Principal Investigator Date

If you have consent, I would like to audio-record this interview. Otherwise I would record your information by hand.

I agree

I don't agree

Please provide your contact address and contact information below if you would like to receive an audio-file of this interview.

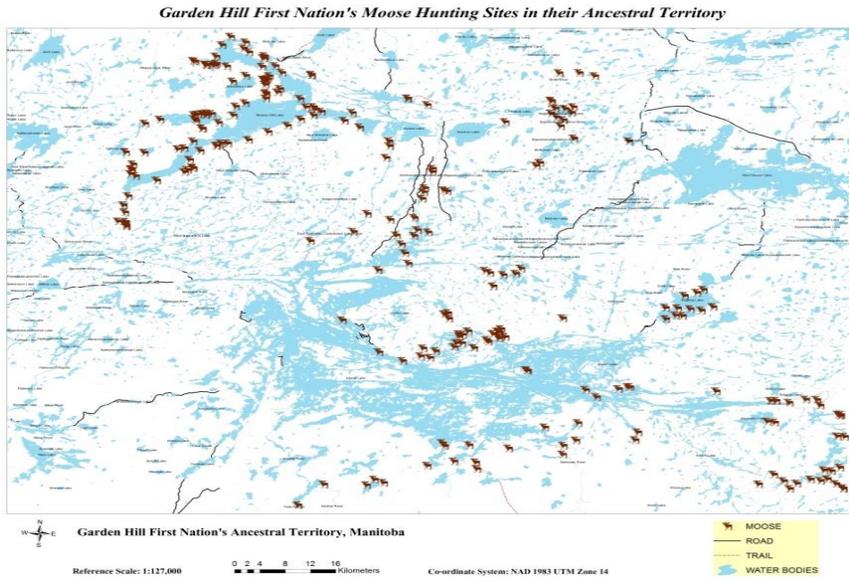
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APPENDIX C:



Source: Thompson, Flett and Rahman, 2016

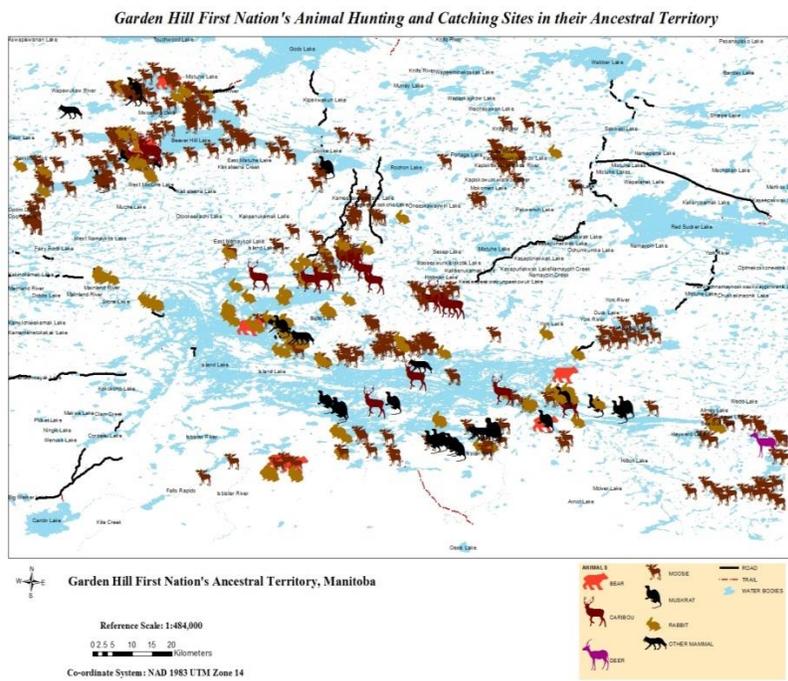


Figure : Garden Hill First Nation's animals hunting and catching sites

Source: Thompson, Flett and Rahman, 2016

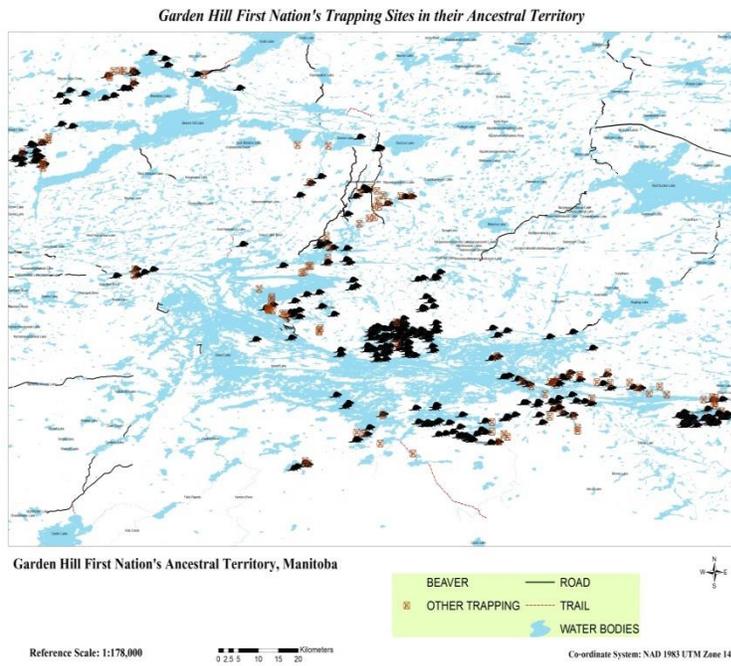


Figure: Garden Hill First Nation's trapping sites

Source: Thompson, Flett and Rahman, 2016

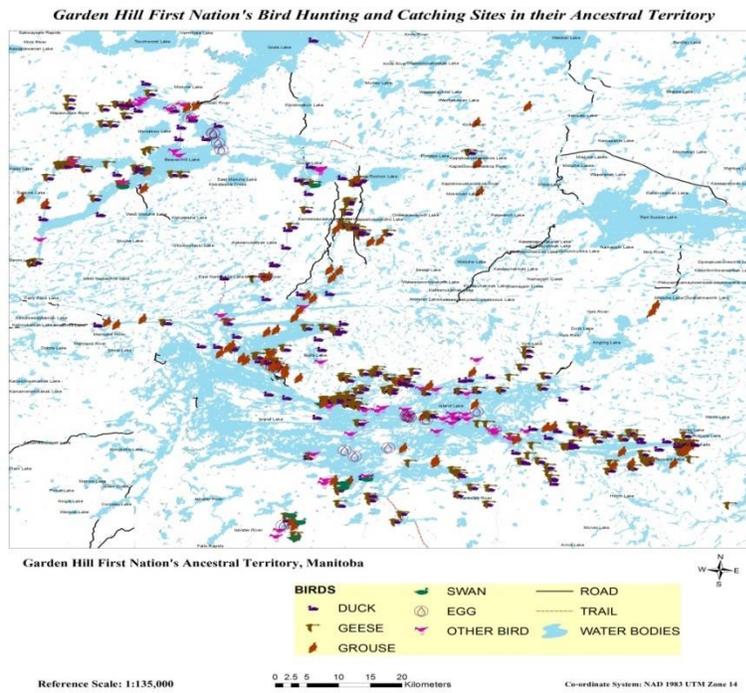


Figure: Garden Hill First Nation's birds hunting and catching sites

Source: Thompson, Flett and Rahman, 2016

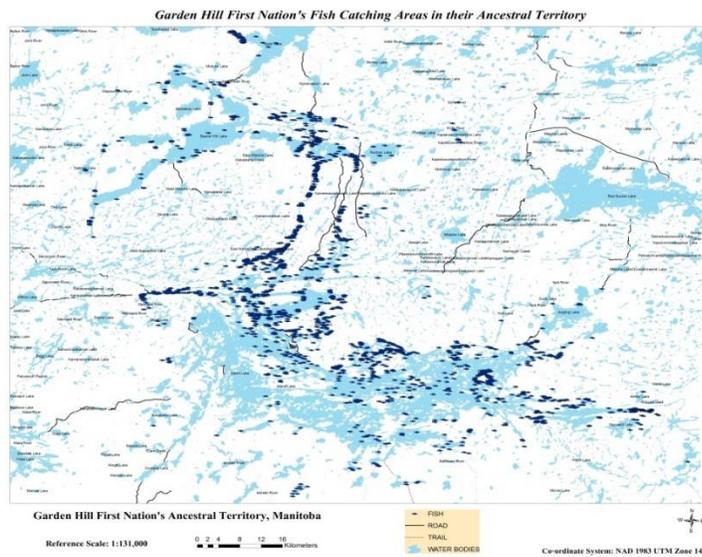


Figure: Garden Hill First Nation's fish catching areas

Source: Thompson, Flett and Rahman, 2016

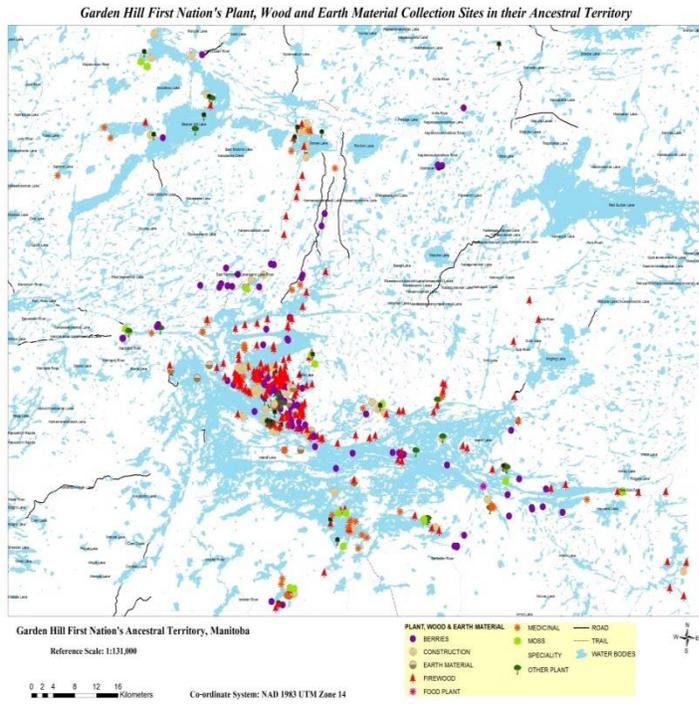


Figure: Garden Hill First Nation's plant, weed and earth material collection sites

Source: Thompson, Flett and Rahman, 2016