

**“NEWFOUNDLAND, NEWFOUNDLAND...HOW DOES YOUR GARDEN
GROW?” EXPLORING THE IMPACT OF GARDENING ON HEALTH AND
FOOD SECURITY IN THE NORTHEAST AVALON REGION**

by © Mercy Dhlakama Winsor

A Thesis submitted to the School of Graduate Studies

in partial fulfillment of the requirements for the degree of

Master of Science in Medicine, Community Health and Humanities, Faculty of Medicine

Memorial University

May 2018

St. John's Newfoundland and Labrador

ABSTRACT

Purpose: The purpose of this qualitative descriptive study was to explore home and community food gardening and its perceived impact on health and food security within the Newfoundland and Labrador context. **Objectives:** 1) to describe the demographic characteristics of gardeners in the Northeast Avalon region; 2) to explore their key reasons and motivations for gardening; 3) to understand the perceived impacts of gardening on health and food security and; 4) to explore the challenges and barriers to gardening, and subsequently suggestions on how to address these challenges and barriers. **Findings:** Research participants were mostly young to middle aged, well-educated, mid-to-high income individuals. Almost all participants reported taking part in gardening for enjoyment and self-satisfaction. Most participants were health conscious and gardened to complement other healthy practices. The impact of gardening on food security appeared to be a secondary benefit of the practice. **Implications:** While acknowledging the limitations of gardening in directly addressing food security, this study highlights the potential role of gardening as a tool for promoting and supporting health. Recommendations on how to enable gardening to become an accessible option for those who wish to engage in the activity are proposed.

Keywords: Gardening, Food security, Newfoundland

ACKNOWLEDGEMENTS

Firstly, to my wonderful supervisor, Dr. Martha Traverso-Yepez: Thank you for your guidance and support throughout this process. Thank you for your patience and the countless hours you spent reading and reviewing my work. Thank you for always encouraging me to think critically and challenging my world view when it was easier to accept the status quo. I will be forever grateful for all the impromptu lessons on health promotion, the kindness you offered through this journey, and for always believing in my work – even in the moments when I did not.

To my supervisory committee members, Dr. Barbara Roebathan and Dr. Natalie Beausoleil: thank you for your on-going encouragement and feedback through this process. Your input in completing this work was invaluable.

Thank you to the Atlantic Regional Training Center (ARTC) for the wonderful program that allowed me to connect and learn with some of the best across the Atlantic province. To the ARTC contacts at Memorial University, Cathy Peyton and Christa McGrath – you are my super stars! Thank you to the Research and Development Corporation NL (RDC) - Industrial Research and Innovation Fund (IRIF), ARTC and Memorial University for your financial support.

Thank you to all the wonderful participants who took part in this study. A special thank you to all the gardeners who took the time to walk me through their gardens while sharing their stories, experiences and gardening tips. You are all such an inspiration!

Thank you to all my friends, family and workmates who endured hours of endless ramblings about this project. I am sure you now probably know more about gardening, health and food security in NL than they may have wanted to. Thank you for always allowing me to bounce off my ideas, listening to my rants, and for your constant encouragement over the years.

To my wonderful husband, Rodney: Thank you for your constant love and support through this journey. Thank you for building me garden beds so I could live out my research. Thank you for being as passionate as you are about where our food comes from and for your commitment to ensuring that we pass on that legacy to our son.

Henry: Thank you for the joy and sweetness you bring in my life.

Lastly, I want to extend a heartfelt thank you to my parents, Davies and Kumbirai Dhlakama. You have always encouraged me to ask more questions and to be constantly striving to learn. Thank you for instilling and cultivating that desire for knowledge in me. Most importantly, thank you for the love and all the support you have provided over the years.

CONTENTS

Abstract	ii
Acknowledgements	iii
List of Tables	viii
List of Figures	ix
List of Abbreviations and Symbols	x
List of Appendices	xi
CHAPTER 1: Introduction	1
1.1 Background of Study	1
1.2 Purpose of Study	2
1.3 Objectives of the Study	2
1.4 Research Questions	3
CHAPTER 2: Developing a Conceptual Framework: A Review Of The Literature.....	4
2.1 Overview and History of Gardening in Newfoundland	6
2.1.1 Early Home Food Production in Newfoundland	9
2.1.2 The Decline in Home Food Production in Newfoundland	13
2.1.3 Present Day Home Food Production in Newfoundland	16
2.2 Benefits of Gardening	18
2.2.1 Gardening and General Health and Wellbeing	19
2.2.2 Gardening and Food Security	28
2.3 Challenges and Barriers to Gardening in NL	39
2.3.1 Physical Challenges and Barriers to Gardening in NL	39
2.3.2 Conceptual Challenges and Barriers to Gardening in NL	41
CHAPTER 3: Methodology and Research Design	42
3.1 Exploring Gardening through a Qualitative Approach	42
3.1.1 Fundamental Qualitative Description	43
3.2 Research Design	44
3.2.1 Online Survey	44
3.2.2 Interviews	46

3.3 Ethical Considerations.....	49
CHAPTER 4: Survey Results and Analysis	50
4.1 General Gardening Experiences.....	50
4.1.2 Reasons and Motivations for Gardening	52
4.1.3 Challenges and Barriers to Gardening.....	55
4.1.4 Overcoming Challenges and Barriers	58
4.1.5 Demographic Questions - Who is gardening in NL?	60
CHAPTER 5: Interview Findings and Analysis	64
5.1 Gardening Participants	64
5.1.1 About the Gardeners	64
5.1.2 Reasons and Motivations for Gardening	67
5.1.3 Gardening and Health.....	75
5.1.4 Gardening and Food Security	86
5.1.5 Challenges and Barriers to Gardening.....	90
5.1.6 Overcoming Challenges and Barriers to Gardening.....	99
5.2 Key Informants.....	108
5.2.1 The Importance & Relevance of Gardening in NL	109
5.2.2 Gardening and Health in NL	118
5.2.3 Gardening and Food Security	120
5.2.4 Challenges and Barriers to Gardening.....	128
5.2.5 Overcoming Challenges and Barriers to Gardening.....	137
5.2.6 General Comments on Gardening	143
CHAPTER 6: Discussion.....	147
6.1 Does gardening have a role to play in promoting and supporting health in Newfoundland and Labrador?	148
6.2 Does gardening have a role to play in increasing food security in Newfoundland and Labrador?.....	151
6.3 What key recommendations can be drawn from this research in relation to gardening as an activity/tool to improve health and food security in NL?	154
6.4 Study Limitations and Future Research	161

6.5 Gardening for health and food security in NL: Concluding remarks.....	162
References	164
Appendices.....	175
Appendix 1: Online Survey – Gardening in Newfoundland	176
Appendix 2: Gardening Participant Interview Guide.....	182
Appendix 3: Key Informant Interview Guide	185
Appendix 4: Gardening Participant Consent Form	187
Appendix 5: Key Informant Consent Form	192

LIST OF TABLES

Table Number	Description	Page Number
Table 2.1	Food insecurity on a continuum	32
Table 2.2	Continuum of Food Security Strategies	33
Table 3.1	An Illustration of the Data Analysis Process	48
Table 4.1	Number of Years Growing Food in NL	50
Table 4.2	Type of garden	51
Table 4.3	Reasons and motivations for gardening	52
Table 4.4	What do you enjoy most about gardening?	54
Table 4.5	Perceived challenges and barriers to gardening	56
Table 4.6	Suggestions for overcoming challenges and barriers to gardening	58
Table 4.7	Age	61
Table 4.8	Gender	61
Table 4.9	Marital Status	62
Table 4.10	Highest level of education completed	62
Table 4.11	Occupational Status	63
Table 4.12	Current annual household income	63
Table 4.13	Were you born in Newfoundland?	63

LIST OF FIGURES

Figure Number	Description	Page Number
Figure 5.1	A photograph showing examples of raised beds	65

LIST OF ABBREVEATIONS AND SYMBOLS

AITCNL	Agriculture in the Classroom Newfoundland and Labrador
CCHS	Canadian Community Health Survey
FAO	Food Agriculture Organization of the United Nations
FEASt	Food Education Action St. John's
FSN-NL	Food Security Network of Newfoundland and Labrador
HREB	Health Research and Ethics Board
NL	Newfoundland and Labrador
NPHS	National Population Health Survey
PHAC	Public Health Agency of Canada
WSFS	World Summit on Food Security

LIST OF APPENDICES

Appendix Number	Description	Page Number
Appendix 1	Online Survey – Gardening in Newfoundland	176
Appendix 2	Garden Participant Interview Guide	182
Appendix 3	Key Informant Interview Guide	185
Appendix 4	Garden Participant Consent Form	187
Appendix 5	Key Informant Consent Form	192

CHAPTER 1: INTRODUCTION

1.1 Background of Study

Newfoundland and Labrador (NL) faces a number of food and nutrition challenges, such as, poor eating habits and limited availability and access to healthy food choices. These factors, along with the reported low levels of physical activity across the province may contribute to the high rates of diet-related illnesses like stroke, heart disease, and obesity (Govt. Newfoundland and Labrador, 2006). This not only impacts the provinces overall health and well-being, but also puts a financial strain on the health care system. To further compound these issues, the 2012 Canadian Community Health Survey (CCHS) showed that 13.4% of households in Newfoundland and Labrador were food insecure (limited access to healthy foods). Food insecurity is a serious public health concern as research suggests that the health and well-being of individuals is closely related to their household food security (Tarasuk, Mitchell, and Dachner, 2014).

Research has been conducted nationally and internationally to explore the myriad benefits associated with gardening, particularly the role of gardening initiatives in increasing and/or improving food security (Carney et al., 2012; Kortright & Wakefield, 2011; Barbolet et al., 2009) and promoting healthy living (Carney, Hamada, Rdesinski, et al., 2012; Sempik, 2010; Barbolet et al., 2009; Alaimo et al., 2008; Stein 2008; Wakefield et al., 2007). Most of the research on gardening has been conducted in environments or climates that are conducive to gardening in general, for example, Ontario, Oregon, British Columbia, etc. (Carney et al., 2012; Kortright & Wakefield, 2011; Barbolet et al., 2009).. While there is currently a growing body of research around gardening and food security

within NL, at the conception of this project, the literature on gardening, particularly home and community gardening, within the NL context was quite limited. Newfoundland and Labrador has unique gardening challenges, such as a short growing season, a cool climate, rocky and acidic soils, harsh winds, etc. As such, it is difficult to know whether the roles and/or benefits associated with gardening observed in other areas with more favorable conditions hold true within the NL context.

1.2 Purpose of Study

The purpose of this research was to explore home and community food gardening (hereon simply referred to as gardening) and its perceived impact on health and food security within a NL context. Key areas of interest included: determining who was taking part in gardening, and why they chose to do so considering the harsh food growing conditions in the province; key challenges and barriers gardeners faced while growing food in NL, as well as the different approaches they took to overcome these challenges and barriers; and lastly, home and community gardeners' perceptions regarding the role or impact of gardening on health and food security within the province. Ultimately this study aimed to contribute to the local body of food research, with a particular emphasis on providing NL-specific data on gardening, health and food security.

1.3 Objectives of the Study

Specific objectives of the study were: 1) to describe the demographic characteristics of individuals participating in gardening in the Northeast Avalon region;

2) to explore their key reasons and motivations for gardening; 3) to study the opinions and experiences of gardeners and key informants regarding the perceived impacts of gardening on health and food security and; 4) to explore the challenges and barriers faced by these gardeners in pursuing this practice, and subsequently their suggestions on how to address these challenges and barriers.

1.4 Research Questions

The specific application questions guiding this study were:

- 1) Does gardening have a role to play in promoting and supporting health in NL?
- 2) Does gardening have a role to play in increasing food security in NL?
- 3) What key recommendations can be drawn from this research in relation to gardening as an activity/tool to improve health and food security in NL?

CHAPTER 2: DEVELOPING A CONCEPTUAL FRAMEWORK: A REVIEW OF THE LITERATURE

Gardening is a practice that has been purported to have an impact on overall health and wellness. Key benefits of gardening identified in the literature include the role of gardening in increasing the consumption of fresh produce, increasing physical activity, improving and sustaining mental health, creating social connections in neighborhoods, and improving environmental health (Carney, Hamada, Rdesinski, et al., 2012; Burges & Moore, 2011; Heim et al., 2011; Hale et al., 2011; Sempik, 2010; Barbolet et al., 2009; Alaimo et al., 2008; Stein 2008; Wakefield et al., 2007; Infantino, 2004). Furthermore, there is research that also suggests that gardening can play a role in building or strengthening food security¹ (access to healthy food) (Carney et al., 2012; Kortright & Wakefield, 2011; Barbolet et al., 2009).

The 2012 Canadian Community Health Survey (CCHS) showed that 13.4% of households in Newfoundland and Labrador were food insecure (Tarasuk, et al., 2014). Food insecurity is one of the social determinants of health, and research shows that Canadians who experience food insecurity are more likely to experience multiple chronic conditions such as heart disease, diabetes and, high blood pressure (Che and Chen, 2001; Tarasuk, et al., 2014). Furthermore, NL has some of the lowest levels of fruit and vegetable consumption in Canada (only 25.5% of residents in NL reported eating fruit and vegetables at least five times daily, compared to the national average of 40.8%) as

¹ The meaning of the term ‘food security’ will be defined and explored in depth in section 2.2.2 (page 28)

well as low levels of physical activity; factors which may further contribute to a number of chronic conditions, such as diabetes, heart disease, cancers, etc. (Statistics Canada, 2013; Govt. Newfoundland and Labrador, 2006). Research evidence suggests that increased consumption of fresh fruit and vegetables helps to improve and maintain overall health, and has the potential to protect against some types of cancers and certain chronic diseases (Health Canada, 2008), while increased levels of physical activity are important in obtaining and maintaining good health.

As highlighted above, NL faces a number of key challenges regarding the levels of food security, consumption of fruit and vegetables, as well as physical activity. It is thus a reasonable assumption that addressing these three aspects (food security, consumption of fruits and vegetables, and levels of physical activity) could potentially improve the overall health and wellness of the people of Newfoundland and Labrador. As gardening has been identified to be a practice that can improve levels of fresh produce consumption, physical activity, environmental and social health, as well as play an important role in increasing food security; would it not be worthwhile to promote and encourage the practice of gardening within NL?

While the literature on gardening and its benefits highlights the idea that gardening could be a worthwhile health promoting tool, as well as a tool in increasing food security in NL, most of this literature does not consider some of the unique characteristics and challenges present within this province. Most research on the role of gardening is carried out in environments that are conducive to gardening in general (i.e. good, quality soil; moderate temperatures, long growing season; etc.), while NL

conditions are not always favourable. Thus one can assume that often times the decision to garden in NL cannot be as simple as the decision to garden in places which have more favourable conditions. Additionally, considering these challenges, it is also possible that the benefits of gardening within this province may differ for gardeners here when compared to gardeners in other provinces.

The remainder of this chapter is designed to provide a context for the research objectives and consists of two main sections. Firstly, an overview and history of home food production in NL will be provided in order to allow the reader to gain a glimpse of some of the challenges around local food production in this province during those early days. Following that a brief review of the key factors leading to the decline in agriculture and home food production during the last century will be presented. This, in turn, will provide some context for understanding the challenges and barriers that present day gardeners in the province face and the relevance of promoting local food production. Secondly, this chapter will focus on presenting the key benefits of gardening, with an emphasis on the benefits of gardening on general health and well-being and food security within a NL context.

2.1 Overview and History of Gardening in Newfoundland

The history of local food production (gardening/ farming) in Newfoundland and Labrador is complex and dates back to early European settlement in the region. Historically, there have been periods in which agricultural activity was widely promoted and periods in which it was discouraged. In the early days, settlements were temporary,

lasting only as long as the fishing season. At that time, British officials discouraged local food production in order to dissuade settlers from staying over the winter or on a more permanent basis (MacKinnon, 1991; Shaw & NL Royal Commission on Agriculture, 1955). In addition to the objections to permanent settlement, there were misconceptions about the island's capacity to produce food. More importantly however, agricultural activities were most likely discouraged due to the notion that any pursuit of farming or food production would disrupt the fishing industry (Murray, 2002; Shaw & NL Royal Commission on Agriculture, 1955).

According to MacKinnon, agriculture in the St. John's area began in the early 18th century when some of the early settlers stayed behind during the winter months and kept their "common kitchen gardens" and pastured livestock that they imported from New England. The gardens were developed on patches of land that civilians cleared themselves or on land improved and reserved for soldiers stationed at Fort Williams, located near present day Signal Hill (MacKinnon, 1991). Expansion of cultivated land and gardening activities was halted in 1766, when the governor at the time objected to civilians using land reserved for the officers and soldiers. The governor ordered the evacuation of houses and knocking down of fences on land that had been cleared by unauthorised civilians, and reserved 50 acres of land around the fort for use only by soldiers. The soldiers were allowed to create gardens as long as they had approval from their commanding officers. Despite these restrictions, some areas where houses were to be evacuated and used only by soldiers remained undisturbed, and as the number of

overwintering settlers increased, civilians simply took over and used other areas around the city for gardening (MacKinnon, 1991).

Although there was some local food grown in the region, most food consumed in NL (including salt beef, pork, butter breadstuffs, flour, dried peas, tea, coffee, rum, sugar and molasses) was transported over great distances from Ireland, Southern England or New England, the West Indies, and some North American ports (MacKinnon, 1991). While this arrangement had provided an adequate supply for the previously small and transient population of the earlier settlements, it was unable to adequately meet the needs of the expanding settlement.

Around the early 1800's, there was a growing interest in agricultural development fueled by two key factors. Firstly, rapid industrializations in Britain generated a greater demand on domestic agricultural surpluses, which consequently reduced the amount of food available for export to the colonies (including NL). Secondly, there was a disruption of traditional patterns of trade as a result of the Napoleonic Wars and the War of 1812. Due to the wars, there was an increase in demand for foodstuffs by the crewmen onboard the navy ships assigned to St. John's, which in turn led to an increase in competition for these food provisions, ultimately driving food prices up (MacKinnon, 1991). These inflationary conditions as well as the scarcity of provisions in the early parts of 1813 forced settlers in the area to attempt to produce their own fresh food, while also providing an economic inducement for those around St. John's already growing food to expand their practices in order to produce enough surpluses to bring to the market (MacKinnon, 1991; Murray, 2002; Shaw & NL Royal Commission on Agriculture, 1955).

Furthermore, the “instability and unreliability of the fishing industry”, prompted a need for a secondary activity that would provide a reasonable and dependent income (Shaw & NL Royal Commission on Agriculture, 1955, pp. 27; Murray, 2002). A Commission set up to investigate the capacity of the island to produce its own food found that contrary to previous beliefs, agricultural activities did not interfere with the fishing industry (Shaw & NL Royal Commission on Agriculture, 1955). Rather, “homegrown produce was the key to the colony’s survival” (Murray, 2002, pp. 33). Agricultural activities were not a threat to the fishing industry, but rather an important adjunct (Shaw & NL Royal Commission on Agriculture, 1955; Murray, 2002). Farming had finally found its place in a culture and economy largely dominated by fishing (Murray, 2002).

Although a commercial agricultural industry was encouraged, most families tended to focus on supplementary farming which involved growing a few traditional vegetables in gardens and keeping a cow and/or few goats and hens for household consumption (Murray, 2002; Shaw & NL Royal Commission on Agriculture, 1955). The practice was meant to be self-sufficing in character. It appears that this form of food production was perpetuated throughout the history of Newfoundland in both the rural and urban areas and is described in the section below.

2.1.1 Early Home Food Production in Newfoundland

Garden produce protected fishing families against the threat of starvation through the produce they grew themselves or exchange with other community members (Cadigan, 1994). Gardening was a practice that also brought families and communities together as

they worked hard to produce enough food to sustain themselves through poor fishing seasons or the long winters of NL (Nelson-Hamilton, 2011). In her discussion of the gardening practice in NL, Nelson-Hamilton notes that gardens were often group endeavours, which included extended family, and/or neighbours within a community. “All Hands Be as One” was a motto that indicated collaboration between families. Working together ensured that the heavy work associated with gardening was made lighter through the sharing of tasks (Omohundro 1995). In addition to the sharing of tasks involved in growing the food, there was also a culture of food sharing which involved sharing the produce from the gardens with other people living within the community (Nelson-Hamilton, 2011).

Despite challenges such as the climate and poor soils, Omohundro (1995) highlights that Newfoundlanders successfully adapted Old World practices to fit their environment. Food was mostly grown by the women while the men were out fishing or logging. However, families often came together to prepare the fields for the growing season. Most food was grown in kitchen gardens and “lazy beds”, an old method of gardening practiced in Europe and in other coastal settlements. Omohundro describes the lazy beds as garden beds that were about three to five feet wide, of varying lengths separated by trenches that could be one foot wide and up to a foot and a half deep (Omohundro, 2006). The soil was enriched with stable manure, seaweed, or commercial fertilizer.

Lazy beds are well suited to areas that lack warmth, deep soil and drainage and were thus suitable to the geographical characteristics of NL (Omohundro, 2006). Some

advantages of lazy beds include: i) the warmth resulting from the raised beds being drier than the moist flat ground around them; ii) the beds warm up more quickly in the morning and retain heat longer; iii) the beds protect the crops at night from frost by draining the denser cold air into the ditches; iv) the reduced soil compaction as spading up the beds loosens the soil while chopping any green manure; and v) the beds allow for dense planting which effectively stifles weeds and increases the yield per acre (Omohundro, 2006).

According to Omohundro (1995), the gardening season began in April when cabbage seedlings were started on window sills. In May, potatoes from the previous years saved for seed were brought in from the root cellars and allowed to sprout. Once the ground thawed in late May or early June the planting began. Some literature suggests that while both men and women were involved in the garden, it was the women who were mostly involved with garden work while the men carried out fishing activities (Porter, 1985). Porter suggests that in most cases the men did the digging of the soil, while the women cleared the ground of stones, planted, weeded, defended the crops against animals, and finally gathered and preserved the garden produce. Omohundro adds that the women also tended to their kitchen gardens which could be found behind the house. These kitchen gardens could contain cabbages, beets, carrots, onion and rhubarb, currant bushes and other fruits or vegetables that women needed to protect or cultivate on a regular basis (Omohundro, 1995). Tomatoes were also grown in hot houses, while kale and other heartier greens were common features of some contemporary gardens (Nelson-Hamilton, 2011).

Berry picking was a major food gathering activity that regularly complemented the local food supply. The practice of berry picking, still widely practiced in Newfoundland, was a task often performed by women and children, although men were sometimes involved. Different kinds of berries were picked on different parts of the island and included: blueberries, partridgeberries, bake apples, marsh berries, currants, cranberries, raspberries and black berries (Porter, 1985). The literature suggests that a large number of the berries picked were sold in order to obtain cash for some winter supplies. The rest of the berries were bottled, that is processed into jams, preserves, and relishes. These were then stored along with the root vegetables, in root cellars for consumption throughout the long winter months and into early spring (Porter, 1985; Nelson-Hamilton, 2011).

Root cellars were very important for food preservation and storage during this time. Root cellars are described as “underground structures designed to create a cold and humid environment that is ideal for the storage of fresh vegetables and fruits for several months” (Food First NL & Ferber, 2012, pp. 49). Root cellars kept food from freezing during the winter months, while also keeping food cool during the warmer summer months. Elton (2010) notes that for Newfoundland, “root cellars built from soil, stones and wood have been part of the culture for centuries because they were the only way to keep enough vegetables, salted meat and cod to get people through long, wet winters.” Along with the salted meat and fish stored in root cellars, some examples of vegetables stored in the root cellars included potatoes, turnips, carrots, beets and onions.

2.1.2 The Decline in Home Food Production in Newfoundland

According to Omohundro (1995), changes to home food production in Newfoundland were influenced by external and internal events, which began around the time of the Great Depression (1930) and the Second World War (1939).

At the onset of the Second World War, the British government began a domestic food production campaign known as the “Dig for Victory” campaign. The Dig for Victory campaign was started in order to mitigate Britain’s food supply vulnerabilities.

At the beginning of the Second World War, less than one-third of the food consumed in Britain was locally grown (Ginn, 2012). At the time, Britain was importing most of its cheese, sugar, fruit, cereal, and about 50% of its meat by sea transportation.

Consequently, food supplies were vulnerable to attack from the German navy. The Dig for Victory campaign was therefore a strategic method employed by the British government in order to ensure that people did not starve in the event of a sea blockade.

The campaign led to an increase in the number of allotment gardens from 930,000 before the war to 1.7 million by 1943, as well as an increase in the number of private vegetable gardens from three to five million (Ginn, 2012).

In the United States, community gardens known as Liberty and Victory gardens were also begun during and after both World Wars. These community gardens were encouraged in order to increase access to food for families with limited access to transportation, which in turn freed up resources and food supplies to feed troops overseas (Armstrong, 2000; Barbolet, et al., 2009; Okvat & Zautra, 2011). It is estimated that in 1944, there were between 18 and 20 million families who had victory gardens, which

provided 40% of the total American vegetable supply (Lawson, 2005, p. 171 as cited in Okvat & Zautra, 2011; Armstrong, 2000).

While Britain had allotment gardens and the United States had Liberty and Victory Gardens, there were no ‘victory gardens’ in NL, even though Newfoundland was a British Colony. Instead, after the Depression, the people in NL “abandoned their subsistence gardening for the construction work that was stimulated by the war” (Omohundro, 1995, pp. 157). It is suggested that the decline in subsistence agriculture accelerated in 1949 when NL joined Canada. Confederation with Canada saw unemployment compensation, retirement benefits and welfare cheques becoming a significant part of the NL household income. While subsistence gardening had been a practice necessary to avoid hunger or starvation during the long winters in NL, these additional sources of income reduced the “precariousness of life that had made gardening necessary” (Omohundro, 1995, pp. 157). Confederation with Canada also resulted in the elimination of many taxes and tariffs which had kept food prices high in NL. With the proliferation of the food industry, imported, processed food thus became more affordable to a larger number of people. Additionally, the construction of roads connected isolated communities, further increasing their access to grocery stores, wage work, health care and other conveniences of civilization (Omohundro, 1995).

While there were financial and political changes that resulted in the decline of gardening in NL, there were internal, cultural and social changes that also resulted in the decline of home food production and self-sufficiency in NL. Some of these changes included: the availability of cash, smaller families, changes in consumption patterns, and

the introduction and promotion of prepared foods (Omohundro, 1995). According to Omohundro, the changes in societal values had a significant impact on the decline of gardening. For example, in the 1970s, the provincial school curriculum in NL changed. Of particular interest were the changes in the home economics curriculum which saw home food production courses being avoided in favor of subjects that taught “young women to be modern consumers of prepared foods like cake mixes and canned tuna” (pp. 158). Additionally, Omohundro adds that for many people in the province, vegetable gardening, goats and berry picking became symbols of poverty and backwardness.

Omohundro’s final conclusions regarding the decline of gardening in NL suggests that by the 1970’s Newfoundlanders had come to realise that the economic progress expected after Confederation was going to be slower than anticipated. Omohundro’s study succinctly summarizes the change from the high hopes brought about by confederation to the expectation or hope for the future of gardening in NL: [...] we gave ‘em up [gardens] because we thought times were getting better. But they weren’t. People are going to have to go back to the ground again” (Omohundro, 1995, pp. 158).

Omohundro’s conclusions reflected an expectation that with rising inflation, laying-off of workers, and other economic problems, people would look back to gardening. Was this ‘wishful thinking’ on his part? Were the people of Newfoundland and Labrador going to return to growing their own in large numbers? Does the current situation within the local food-growing environment in NL reflect this return to living off the land?

2.1.3 Present Day Home Food Production in Newfoundland

Cadigan (1994) noted that gardening remained a widespread activity throughout some rural regions in NL. Omohundro (1995), who studied gardening in the Northern peninsula in rural Newfoundland noted that the practice of vegetable gardening most likely persisted in some of these rural NL communities as it displayed and perpetuated “old values concerning self-reliance, subsistence skills and extended family reciprocity” (pp. 155). Presently, almost 20 years after the work conducted by these two researchers, while the practice of gardening may not be as widespread as it once was when people gardened for survival, gardening activities continue in the Northern Peninsula and across the province. There is evidence that suggests that local food production may be on the rise as demonstrated by the growing number of community gardens identified by the Food First-NL (previously known as the Food Security Network of Newfoundland and Labrador, FSN-NL) inventory on food security initiatives over the last few years (Food First NL, 2012).

In addition to community gardens, gardening or local food production is also being introduced into the education system as a way of teaching children about where their food comes from, as well as a way to pique their interest in how to grow their own food. One prime example of gardening as a learning opportunity is the St. Francis School Greenhouse in Harbour Grace, NL. The school garden in Harbour Grace provides an opportunity for local students to gain hands-on experience in growing food and preparing healthy snacks. In addition to planting seeds and monitoring the growth of plants, the students also receive presentations about the nutritional value of the vegetables and fruits

that they are growing. The learning experience for students is completed when the students get an opportunity to prepare healthy snacks with their produce (Public Health Agency of Canada (PHAC), 2009).

In addition to gardening in schools, there are also some programs being introduced into the curriculum to provide a broad understanding of the food system such as *Agriculture in the Classroom*. Agriculture in the Classroom is an “industry-supported initiative” that is “intended to help NL children increase their awareness and understanding of why our food system is essential in society” (NL Federation of Agriculture, nd).

While there is an inventory to account for community gardens (and some school gardens), as well as some information on school gardens in the province, at present there is no way of knowing the extent to which other gardening initiatives such as home gardening are spread among the general population. One can make the assumption that there appears to be a general growing public interest in local food growing or home food production as evidenced by the growing number of these home, community and school gardens. Additionally, over the last few years, there has also been an interest in local food production as evidenced by the introduction and increase in the number of farmers’ markets.

Cadigan (1994) and Omohundro (1995) suggested that people would continue practicing home or community gardening in order to display and perpetuate values of self-reliance and subsistence skills. Is it possible that present day gardening in NL in both rural and urban areas is still an extension of the importance of values around self-reliance

and subsistence skills? Or are present day gardeners in the region gardening as a reflection of their concern about the status of their food security? Are people growing food in their gardens in order to counter the economic challenges highlighted by Omohundro (1995), out of necessity? Or are people being drawn out into their gardens for reasons beyond necessity? Is gardening in NL simply a part of the wave of green movements seen in other parts of Canada and around the globe, which are movements based on ecological and environmentally friendly values? Or even more, is present day gardening a reflection of the desire by some residents of the province to lead healthier lives and improve their health status through the increased consumption of locally produced fresh produce?

The reasons why people choose to participate in gardening are complex. To begin answering this question as it relates to NL, it was important to gain some insight on some of the potential benefits of gardens identified in the literature. The following section explores the benefits of gardening, with a particular emphasis on these benefits as they relate to health and food security.

2.2 Benefits of Gardening

There are numerous benefits of gardening highlighted in the literature, which include the role of gardens in: increasing consumption of fruits and vegetables among participants, increasing physical activity, improving mental health, generating a sense of community, increasing levels of community attachment, building social networks/connections, building and/or improving the local physical environment, encouraging

ecological and sustainable living, and increasing food security (Carney et al., 2012; FSN-NL, 2011b; Barbolet et al., 2009; Alaimo et al., 2008; Wakefield et al., 2007; Stein 2008; Infantino, 2004; Burgess & Moore, 2011). The discussion in this literature review will mainly focus on the health and social benefits of gardening, as well as the role that gardening plays in food security.

2.2.1 Gardening and General Health and Wellbeing

Gardening has a number of health benefits, either perceived or measured, which have been shown to improve the physical and psychological health of those individuals who participate in the activity (Burgess & Moore, 2011). The literature suggests that gardening may positively influence health by playing a role in improving dietary intake, increasing levels of physical activity, increasing self-esteem, improving mental health, and improving or contributing to overall general health and well-being (Carney et al., 2012; Burgess & Moore, 2011; Wakefield et al., 2007; Heim et al., 2011; Hale et al., 2011; Sempik, 2010; Barbolet et al., 2009; Alaimo et al., 2008; Stein 2008; Wakefield et al., 2007; Infantino, 2004). Furthermore, there is research that also suggests that gardening can play a role in building or strengthening food security through access to healthy food (Carney et al., 2012; Barbolet et al., 2009).

Gardening and Improved Dietary Intake: One of the main health benefits identified in the literature is the role that gardening plays in increasing the consumption of fruit and vegetables among participants (Carney et al., 2012; Kortright & Wakefield, 2011; Wakefield et al., 2007; Stein 2008; Alaimo et al., 2008; Heim et al., 2011; Barbolet

et al., 2009; McCormark et al., 2010; Burgess Watson & Moore, 2011). According to Health Canada, a healthy diet consisting of a variety of fruits and vegetables may help reduce the risk of some types of cancer, as well as the risk for heart disease (Health Canada, 2008).

The increase in consumption of fruits and vegetables among participants who garden, may be a result of the increased physical and economic access to fresh, healthy produce from community or home gardens (FSN-NL, 2011; Barbolet et al., 2009; Flanigan & Varma, 2006; Alaimo et al., 2008; Heim et al., 2011; Burgess & Moore, 2011). In their research, Alaimo et al. noted that “community gardens may offer potential as a nutrition intervention because they address a primary barrier some urban residents face when trying to eat a healthful diet, that is, limited availability of fresh produce” (Alaimo et al., 2008, pp. 97). This idea can in turn be extended to home gardeners as these gardens also increase their availability to fresh produce.

The 2012 Canadian Community Health Survey (CCHS) showed that the proportion of residents who reported eating fruit and vegetables at least five times daily (Health Canada’s daily recommendation) was lowest in Newfoundland and Labrador (25.1%). This percentage was lower when compared to all the other provinces, and compared to the national average (40.6%) (Statistics Canada, 2013). Key food and nutrition challenges faced within NL include: poor eating habits, increasing rates of obesity in adults and children, and limited availability and access to healthy food choices, especially for groups such as low income, children, youth, women who are pregnant and seniors (Govt. Newfoundland and Labrador, 2006). These factors may contribute to the

very high rates of diet-related illnesses (e.g. stroke, heart disease, diabetes) reported within the province, which not only impact the provinces overall health and wellbeing, but also puts a financial strain on the health care system. In 2006, the estimated cost of unhealthy eating in Newfoundland and Labrador was approximately \$126 million annually, based on estimates of national projections (Govt. Newfoundland and Labrador, 2006).

Efforts to address the challenges related to eating healthy in NL have included the provincial food and nutrition framework titled ‘Eating Healthier in NL: A provincial food and nutrition framework and action plan’. The framework was directed by a vision which hopes to ensure that “All residents of Newfoundland and Labrador will have reasonable access to an adequate, nutritious and safe food supply and a supportive, comprehensive network of food and nutrition services” (Govt. Newfoundland and Labrador, 2006, pp. 1).

Key directions to meet the goals of the food and nutrition framework included:

reinforcing healthy eating and physical activity practices, enhancing the availability of safe, high quality food which supports healthy eating; and supporting food and nutrition research. Gardens, not only provide an avenue to all these food and nutrition related aspects, gardens have also increased physical activity, which is closely linked to healthy eating for maintaining health and wellbeing (Govt. Newfoundland and Labrador, 2006).

Recognizing the challenges that NL faces with respect to dietary intake, and considering key directions noted in the framework around creating environments that promote healthy eating, as well as promoting the safe quality foods; does gardening then have a role to play in NL in promoting these practices? If so, how do the people of NL

perceive gardening as making a difference in their diet and eating habits? This aspect of healthy eating was explored as part of this study in order to gain some insight into what role gardening had for individual gardeners, and what potential role it might have at a provincial level.

Gardening and Physical Activity: The literature on gardening also shows that gardening may be beneficial to health by encouraging and increasing the levels of physical activity among participants (Park et al., 2013; Chen & Janke, 2012; FSN-NL, 2011; Berg et al, 2010; Stein, 2008; Park et al., 2008; Bellows et al., 2004). Gardening can provide an opportunity for regular physical activity, which promotes health and can help in managing chronic diseases (Stein, 2008). Stein (2008) notes that 30 to 40 minutes of gardening (considered to be moderate intensity exercise) can help in preventing and decreasing overweight and obesity. Park, Shoemaker & Haub (2008) also conducted a study to investigate whether older adults could meet their physical activity (PA) recommendation of at least 30 minutes of moderate intensity PA on most days of the week through gardening. Results from the study showed that participant's average gardening time during the observational study was 53 minutes per day. The authors thus concluded that healthy older gardeners could meet the physical activity recommendations through their daily gardening, a factor that could lead to the physical and mental health of the participants.

While a number of studies exploring the physical health benefits of gardening focus on adults and seniors (Park et al, 2008; Berg et al, 2010), a recent study conducted in South Korea found that children can also benefit from activities related to gardening.

In this study, Park et al measured the metabolic cost of 10 gardening tasks in children to determine the exercises intensity associated with the gardening. The results from the study showed that digging and raking represented high intensity exercises, while weeding, mulching, hoeing, sowing seeds, harvesting, watering, mixing the growing medium, and planting transplants represented moderate intensity activity. The authors concluded that the data from the study could be used in the development of garden-based exercise interventions for children, which they argue could promote a healthy and a physically active lifestyle in children and youth (Park et al, 2013).

The studies summarised above highlight some of the positive impacts that gardening can have on levels of physical activity. Increasing the levels of physical activity can have comprehensive health benefits across the life span, which include: promoting and supporting healthy growth and development in children and youth; prolonging independence as people get older; contributing to healthy bones, muscles and joints, decreasing stress, and potentially decreasing the incidence of chronic diseases like cancer, Type 2 diabetes and heart disease (PHAC, 2011; Stein, 2008). Positive inputs also include addressing the economic costs of inactivity estimated to be about approximately \$42 million annually, based on national projections from 2006 (Govt. Newfoundland and Labrador, 2006). Stein (2008) also notes that gardens can provide an opportunity to participate in holistic health-promoting behaviour through better nutrition and by encouraging active living. Even moderate forms of exercise may increase muscle strength and endurance in activity-reduced persons including pregnant women, cancer survivors, and generally sedentary individuals (Bellows et al., 2004).

Recognizing the challenges that NL faces with regards to healthy eating and physical activity, could gardening have a role to play in promoting better nutrition and physical activity within NL? The literature suggests that gardening has the potential to address these two key areas, which in turn may play a role in increasing the health, well-being and quality of life of Newfoundlanders and Labradoreans (FSN-NL, 2011; Stein, 2008; Bellows et al., 2004, PHAC, 2011). In order to explore the potential role of gardening on physical activity levels of this population, it is important to consider the kind of impact that gardening is currently having on those participants who are already gardening in the region. Do active gardeners in the province experience any positive benefits with regards to their physical activity as they take part in gardening? Exploring the perceived impact of gardening on physical activity was thus another focus of this research.

Gardening and Mental Health: Some research suggests that gardening may also play a role in improving and maintaining mental health (Grabbe, Ball & Goldstein, 2013; Sempik, 2010; Wakefield et al, 2007). Historically gardens were often found near hospitals or other formal communities, such as prisons or asylums as it was believed they were beneficial to mental health and well-being (Sempik, 2010). Today, gardening benefits mental health clients in more structured forms such as horticultural therapy (the use of nature as therapy), as well as in less structured forms as evidenced in community gardening studies which report reduced stress, and improvements in affective well-being among most gardening participants (Sempik, 2010, Wakefield et al, 2007; Okvat & Zautra, 2011). In one such study, Grabbe, et al. (2013) explored the perceptions of

homeless women regarding their experiences in a shelter-based garden project that aimed to promote mental wellness. Findings from the study showed that in addition to providing a resource for food, the women who took part in the garden reported increased positive social interactions with other gardeners. Additionally, some of the women noted that the physical work of the garden was a distraction from the many stresses of homelessness, while the tangible results of gardening (the harvest) provided a psychological boost.

In Newfoundland and Labrador, the Ever Green Environmental program offers competitive employment to individuals recovering from mental illnesses. While there are key benefits for some individuals to this type of intervention that offers competitive employment, a key recommendation from a recent evaluation of the program noted the importance of developing other kinds of non-competitive intervention programs that could meet the needs of mental health clients who are not ready for competitive employment (Traverso-Yeppez, et al, 2012). A gardening program could be an example of such a non-competitive intervention. However, before developing such programs, it is essential to gain a clear understanding of whether gardeners in this region obtain any mental health benefits from taking part in this activity. By exploring the perceived impacts of gardening on health, this study also hoped to learn whether participants perceived any positive mental health benefits by taking part in gardening. As indicated by Grabbe et al (2013), “gardening is an elegantly simple and inexpensive approach to mental wellness promotion. It provides exercise, gardening skills, good nutrition, and a pleasant, supportive, social milieu” (pp. 265). As such, would it not be worthwhile to

consider the role that gardening may have in promoting mental health within this province?

Gardening and Environmental Health: A common factor in the literature on gardening is the role of gardens in promoting environmental well-being (Okvat & Zautra, 2011; Barbolet et al., 2009, Bellows et al, 2004). Home and community gardening can help in decreasing greenhouse gas emissions as growing food locally reduces the energy demand and carbon emissions associated with distributing food over long distances (Okvat & Zautra, 2011). Bellows et al (2004) noted that cultivating food improves the air quality, while also increasing bio-diversity. Additionally, gardens, particularly community gardens, increase the amounts of green spaces available in urban regions which have also been attributed to increasing or improving mental health (Okvat & Zautra 2011; Barbolet et al., 2009).

Gardening and Community Connections: Research evidence shows that healthy social connections can improve overall health and well-being of individuals (Kawachi & Berkman, 2001; Cacioppo & Caccioppo, 2014). Strong social support networks are identified as one of the determinants of health. In an article by Jennings, Larsen & Yun (2016), the authors note that having access to green space can improve health for individuals and communities “by promoting aesthetic surroundings that encourage residents to be more physically active, socialize with neighbors, support mental renewal, and enhance community satisfaction” (Jennings, Larsen & Yun, 2016, pp.5). While taking part in home gardening may provide an opportunity for interaction with other home gardeners, the literature suggests that it is really community gardens that offer an

opportunity for the development of social connections and networks. Teig et al (2009), note that community gardens have a positive influence within neighbourhoods, often serving as a catalyst for other positive “place-based social dynamics” (Teig, et al, 2009, pp.1116).

Participating in community gardening is suggested to be beneficial in creating and strengthening social support networks. Wakefield et al., (2007) explored the perceived health benefits of community gardens among community garden participants in a low-income Toronto neighborhood. Besides benefits such as increasing consumption of fruits and vegetables and increasing physical activity, participants indicated that community gardens “decreased isolation through sharing of seed[s], tools, knowledge, ideas, produce, culture and recipes (as cited in Okvat & Zautra, 2011). Other studies and reports support these findings identifying community gardens as a social gathering place for the community. Community gardens encourage the sharing of knowledge between generations, provides an opportunity to learn social skills such as cooperation, and provides an opportunity for social contact and expansion of neighborhood social networks, which serve as a foundation for building community capacity (FSN-NL, 2011; Barbolet et al., 2009; Okvat & Zautra 2011). Community gardens may also play an important role in contributing to a sense of togetherness particularly when families garden together and thus spend quality family time building relationships (Carney et al, 2012).

Community gardens have an additional benefit of building community by “cultivating a sense of commitment and ownership towards the neighborhood,

community and larger food system” (Barbolet et al., 2009, pp. 7). Furthermore, community gardens build community capacity, and strong community capacity has been identified as increasing the effectiveness and quality of community health interventions (Twiss et al, 2003). Community gardens also provide an opportunity to develop food production skills, and generate food-related businesses, factors which strengthen community capacity (Barbolet et al., 2009).

2.2.2 Gardening and Food Security

The literature around the benefits of gardening suggests that gardening may play a role in increasing or improving food security at a household and community level. Before delving into a discussion of the benefits or role of gardening to food security, it is important to ensure that there is an understanding of what food security is, as well as what it means to be food insecure.

Food Security: Food security exists when “all people, at all times, have physical and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life” (World Summit on Food Security (WSFS) & Food and Agriculture Organization of the United Nations (FAO), 2009). When access to food is disrupted either due to physical, social, political and/or economic barriers, then food insecurity is said to exist.

Food First NL (a provincial, membership-based, non-profit organization dedicated to improving food security for all Newfoundlanders and Labradoreans) notes that achieving food security depends on the success of the food system, which includes

production, distribution, access, consumption, and disposal of food. That is, food security exists when “all elements of the food system are functioning together effectively to support environmental, economic and social wellbeing” (Food First NL, 2015, pp.4).

Accordingly, while the primary component of food security relates to access to healthy food for all, food security is also concerned with environmental issues (that food is produced/ transported/ marketed in an environmentally sustainable manner); and social justice issues (that those who are involved in the food industry earn a decent wage, and that people are able to make informed decisions about their food). More importantly, it is necessary to emphasize the role of economic resources, not only to buy food, but to live within a favorable, nurturing environment throughout the lifespan, where individuals are able to develop and make informed, conscious, and healthy choices in their personal lifestyles.

Discussions of food security in the literature commonly use the term ‘community food security’. Dietitians of Canada describe community food security as existing “when all community residents obtain a safe, personally acceptable, nutritious diet through a sustainable food system that maximizes healthy choices, community self-reliance and equal access for everyone” (Slater et al., 2007, pg.2). It is suggested that the term ‘community food security’ is used as it provides a more holistic understanding of food security as a community level concern, rather than an individual or household problem (Kortwright & Wakefield, 2011).

Food Insecurity: Food insecurity can be defined as "the inability to acquire or consume an adequate diet quality or sufficient quantity of food in socially acceptable

ways, or the uncertainty that one will be able to do so" (McIntyre, 2003, pp.46). Food insecurity is commonly associated with, but is not limited to low-income households. Evidence from the 1998/99 National Population Health Survey (NPHS) (as cited in Che and Chen, 2001) indicated that about 14% of middle-income households in Canada reported being food insecure at least once in the previous year. Food insecurity appears to be prevalent among the following groups: lone-parent households, individuals relying on social assistance as their main source of income, persons of Aboriginal descent living off reserve, and Atlantic Canadian low-income mothers (Che & Chen, 2001; McIntyre, et al, 2001). McIntyre, et al (2001) suggests that the grocery budget is considered flexible, and is therefore one of the first things to be compromised when individuals experience financial constraints, which may account for the high levels of food insecurity within these groups. Additionally, when living under a limited budget, individuals are often forced to regularly choose cheaper, processed, high calorie foods, which are not usually the healthiest options.

Health Implications of Food Insecurity: Canadians who are food insecure are more likely to report poor health, and more likely to experience multiple chronic health conditions such as heart disease, diabetes and, high blood pressure (Vozoris & Tarasuk, 2003; Che and Chen, 2001). As food insecurity may compromise dietary and nutritional status, it can in turn negatively impact the management of certain chronic diseases in which nutrition is implicated, such as, diabetes, obesity, stomach and colorectal cancers (Tarasuk, 2003).

Food insecurity is also paradoxically associated with overweight and obesity (Che & Chen, 2001; Townsend et al, 2001). It is suggested that food insecure people are more likely to binge eat or choose higher calorie, processed foods as they are far cheaper options than fresh produce (Che and Chen, 2001). Moss (2013) reported that food companies invest millions of dollars in conducting sophisticated experimental studies to predict consumer preferences for specific food flavours and textures. These studies aim to determine the “bliss point”, that is, the point most likely to generate the greatest amount of craving for processed foods. In his understanding, consuming these processed, high calorie foods (which are often cheaper and widely available) can become a form of addiction. This observation by Moss could partially explain the paradoxical relationship between food insecurity and overweight and obesity.


In addition to the evidence linking food insecurity and dietary concerns, there are also studies that suggest that food insecurity may also negatively impact mental health (Tarasuk, 2003). In the report by Che and Chen (2001), the authors mention that individuals in food-insecure households may experience distress stemming from worrying about depleting food supplies. The report adds that food-insecure individuals were also more likely to have had a major depressive episode in the previous year. As the evidence regarding health implications of food insecurity grows, there is a critical need for food insecurity issues to be addressed.

Addressing Food Insecurity: Che and Chen (2001) note that “in North America, hunger rarely reaches the drastic levels of deprivation that exist in poorer parts of the world” (pp.11). Instead, the literature presents levels of food insecurity on a continuum

ranging from mild food insecurity to severe food insecurity (Che & Chen, 2001; Tarasuk, 2001). On this continuum, changes in the levels of food insecurity are reflected in changes in the eating patterns of households. The changes in the level of food security often progress from mild food insecurity, where there is anxiety about limited food supplies, followed by changes in the adult's eating patterns (i.e. adults within a household, commonly the mothers/ female care-giver, compromising their nutritional needs in order to provide for their children). At the most severe level of food insecurity, the eating patterns of children within the household are impacted. Table 1 below is a representation of the food security continuum as described by Che and Chen:

Table 2.1: Food insecurity on a continuum			
Mild food insecurity		Severe food insecurity	
Anxiety about limited food supplies	Declining levels of supplies lead to compromising on quality for quantity. Conditioned to consume less nutritious foods	Depleting supplies lead to periods of hunger or the likely consumption of cheaper processed food. Often at this stage however, only the adults alter their eating patterns to ensure adequate supplies for children within the household	Supplies and resources exhausted. Nothing is available to eat and at this stage, in extreme situations, even children within the household may experience hunger or the consequences of poor nutrition.

Approaches or measures to address food insecurity, and subsequently approaches to build food security often happen across a continuum which moves from short-term relief strategies towards longer term systems change and policy work (FSN-NL, 2014). Table 2.2 is an illustration of how the food security strategies exist on a continuum as described by the FSN-NL.

Table 2.2 : Continuum of Food Security Strategies		
Emergency & Short-Term Relief Strategies	Capacity Building Strategies	Systems Change Strategies
		

The food security continuum “helps to illustrate the complexity of food security and the various types of work that can be done to address some of the food security challenges” (FSN-NL, 2014). There are three main strategies within the food security continuum which focus on addressing immediate problems of hunger and poor nutrition, as well as building food security for the longer term: 1) Emergency and Short-term Relief Strategies – are directed at those individuals who are most at need and provide immediate relief to the problem of hunger. Some examples of these emergency and short-term solutions include food banks, soup kitchens, and school lunch programs. 2) Capacity Building Strategies - focus on building skills at the individual and community level in order to help people become more food secure. Capacity building strategies can include education and capacity building around gardening, wild food harvesting, cooking, preserving foods, and social support building. More specifically, capacity building strategies can include activities such as, cooking skills, community kitchens, community gardens, food buying clubs, farmers’ markets, food co-ops, etc. 3) Systems Change Strategies – are aimed at making long-term changes in policy to address issues of poverty, in order to ultimately increase food security. Systems change work can thus consist of the work done by food charters, food policy organizations, and food security networks (FSN-NL, 2014; Wakefield, et al., 2007).

The most common response to situations of food insecurity in Canada, including Newfoundland and Labrador, has largely been on emergency and short-term relief strategies such as food banks, aimed at reducing immediate hunger among low-income individuals (Ewtushik, et al., 2004). Furthermore, while capacity building strategies have attempted to address issues of food insecurity, these efforts have been small in scale and have been more focused on developing individual skills such as food shopping and preparation skills, or on alternative methods of food acquisition (e.g. community gardens, farmers' markets, field-to-table programs, etc.). However, there is little evidence to suggest that these programs significantly reduce food insecurity or improve nutritional status among vulnerable populations. McIntyre and Rondeau (2009) suggest that “the lack of demonstrated effectiveness of such programs is likely because they maintain a focus on food as the problem rather than on income” (pp. 191).

Kirkpatrick and Tarasuk (2009) examined circumstances of food security, participation in food programs (such as food banks, soup kitchens, community kitchens and gardens), and the strategies used by individuals to respond to food shortages. Their study focused on low-income families in high-poverty Toronto neighbourhoods. The findings of the study showed that participation in food programs did not help in changing the food security status of these low-income households. Kirkpatrick and Tarasuk (2009) along with other critics of ad-hoc community-based solutions challenge the presumption that current community-based food initiatives are reaching those in need. In concluding, the authors highlight the need for a critical examination of community-based initiatives to ensure that they are structured to provide the maximum benefit possible to the most

vulnerable members of the community (Kirkpatrick and Tarasuk, 2009). One might argue that there is a much larger critique to be made, that is, there should be a greater focus on systems change strategies rather than the emergency, short-term relief and capacity building strategies.

Critics of ad-hoc community-based initiatives argue that food security is not just about food; rather, the problems of food insecurity are rooted in inadequate incomes (McIntyre & Rondeau, 2009; Kirkpatrick & Tarasuk, 2009). “Food insecurity, as experienced in higher-income countries, results from social conditions and policies that limit resources available to a household to purchase adequate, nutritious food”, that is, food (in) security is a political issue – a reflection of the failing social system (McIntyre & Rondeau, pp. 188). McIntyre & Rondeau suggest that food insecurity, particularly in Canada, is a product of the restructuring of social programs that occurred in the 1990s which led to the shifting of federal government spending away from social programs. Consequently, the increasing food insecurity levels are a manifestation of growing poverty and inequity (McIntyre & Rondeau, 2009). Community-based food initiatives are thus not adequate substitutes for social programmes, which would provide a sufficient income to purchase food (Wakefield, et al. 2007). Rather, advocates of the social determinants of health believe that radical measures, such as, health policy approaches that address/tackle the complex issues like low-income and job insecurity, might be best suited for addressing the issues of food insecurity (Mikkonen & Raphael, 2010).

The Role of Gardening in Food Security: While acknowledging the limitations identified with regard to emergency and capacity building strategies and the fact that

gardens, as food security measures, may work in some places and not in others, the following section highlights studies that have explored gardening and its role in contributing to food security.

Corrigan (2011) explored community gardens in Baltimore, Maryland in order to gain insight on the extent to which these gardens contributed to food security. The author notes that the area in which the study was conducted was dominated by corner stores which offered a limited amount and variety of fresh food. Consequently, the community gardens improved gardeners' food security by providing a "constant supply of fresh fruits and vegetables" (Corrigan, 2011, pp. 1239). Additionally, the community gardens contributed to the community's food security as most gardeners donated more than 50% of their produce to the neighbourhood. However, in the discussion of the study findings, Corrigan notes that, "the community garden alone cannot alleviate all the stresses associated with food insecurity" (pp. 1240). She adds that more help is needed in the form of education on quality food, the addition of food policy councils, and increased financial assistance to help promote more gardens and other approaches to community food security.

In a community-based participatory research study, Carney, et al (2012) used education techniques to support and educate Hispanic farm worker families in planting and maintaining organic gardens. The findings from the study revealed that along with improving dietary intake and strengthening family relationships, community gardening also reduced food insecurity among those who took part. In this study, the authors found that "before the gardening season, the sum of the frequencies of "sometimes" and

“frequently” worrying in the past month that food would run out before money was available to buy more was 31.2% and the sum of those frequencies dropped to 3.1% during the post garden period, ($p=0.006$)” (Carney, et al., 2012, pp. 874).

Kortwright and Wakefield (2011) notes that, “there is limited literature available to date examining informal household food gardens in Western industrialized countries, particularly in relation to food security” (pp. 40). Consequentially most of the available literature on local food production and food security focuses on community gardens rather than home food gardens. In an attempt to add to the literature, these researchers explored the contribution of household food growing to community food security. They looked at the question: “How does home food growing contribute to community food security in Toronto?” The authors conducted in-depth interviews with home gardeners to learn about what their gardens and the food they grew meant to them and their communities. Findings from the study showed that the “most significant impact of home food gardening on food security was its ability to enhance the accessibility and nutritional value of the diets of the gardeners’ interviewed” (Kortwright & Wakefield, 2011, pp. 50).

Food (In) Security in Newfoundland and Labrador: While there are both critics and advocates for gardening as an avenue for addressing and/or contributing to food security, it is important to consider the concept within a Newfoundland and Labrador context. Results from the 2007 - 2008 Canadian Community Health Survey (CCHS) show that approximately 9.4% of households in Newfoundland and Labrador are food insecure, compared to the national level of 7.7% (Statistics Canada, 2010). As mentioned earlier, the province of Newfoundland and Labrador also has high rates of chronic

diseases, with the provincial rates of stroke, heart disease and diabetes being among the highest in the country (Govt. Newfoundland and Labrador, 2006). A number of these chronic diseases can be attributed to poor diet or unhealthy eating and low levels of physical activity. Unhealthy eating impacts the overall health of the population of Newfoundland and Labrador, while causing an economic burden on the health care system. In 2006, the provincial cost of unhealthy eating was estimated to be about approximately \$126 million annually based on estimates of national projections (Govt. Newfoundland and Labrador, 2006).

Food insecurity has been identified as one of the social determinants of health (Mikkonen & Raphael, 2010). The social determinants of health are the multiple social, physical, economic and environmental factors that directly or indirectly influence overall health. Mikkonen & Raphael (2010) note that addressing the determinants of health is as much a health issue, as it is a political issue. In realizing the importance of food security as a determinant of health, the provincial government of Newfoundland and Labrador introduced *Eating Healthier in Newfoundland and Labrador*, a provincial food and nutrition framework and action plan. Some of the key directions of the framework included: supporting measures that allow access to an adequate food supply; supporting measures which promote development, production, marketing and distribution of foods which are reflective of healthy eating practices, and supporting measures of environmentally and economically sustainable practices. The framework also calls for and promotes food and nutrition research efforts which provide credible information and data in matters relating to nutritional well-being, healthy eating practices and physical

activity (Govt. Newfoundland and Labrador, 2006). This study proposes that gardening could be one measure that addresses a number of key directions presented in the framework.

Before home or community gardening can be endorsed as a health promoting tool and activity that contributes to the food security of the province, it is important to explore the perceived impact of gardening on food security for individuals already taking part in the activity within the region. Is gardening relevant to food security as described by Corrigan (2011), Carney, et al., (2012), or Kortwright & Wakefield, (2011) within the Newfoundland context, specifically the Northeast Avalon region? This research project thus also focused on learning whether gardeners in the region were growing food in order to contribute to their food security, and if so, how and to what extent gardening impacted their food security.

2.3 Challenges and Barriers to Gardening in NL

While the sections above have highlighted key benefits attributed to gardening on health food security, it is important to note that Newfoundland faces a number of challenges and barriers to gardening, which are outlined below:

2.3.1 Physical Challenges and Barriers to Gardening in NL

Firstly, many of the challenges to gardening faced in NL are due to its physical geography. Three fifths of NL consists of either barren lands, also known as ‘the barrens’, bog-lands or numerous lakes, while a small part of the remaining two fifths of

the area of the island are covered by forests (Shaw & NL Royal Commission on Agriculture, 1955). The report by the Royal Commission on Agriculture (1955) notes that the barrens has varying levels of soil, ranging from bare rock to areas where there is sufficient soil cover for brushy plants and limited amounts of wild grass. The levels of soil coverage thus present challenges for growing food in some parts of NL.

Shaw & NL Royal Commission on Agriculture (1955) note that the movement of ice masses had a massive impact on the character and distribution of soils in Newfoundland. The soils formed before the last glacial period (Wisconsin glacial age which ended 10,000 years ago) were stripped from underlying rocks during the glacial movements. The soil which now exists on the island was formed after that period and is “relatively youthful” and shallow (Shaw & NL Royal Commission on Agriculture, 1955, pp. 11). Additionally, the Avalon Peninsula largely consists of Precambrian rocks, which are resistant to erosion and do not weather rapidly. As a result, soils developing from these rocks are “thin, full of flesh rock fragments and large boulders...[and].... commonly underlain by coarse gravel and bouldery material”, which is often deficient in lime (i.e. acidic in nature) (Shaw & NL Royal Commission on Agriculture, 1955, pp. 11).

Besides the shallow, rocky and acidic soils, those wishing to grow food in NL also have to contend with the climate. The geographical location of the island means that NL’s climate is affected by the water currents as well as the cold Labrador current, which not only cools the atmosphere, but also creates a barrier against warm air masses coming from the south. These conditions lead to: late and cold springs, short summers, lower summer temperatures, and early fall frosts (Shaw & NL Royal Commission on

Agriculture, 1955). The report by Royal Commission on Agriculture (1955) concluded that these climatic conditions made it “impractical to grow crops which require either plenty of warmth or a fairly long frost-free growing period” (pp.14).

2.3.2 Conceptual Challenges and Barriers to Gardening in NL

As noted in section 2.1, local food production was discouraged because of the belief that any pursuit of farming would disrupt the fishing industry (Murray, 2002; Shaw & NL Royal Commission on Agriculture, 1955). While, it was eventually determined that agricultural activities were not a threat to the fishing industry (Shaw & NL Royal Commission on Agriculture, 1955; Murray, 2002), agriculture was only actively encouraged when there was a crisis in the fishing industry (Murray, 2002). Furthermore, in the 19th century and early 20th century, the NL government supported farming, but never allocated much money to the industry (Murray, 2002).

Historically, there were also strong beliefs by those in authority that soil and climate of NL was unsuitable for agriculture(Murray,2002). Do these ideas about the province’s capacity to produce food still persist, not only among government officials, but also among the general population? Do home and community gardeners face these same physical and conceptual challenges and barriers? Are there other challenges and barriers beyond those identified in this section faced by gardeners in region? Are there supports or resources available for those individuals wishing to pursue gardening for health and food security to overcome some of these challenges and barriers? If not, what could these supports and resources look like?

CHAPTER 3: METHODOLOGY AND RESEARCH DESIGN

3.1 Exploring Gardening through a Qualitative Approach

This research was conducted as an exploratory qualitative study. Swift and Tischler (2010) suggest that a qualitative approach is particularly relevant for applied health research as it allows for a focus on how and why people behave in certain ways. As outlined earlier, beyond looking at the characteristics of those taking part in gardening in the Northeast Avalon, one of the key objectives in this research was to explore the reasons and motivations for taking part in gardening – the ‘why’. Furthermore, by learning about participants’ gardening experience, this research ultimately also learned the ‘how’ regarding their practice. As such, the research questions lent themselves to a qualitative approach.

Broadly speaking, qualitative research tends to have a relativist ontology and to be located in an epistemology that embraces subjectivity (Swift and Tischler, 2010). Ontology refers to the way one views and understands the world, while epistemology refers to how one tries to learn about the different aspects relating to this world. Additionally, the way one wishes to learn about the world or various concepts will in turn shape the way the research process proceeds (methodology) (Swift and Tischler, 2010). A relativist ontological position acknowledges that there is no absolute ‘truth’ or reality, rather, that there are multiple realities or ‘truths’. Additionally, relativist ontology considers “reality to be socially constructed [and so] how the world is perceived and a person’s thoughts about it are always influenced by social factors such as culture, history and language (Swift and Tischler, 2010).

The literature on gardening (home or community) suggests that there may be multiple reasons for why people participate. As such, I assumed a relativist ontological position, thereby acknowledging that there are multiple realities or ‘truths’ related to why individuals participate in gardening; reasons which may be based on a myriad social factors. Realizing the potential existence of these multiple ‘truths’, I recognize that every individual has a story to tell usually in a situated context. Gardeners in Southern Toronto or in California have their own set of circumstances that shape their experience with gardening, as well as the reasons why they garden. In the same way, gardeners in Newfoundland and Labrador have their own story to tell shaped by their own unique experiences.

3.1.1 Fundamental Qualitative Description

While there are a number of qualitative research approaches available for conducting research, the basic/ fundamental qualitative descriptive design as described by Sandelowski (2000) was followed. Sandelowski notes that the primary goal of qualitative descriptive studies is to provide a “comprehensive summary of events in the everyday terms of those events”. As outlined in previous sections, the objectives of the study were: 1) to describe the demographic characteristics of individuals participating in gardening in the Northeast Avalon region; 2) to explore their key reasons and motivations for gardening; 3) to study the opinions and experiences of gardeners and key informants regarding the perceived impacts of gardening on health and food security and; 4) to explore the challenges and barriers faced by these gardeners in pursuing this practice, and

subsequently their suggestions on how to address these challenges and barriers. As such, by following a basic qualitative description, this study would provide a comprehensive summary of gardening in the Northeast Avalon region in the “everyday terms” of the gardeners while staying close to the data and to the surface of their words in order to provide “largely unadorned answers to questions of...relevance to practitioners and policy makers” (Sandelowski, 2000, p.337).

3.2 Research Design

Typically, qualitative descriptive designs are a well-considered combination of sampling, data collection, and data analysis techniques (Sandelowski, 2000). Accordingly, in order to adequately address the objectives of this research, both qualitative (semi-structured interviews) and quantitative (online survey) methods of data collection were used.

3.2.1 Online Survey

Data Collection: An online survey questionnaire, developed using Survey Monkey, was used to collect the demographic information and gardening experiences of gardeners in the Northeast Avalon region (see Appendix 1). A total of 70 people provided consent to take part in the online survey portion of this study from August 2012 to January 2013. However, only 67 participants completed the survey.

The survey questionnaire consisted of three questions related to how long participants had been gardening in the region, the type of garden they had, as well as

what they were growing in their garden. The survey also consisted of four open ended questions exploring gardeners' reasons and motivations for gardening; what they enjoyed most about gardening; challenges and barriers to gardening in the region; and what they thought could be done to overcome these challenges and barriers. Lastly, the survey questionnaire asked six close-ended socio-demographic questions (age, gender, marital status, education, occupational status, and household income).

Participant Selection and Recruitment: The survey was distributed online through email lists of organizations working in and around food production, health and food security in the Northeast Avalon region (e.g. Food First NL, Food Education and Action, St. John's (FEASt), Memorial University Community Garden; Rabbittown and Community Garden Alliance, Mercy Centre for Ecology & Justice Community Garden, etc.). The information about the survey was also included on recruitment posters, shared through word-of-mouth, and via on-line social media (Facebook).

Data Analysis: The data collected from Survey Monkey were imported into the statistics program SPSS. The data were then analyzed using this program. As the research objectives focused on describing the demographic characteristics and experiences of individuals participating in gardening in the Northeast Avalon region, the analyses were limited to descriptive statistics (frequencies). The results to the open-ended questions were coded and presented as frequencies, based on the assigned themes.

3.2.2 Interviews

Data Collection: Semi-structured interviews were used to collect data from gardeners and key informants. Two separate interview guides were used to guide the interviews. The first interview guide used with gardening participants (see Appendix 2) consisted of semi-structured, open-ended questions in five main categories: 1) gardening experiences; 2) reasons and motivations for gardening; 3) gardening and health; 4) gardening and food security; and 5) barriers and facilitators to gardening in NL. The second interview guide was directed at key informants, who were individuals working in policy and decision-making roles and in organizations focused on food security and health in NL. This guide (see Appendix 3) consisted of questions pertaining to gardening or local food production, health and food security issues at a broad policy and decision-making level.

A total of 17 semi-structured face-to-face interviews (7 Home Gardeners, 5 Community Gardeners, and 5 Key Informants) were conducted between July, 2012 and September, 2013. Interviews were conducted up to the point of data saturation. Data saturation can be defined as “the point in data collection and analysis when new information produces little or no change” (Guest et al, 2006, pp. 65). In an experiment on data saturation and variability, Guest et al (2006) systematically documented the degree of data saturation and variability over the course of thematic analysis, and based on their data set found that saturation usually occurred within the first 12 interviews. The interviews were conducted by the principal investigator and were all audio recorded. The

recordings were later transcribed verbatim and the content analyzed using thematic analysis.

Participant Selection and Recruitment: Gardening participants included community and home gardeners in the Northeast Avalon region. Criterion purposeful sampling was used to select participants. Criterion sampling involves picking all cases that meet some criterion (Patton, 1990a). Participants for this study were expected to be: 1) nineteen years of age or older; 2) an active gardener in the Northeast Avalon region; and 3) English speaking. Community garden participants were recruited through email lists of the specific community gardening organizations or groups to which they belonged. Home gardeners or other gardeners who belonged to less formal community gardens were recruited through posters and word-of-mouth.

Key informants were selected from organizations, government departments and community groups involved with food growing, food security and health within this region. The key informants were identified through the review of the literature around gardening in Newfoundland and Labrador, as well as through local events related to food security. The five key informants were contacted and recruited through email.

Data Analysis: Thematic analysis was used to process the data as it was best suited for identifying, analyzing and describing dominant patterns (themes) which emerged from the data. Additionally, thematic analysis also provided an opportunity for interpreting the meanings of the various themes that emerged from the data, and the implications of these themes within the local NL context (Braun and Clark, 2006; Patton 1990b).

Data analysis was guided by the key steps to thematic analysis described by Infantino (2004). Specifically, analysis of the data consisted first of familiarization of the data during the transcription of recorded interviews, as well as during the reviews of the transcripts. During the transcript review, significant verbatim statements that were directly related to the research questions/objectives were highlighted, extracted and placed into broad categories. The broad categories were then further reduced and organized into clusters of themes, which were then finally organized into a key theme related to the research objectives. Table 3.1 below illustrates the data analysis process. The example below shows verbatim statements that fell within a number of broad categories. The broad categories were then reduced and organized into a cluster theme on gardening and connections, which fell under the key theme: benefits of gardening.

Table 3.1 An Illustration of the Data Analysis Process			
Verbatim Statement	Broad Category	Cluster Theme	Key Theme
<i>"...the nice thing about gardening is that... it connects people to food and makes them think about food and where it comes from..."</i>	Gardening connecting people with food, with nature	Gardening and Connecting	Benefits of gardening
<i>"...And that's why gardening is important I think because it takes the children back to where it comes from..."</i>	Gardening connecting children to food		
<i>"...that's a really important reason to garden in this province – is to just preserve that information and to connect ourselves a bit more with the heritage and to connect ourselves with the older people..."</i>	Gardening as a means/way of connecting with our heritage Gardening as a means of social connections with older people		

The data were reviewed and analyzed in three parts: home gardeners, community gardeners, and key informants. The data from the home and community gardeners were analyzed first. Cluster themes emerging from the home gardeners and those emerging from the community gardeners were compared in order to identify commonalities and differences between the two groups. The write-up of the analysis of data from the home and community gardeners in Chapter 5 is combined to reflect the common ideas that emerged between the two groups of gardeners. Cases where significant differences emerged between the home and community gardeners are highlighted.

Once data analysis of the home and community gardener interviews was completed, the key informant interviews were then analyzed. During analysis and write-up of key informant interviews, issues that had arisen in the home and community gardening section were addressed where appropriate.

3.3 Ethical Considerations

Ethical approval for this study was obtained from Memorial University's Health Ethics Research Board (HREB). All participants who took part in the study were provided with a consent form (see Appendix 4 and 5) that was verbally explained and signed before the interviews began. Participants who completed the online survey were also provided with an abbreviated version of the consent form attached to the introductory page of the survey and asked to provide their consent before completing the survey.

CHAPTER 4: SURVEY RESULTS AND ANALYSIS

A total of 67 participants completed the online survey portion of this study from August 2012 to January 2013. The results from the survey are presented in five sections. The first section contains information about participant's general gardening experience. The second section describes participant's reasons and motivations for taking part in gardening. The third section describes the challenges and barriers the gardeners face while gardening in this region. The fourth section explores some of the ideas and solutions participants suggested for overcoming the challenges and barriers to gardening. Lastly, section five contains socio-demographic information about the participants.

4.1 General Gardening Experiences

Number of Years Growing Food: Over half of the respondents (n=52) had been growing food in Newfoundland for five years or less. A number of these gardeners (n = 15) were new to gardening with less than a year of gardening experience in this region. Some of the respondents (n=9) indicated that they had been growing food in the region for more than 10 years.

Table 4.1 Number of Years Growing Food (n=66)		
# of Years	Response Count	Response Percent
Less than a year	15	22.7%
1 - 5 years	37	56.1%
6 - 10 years	5	7.6%
10 - 20 years	3	4.5%
More than 20 years	6	9.1%
Total	66	100%

Type of Garden: Most survey participants were growing their food in backyard gardens (62.7%), community gardens (44.8%) and/or container gardens (41.8%). A few respondents noted that they were growing food on farms (3.0%). One participant noted that they are also growing food in their front yard. Additional comments by survey participants indicated that some gardeners were using greenhouses (n=5; 7.46%) to grow their food. The survey results also showed that participants were growing food in more than one location, for example, one participant noted that they grew fruits in their backyards, and vegetables in their community garden plot.

Table 4.2 Type of garden (n=67)		
Type of Garden	Response Count	Response Percent
Container Garden (On your deck, window sills, etc.)	28	41.8%
Backyard Garden	42	62.7%
Community Garden	30	44.8%
Rooftop Garden	0	0.0%
Farm	2	3.0%
Other	9	
**Note response rates do not add up to 67 or 100% as participants could select more than one option.		

Some participants also specified that they were growing their food in raised beds. The additional comments section suggests that some participants were using raised beds in order to avoid contamination of their produce with toxins in the soil.

Type of Produce Being Grown: Survey participants were growing a wide variety of vegetables and fruits. While the list of options is too large to tabulate, some top choices included: lettuce, herbs, tomatoes, carrots, onions, salad greens, peas, spinach, beans, potatoes, garlic, zucchini, Swiss chard, kale, cucumbers, peppers, radishes,

rhubarb, berries, edible flowers, beets, etc. Although beets were not included in the list of vegetable options provided, one participant accurately indicated that beets were a popular vegetable grown in the province.

4.1.2 Reasons and Motivations for Gardening

Question 6 was an open-ended question regarding the main reasons and motivations for gardening. The open-ended responses were coded and organized into 11 main categories. In most cases participants provided more than one reason for why they gardened. The table below shows the main reasons and motivations organized in descending order.

Table 4.3 Reasons and motivations for gardening (n=62)		
Reason/ Motivation	Response Count (n)	Response Percent (%)
For Food & Food Quality	51	82.3%
Enjoyment/ Self Satisfaction	29	46.8%
General Health and Well-being (physical, nutritional, mental, etc.)	16	25.8%
Financial	16	25.8%
Food Security/ Access/ Self-sufficiency	15	24.2%
Sustainability/ Environmental Concerns	15	24.2%
Educational	12	19.4%
Nature/ Being Outside	11	17.7%
Family/ Peer Influence	5	8.1%
Social	4	6.5%
Other	4	6.5%
**Note response rates do not add up to 62 or 100% as participants could select more than one option.		

A number of participants (46.8%) indicated that they considered gardening to be an activity that they enjoyed and found satisfying, especially because it allowed them the opportunity to produce and consume good quality food. This was reflected by survey findings, which showed that the top reason for gardening was for food & food quality (82.3%). A number of participants noted that the quality of the produce from their gardens was far better than what they got at the grocery stores or supermarkets with respect to taste and flavour, textural quality and appearance: *“The quality of produce at the grocery stores here is so poor. I started learning to grow my own to combat this...”* Additionally, some participants indicated that they preferred their home-grown produce as they considered it “safe”, as it was free of pesticides or preservatives.

Most of the responses to the question about reasons and motivations for gardening reflected that survey participants were taking part in gardening for more than one reason and often emphasized a more holistic, environmentally friendly understanding of food production and consumption: *“to grow organic[vegetables] for myself and my family... to know what is actually going into my food, to [be able to] use land productively, to reduce environmental problems caused by transporting [vegetables] from far away (cut down on carbon footprint), to save on cost, and for enjoyment”*. This holistic approach was also evidenced in the question regarding “Enjoyable Aspects of Gardening.”

Enjoyable Aspects of Gardening: Question 7 was an open-ended question about what participants enjoyed the most while gardening. The responses to the

question were coded and organized into 10 main categories. The table below shows the various aspects of gardening that participants enjoyed arranged in descending order.

Table 4.4 What do you enjoy most about gardening? (n=62)		
Most enjoyable aspect of gardening	Response Count (n)	Response Percent (%)
The Food & Food Quality	25	40.3%
Nature/ Plant Life Cycle/ Watching things Grow	20	32.3%
Satisfaction/Gratification of Growing your own/ Self sufficiency	17	27.4%
Working Outside	11	17.7%
Mental Health Benefits – Relaxation/ Peacefulness/ Spiritual	9	14.5%
Connecting (with nature, other like-minded people)	6	9.7%
Food Skills/ Everything/ The Process	4	6.5%
Learning	4	6.5%
Health Benefits	4	6.5%
The Physical Labour/ Work	3	4.8%
**Note response rates do not add up to 62 or 100% as participants could select more than one option.		

As the table above shows, most survey respondents (40.3%) indicated that the most enjoyable aspect of gardening was the good quality food that they harvested from their gardens. Some responses to the question “What do you enjoy most about gardening?” included: “*delicious fresh produce*”; “*The quality of the food that I produce*”; “*The fresh taste of my food.*” These responses align with the findings from the previous question as

the top reasons and motivations for gardening were for food/ food quality/ food safety/ organic food/ local food.

As survey participants usually mentioned more than one idea in their responses, a number of them (32.3%) also noted that they enjoyed some of the ecological aspects of gardening. That is, they mentioned enjoying being a part of nature or watching things grow and being a part of the plant life cycle showing environmentally friendly attitudes. The satisfaction of growing your own food and being self-sufficient was also something that participants responded as enjoying the most.

4.1.3 Challenges and Barriers to Gardening

Question 8 was also an open-ended question that focused on the challenges and barriers that survey participants face while gardening in the region. The responses to the question were coded and organized into 9 main categories. The table below shows the challenges and barriers highlighted by the survey respondents arranged in descending order.

Table 4.5 Perceived challenges and barriers to gardening (n=61)		
Challenges and Barriers	Response Count (n)	Response Percent (%)
Weather/ Climate – short growing season/ unpredictable nature/ low sunlight/ sunshine/ cool/cold/ rainfall	58	95.1%
Soil quality	21	34.4%
Availability/ Accessibility of Land/Space	17	27.9%
Produce Related Challenges: a) Pests/ diseases/ weeds b) Seeds/ Plants	13	21.3%
Education/ Knowledge/ Attitudes	12	19.7%
Structural Challenges – Government/ Municipal Policies/ Lack of Support	4	6.6%
Cost	3	4.9%
Time	3	4.9%
Other	1	1.6%

As expected from reviewing the literature, almost all participants (95.1%) who responded to this question indicated that the weather/climate was a major challenge to growing food in the province. A number of participants also indicated that the soil, or rather the lack of good quality soil was a barrier when it came to growing food in the region. Some participants (34.4%) noted that soil in the region was often acidic, rocky, or contaminated with heavy metals such as lead. Consequently, most participants noted that they had to bring in new soil, or spend time and money improving their soil before they could begin growing their own food: “...the soil can be difficult to work with, it involves a bit of labour at the beginning of the season due to the rocks and lead content in the downtown region.”

The availability or accessibility of land or space to grow food was also indicated as a barrier by some participants (27.9%). Responses related to land and space issues showed that some survey participants either felt they did not have enough space to grow food in their backyards, or were unable to join community gardens due to the limited space in those community gardens. One participant even indicated that there was a lack of easily accessible community gardens, i.e. community gardens that were only easily reached by car. Additionally, a few participants felt that there was also a loss of land for growing food due to the high rate of development in the area, which was leading to good arable land being cleared and used for construction: *“Most importantly, loss of agricultural land due to urban sprawl and short-sighted development policies”*

While there were physical challenges and barriers to gardening highlighted by participants, a lack of knowledge about gardening and less than positive attitudes to gardening were also considered to be barriers by some survey participants (19.7%). Some participants felt that lack of knowledge (general and Newfoundland specific knowledge) about gardening in the region was a significant barrier: *“A lack of knowledge and support... I grew up gardening with my grandfather who seemed to me to know everything about gardening. He is no longer living and I don't know who to ask when I have questions or require practical assistance.”*

Additionally, some participants indicated that there were some negative attitudes towards gardening or growing food in the region; attitudes that could be attributed to a lack of knowledge about gardening in the area: *“For the general population - the belief that only root [vegetables] can be grown here.”*

4.1.4 Overcoming Challenges and Barriers

Question 9 was an open-ended question that provided the survey participants with an opportunity to provide some suggestions and/or recommendations for overcoming the challenges and barriers that the gardeners identified in the previous question. As with the rest of the open-ended questions, responses to the question were coded and organized into 10 main categories shown in the table below.

Table 4.6 Suggestions for overcoming challenges and barriers to gardening (n=57)		
Suggestions for Overcoming Barriers	Response Count (n)	Response Percent (%)
Education/ Awareness/ Information/ Support	25	43.9%
Adaptation – plants/ practices/ techniques/ Season extension practices	19	33.3%
Community Gardens/ Communal Spaces	14	24.6%
Green Houses (Communal)	14	24.6%
Structural changes/ support – Government/ Municipal	11	19.3%
Not much/ Very Little / Can't change the weather	11	19.3%
Environmental practices – Practicing environmentally sustainable practices	7	12.3%
Other	7	12.3%
Improving Soil	5	8.8%
Building Connections	3	5.3%

The most common suggestions for overcoming challenges and barriers to gardening in the region focused on providing education, information, and support for those individuals already gardening, as well as those individuals who may be interested in taking up gardening (43.9%). As noted in the previous section, a common barrier for some gardeners was the lack of information specific to growing food in Newfoundland's

unique climate. Responses to this question reflected the desire for this NL-specific information: *“I would enjoy participating in a workshop specific to best practices for growing fruit and vegetables in NL.”*

Moreover, the responses to this section indicated that information coupled with supports in terms of human resources, i.e. knowledgeable people who could provide hands-on support or advice was important for a number of participants. Some suggestions of how this information could be delivered was through gardening mentors (i.e. experienced gardeners willing to work with less experienced gardeners) in informal learning situations: *“...I would love to sign up with some sort of gardening group where I could attend informal classes and information sessions and be assigned a mentor or elder who could actually come to my home, see what I'm working with, and help me when I have questions or need advice”*. Radio phone in shows or an information forum/ online website were also suggested: *“More radio phone in shows on regional gardening [like the CBC Tuesday radio noon show] would help.”*

Some participants felt that the negative attitudes and/or misconceptions about gardening could be removed if there was a focused approach on raising awareness about Newfoundland and Labrador’s potential to grow food at an individual or community level. These awareness raising efforts could encourage more people to try out gardening: *“More awareness to change the mindset that we can't grow anything here because of our climate and soil conditions.”* A few survey participants suggested that awareness raising could be achieved through an advertising campaign: *“...some sort of advertising campaign that reaches others outside of those already interested in the local food*

movement that explains how important growing food is, how enjoyable it is, and how we can grow A LOT here!”

While recognizing the limitations and challenges posed by the weather to growing food in NL, a number of survey participants noted that it was possible to adapt gardening methods and techniques in order to combat some of the challenges posed by the weather. Accordingly, the second most popular suggestion for overcoming barriers to gardening centered on adapting to the environment (33.3%). Some suggestions included: using seeds and transplants adapted to NL, for example, seeds produced through seed saving; and using season extension practices in order to lengthen the growing season (e.g. using cold-frames or starting plants indoors or in greenhouses).

Some survey participants also suggested that structural changes and support at the government or municipal level could encourage more people to grow their own food and also potentially make gardening more accessible within communities. Government supports could be in the form of incentives for growing food: *“Financial support or tax credits for those who want to grow their own food”*, or through city planning which prioritized food growing over other land uses: *“Policies which protect agricultural land”*.

4.1.5 Demographic Questions - Who is gardening in NL?

Questions 10 to 15 were demographic questions aimed at exploring the characteristics of those individuals taking part in gardening in the region who completed the survey. The questions focused on age, gender, marital status, education, occupational

status, and household income. The data from these questions is presented in the tables below.

Age of Gardeners: Most gardening participants who completed the survey were in the 25-54 age range.

Table 4.7 Age (n=51)		
Age Category (years)	Response Count (n)	Response Percent (%)
19 - 24	1	2.0%
25 - 34	21	41.2%
35 - 44	13	25.5%
45 - 54	8	15.7%
55 - 64	5	9.8%
65 - 74	2	3.9%
75 - 84	1	2.0%
85+	0	0%

Gender: Most participants who completed the survey were female (female =75.8%; male = 24.2%)

Table 4.8 Gender (n=62)		
Sex	Response Count	Response Percent
Female	47	75.8%
Male	15	24.2%
Total	62	100%

Marital Status: More than half of the survey participants (54.9%) indicated that they were either married or living in a common law relationship.

Table 4.9 Marital status (n=62)		
Marital Status	Response Count	Response Percent
Single, Never Married	24	38.7%
Living Common Law	12	19.4%
Married	22	35.5%
Separated/Divorced	3	4.8%
Widowed	1	1.6%
Total	62	100%

Highest Level of Education: Almost all participants were well educated, with most participants having college or university training.

Table 4.10 Highest level of education completed (n=62)		
Highest Level of Education	Response Count	Response Percent
Less than High School	1	1.6%
High School or Equivalent	0	0.0%
Some College/University	4	6.5%
College Diploma or Certificate	6	9.7%
Undergraduate Degree/ Diploma	19	30.6%
Some Graduate School	4	6.5%
Graduate Degree/Diploma	20	32.3%
Some Post-Graduate School	1	1.6%
Post-Graduate Degree/Diploma	7	11.3%
Other	2	3.2%

Occupational Status: Most survey participants indicated that they were either employed part time, full time or self-employed

Table 4.11 Occupational Status (n=62)		
Employment Status	Response Count	Response Rate
Student	13	21.0%
Employed Part Time	14	22.6%
Employed Full Time	31	50.0%
Self-Employed	8	12.9%
Retired	3	4.8%
Unemployed	1	1.6%
Other	2	

Annual Household Income: Although the household income of survey participants responding to this question varied, more than half of them (58.1%) indicated that they had an annual household income of \$50,000 or more.

Table 4.12 Current annual household income (n=62)		
Household Income	Response Count	Response Percent
\$0-\$15,000	6	9.7%
\$15,000-\$24,999	8	12.9%
\$25,000-\$34,999	6	9.7%
\$35,000-49,999	6	9.7%
\$50,000-\$74,999	12	19.4%
\$75,000-\$99,999	9	14.5%
\$100,000 and higher	15	24.2%

Place of Birth: Most survey participants indicated that they were born in Newfoundland.

Table 4.13 Were you born in Newfoundland? (n=63)		
Response	Response Count	Response Percent
Yes	40	63.5%
No	23	36.5%

CHAPTER 5: INTERVIEW FINDINGS AND ANALYSIS

A total of 17 semi-structured face-to-face interviews (7 Home Gardeners, 5 Community Gardeners, and 5 Key Informants) were conducted between July, 2012 and September, 2013. As noted in description of the data analysis process in Chapter 3 (page 47), write-up of the analysis of data from the home and community gardeners is combined to reflect the common ideas that emerged between the two groups of gardeners. As such, this Chapter is organized into two main sections. Section 5.1) explores the key findings and analysis of data from interviews with gardening participants. Following, Section 5.2 will highlight the findings and analysis of data from key informant interviews. In both sections, key themes identified in the analysis of interviews are provided organized by sub-topics relevant to the main research objectives.

5.1 Gardening Participants

5.1.1 About the Gardeners

Home Gardeners: Interviews were conducted with seven home gardeners who were growing food in and around the St. John's region. Five of the seven participants interviewed were male, while the other two were female. All participants reported having attained at least trade/college/university training within different disciplines. Most of the participants indicated that they were working and/or studying on a full time or part time basis, while a few of the participants noted that they were partly/ mostly retired. All the participants who were interviewed also indicated that they were married and had children. Of the seven participants interviewed, three participants reported being born

outside NL, while the rest of the participants indicated that they were born and raised in NL.

Most participants were growing their food in raised beds, also known as garden boxes. Raised beds are a method of gardening in which the soil is raised above the surrounding soil and is sometimes enclosed within a frame which can be made of wood, rock, or concrete blocks, or some other kind of material. The soil is often enriched with compost or mulch. As described by one participant: “...*for the most part, a raised bed is a piece of 2 by 10 nailed together in a square and you fill it with soil and compost...*”

The photograph below is an example of two kinds of raised beds. The round raised bed in the top right hand corner has a framework consisting of rocks, while the rest of the raised beds in the photograph have wooden frames.



Figure 1: A photograph showing examples of raised beds

While a number of the home gardeners used raised beds to grow their food, there were a few gardeners who also reported growing food in containers in and outside the house, as

well as in greenhouses. A few gardeners also indicated that besides growing food, they also focused on producing seed for future use, or for the local market.

The home gardeners interviewed were growing a variety of crops, which included: lettuce, cucumbers, potatoes, parsnip, carrot, turnip, cabbage, rhubarb, blueberries, black currants, raspberries, apples, beets, kale, spinach, swiss chard, collard greens, strawberries, herbs (such as chives, rosemary, parsley, etc.), leeks, onions, pumpkins, peas, zucchinis, asparagus, shallots, edible flowers (sunflowers, calendula's, pansies) and decorative flowers. Some of the crops grown in greenhouses included: bell peppers, jalapeno peppers, tomatoes, green beans. Some gardeners also noted that they enjoyed experimenting with crops outside the traditionally grown NL crops, such as artichokes, tomatoes, corn, peaches, grapes, etc.

Community Gardeners: Five community gardeners took part in the study. All five participants interviewed were female. As with the home gardeners, all participants indicated that they had at least some university/college education and beyond. All the participants indicated that they were either working or studying on a full time or part time basis. Some community gardeners were married, while the others reported being single, or did not allude to their marital status. Three of the participants were originally from NL, while two of the participants were not.

The community gardeners interviewed grew their food in the Memorial University Community Garden, and the Brother McSheffrey Garden on Mount Scio Road in St. John's. Like most of the home gardeners, most of the community gardeners were growing food in raised beds. Some of the community gardeners indicated that while they

were part of the community garden, they also grew food at home, or were interested in growing food at home. Some of the less experienced gardeners indicated that taking part in a community garden provided them with an opportunity to gain knowledge and experience, which they could then apply in beginning their own home gardens.

Crops that the community gardeners were growing included: broccoli, cauliflower, Brussels sprouts, kale, green peppers, (strawberries at home), pumpkins, carrots, turnips, tomatoes, peppers, lettuce, parsley, and green onions.

5.1.2 Reasons and Motivations for Gardening

The home and community gardeners provided a number of reasons that inspired, motivated and encouraged them to grow food. The responses were categorised into the following groupings: 1) Enjoyment and Self-Satisfaction; 2) Food and Food Quality (taste, texture, etc.); 3) General Health and Well-being; 4) Food Security/Access; 5) Tradition and Cultural Values - Early Exposure; 6) To Connect with Nature and 7) For Learning and Educational Experiences.

Gardening for Enjoyment and Self-Satisfaction: Almost all the participants

Reasons and Motivations:

- Enjoyment & Self-satisfaction
 - Food & Food Quality
 - General health & Well-being
 - Food Security/ Access
 - A way of life - Tradition and Cultural Values: Early exposure to gardening
 - To connect with nature
 - For Learning & Educational experiences
-

indicated that they gardened simply because they enjoyed taking part in the activity: “... *there’s such satisfaction in participating in a process of growing your food...I love every phase of it...*” Gardening allowed participants to show off the hard work and skills they put in their gardens: “...*there’s a certain amount of – how do you say – bragging rights to it. Like I grew this... I grew 50 pounds of onions this year. Well I was bragging about that...today. So that’s the pleasure of growing things.*” Some gardeners indicated that gardening, particularly in Newfoundland's challenging environment, played a role in increasing their self-esteem: “... *I tried gardening in a lot of different places and here is the greatest challenge, but the most fun. When you succeed you feel so so clever. It’s good for your sense of self-esteem when something grows well.*”

Gardening for Food and Food Quality (Taste, texture, safety, variety, etc.): As shown in the survey responses, a major reason why participants chose to garden was for the produce they harvested. Similarly, most of the interview participants reported that they enjoyed having access to fresh produce that they grew themselves. As one participant noted, after putting in some hard work into their gardens during the growing season, it was satisfying to be able to go out and receive their bounty during harvest season.

Most of the gardeners indicated that they could easily go to the supermarkets or grocery stores and buy fresh produce. However, most participants agreed that the produce from the grocery stores and supermarkets was often of poor quality: “*To start with, most of the stuff you buy in stores are not fit to eat anyway...*” As a result, most of the gardeners enjoyed and preferred the (higher) quality of the produce from their own

gardens “... *the big thing for us is that we love to plant greens because ... Good greens are hard to find in the grocery store...*” The home and community gardeners also noted that they felt that the produce from their personal gardens was of a higher quality with regards to taste, texture, and appearance when compared to the produce in the supermarket or grocery stores. One of the community gardeners new to gardening reported being surprised at the difference in taste between store bought produce and their home-grown produce: “...*in the first year I grew broccoli and I had never tasted fresh broccoli before. And it was like candy. It was just such a revelation to me. Oh this is what food is supposed to taste like...*”

Based on the conversations with the gardeners, one of the key factors that gardeners attributed to the lower quality taste and texture of store-bought produce was the use of chemical preservatives. Some of the interview participants noted that as most produce had to travel long distances in order to get to NL, it was often covered with chemicals to prevent it from over-ripening (a measure which they added was not always successful). In addition to the chemical preservatives, participants also highlighted that the produce was often grown using high levels of fertilizers and pesticides. According to some gardeners, the chemical additives fundamentally compromised or changed the true taste and flavor of the store-bought fruits and vegetables: “... *the vegetables you buy in the store don't taste like the ones I grow. No way! Particularly potatoes for instance. The farmers drive them with fertilizer and you can taste the fertilizer on them when you eat them...*”

As illustrated in the interview extract above, a common concern for some participants related to the quality of store-bought produce centered on the use of chemical preservatives and pesticides. Accordingly, most of the home and community gardeners indicated that they were using organic practices in growing their food, i.e. manure and mulch from local farms, natural methods of pest control (for example, using non-toxic home-made sprays or rotating vegetables to avoid re-infestation by pests which may have over-wintered in the soil), no chemical fertilizers, etc. Due to the lack of preservatives and chemical pesticides on their produce, participants not only thought that their produce tasted better than store-bought produce, but they also perceived their home grown produce to be safer as it was not layered with chemicals: “...*a lot of the food we buy is poisoned by the industrial methods, the preservatives, the sprays...I would much rather live a healthy life. And by growing food myself, I have a better chance of feeding myself and my family healthy food.*”

In addition to quality, other participants also indicated that they were able to get a larger variety of produce from their home gardens than they could from the grocery stores and supermarkets: “...*I grow things for flavor and for variety that you can’t actually buy in the supermarket. Like those kabacha squash...The berries like the black currant and the gooseberries and all the fruit that we grow, you can’t buy those in the supermarkets.*”

Gardening for General Health and Well-being: A number of participants indicated that they were growing food in order to maintain their general health and well-being. As the topic of gardening and health was a major objective for exploration for this project, gardening for health and well-being will be explored in greater detail in the next

major sub-heading “perceived benefits of gardening: gardening and health”. However, as a motivating factor, some participants highlighted that their gardens were places that they felt they could get away and recover, both mentally and physically. Additionally, one of the participants indicated that they were motivated to garden in order to get a variety of fresh vegetables and fruits, which they saw as essential for maintaining good health.

Gardening for Food Security: In addition to growing food for the higher quality produce, taste and variety, some participants also indicated that they grew food in order to increase their access to fresh produce (i.e. for food security). Since the topic of gardening and food security was a major objective for this research, it will be discussed in greater detail in the major sub-heading section “perceived benefits of gardening: gardening and food security”.

Gardening as a Way of Life and the Impact of Early Exposure to Gardening: When the home and community gardeners talked about when they had first started growing food, most indicated that they had been exposed to gardening at an early age in their life, in most cases, during their childhood years: “*I can remember gardening as a kid... growing up, my father always had a garden...*” Another participant who shared similar experiences added:

“... I have always been around people who like to garden and my grandmother – she had a market garden ... So I used to help her when I was a little girl – about 5 years old, I used to help her pick berries and hazel nuts and help her in the garden. So I guess it gets ingrained very deeply when you do that.”

For a number of participants, the early exposure to gardening ultimately instilled the activity of growing food as a way of life: “...it’s just something that we’ve always done. I just can’t think of why we wouldn’t have a garden... It was just such a part of our lives. We had huge gardens. It was just part of what we did.” For some participants, while gardening was a part of who they were, a cultural value that had been passed onto them by their parents, it was also a value that they wanted to pass onto their children:

“...another reason that I garden is because I have a son. And I want him to know where his food comes from and I want him to experience the gardening process...food is not just what we need to survive. It’s the real basis of our whole culture and community.”

A few of the participants who were born in NL, also highlighted that growing food was part of their family tradition, as it was something that they had to do while growing up in order to survive. Although growing food for survival was no longer a necessity, these participants noted that gardening was a tradition and activity they continued to value:

“I have [had] a vegetable garden ever since I was a little boy... like a lot of typical out-port families, we always grew our own vegetables...So we’ve always grown our own vegetables and stored our own vegetables...it’s the type of thing that just comes naturally to us.”

Most of the home gardeners indicated that when they started growing food, they had no formal training on how to begin a garden. However, as growing food was such an integral part of their day-to-day lives, in most cases, they learned by seeing and doing:

“...my dad was a fabulous gardener...wherever he went, he had a garden. And I can’t remember him ever teaching me how to garden, but that’s what I grew up with - and so by osmosis it kinda seeps into you. And I have a daughter now... and she said nobody ever taught me how to garden, but I actually know how because being around mom and you and you were always gardening and I was always having to help and now I know how to do it...”

Gardening to Connect with Nature: In most cases, the gardeners indicated that they had to go outside to grow their food, and for one participant, this was a major motivation for taking part in gardening: *“... I LOVE being outdoors. That’s probably the biggest one [reason] is like the need to be outside.”* For a few participants, gardening provided an opportunity for them to connect with nature, a process which happened when they went outdoors, worked the soil, planted and cared for their plants, and so on: *“...it kinda forces you to get outside, back to nature...”* As one participant described it, growing their own food provided an opportunity for them to be a part of the cycle of nature, specifically the cycle of life and death of plants:

“So every time you experience something like that [watching plants grow], it teaches you about the vitality of the earth and how food – if you set the right conditions up, it just does it [grows]. And so that’s a really wonderful relationship to be part of – to be a partner in the fertility of the earth and the production of food.”

For one participant, gardening was not only an opportunity for connecting with nature, but also a way in which people could learn to appreciate the natural world and

become more aware of the limited resources available in the world, and the importance of preserving these limited natural resources:

“...I think it’s really important that we ... get back into the whole process of where our food comes from, from start to finish. That we know how it’s raised, that we participate in growing it, that we harvest it...that we put the waste products not into the land fill, but we put it into our compost, that it all comes back to us.... And for me personally, that’s a really strong value.”

Gardening as a Learning Experience: Some of the gardeners interviewed perceived their gardens as places where they could connect with children to teach them about where their food came from: “...for some children, they didn’t know that the carrots they pulled out of the ground were the same things as they bought in the store...”. Taking part in gardening was thus an excellent opportunity for these children to learn not only where food came from, but also how to grow it. A few of the gardeners noted that the opportunities for teaching and learning were not only limited to children. Rather, gardening presented opportunities for some adults to learn or re-learn traditional skills of food production.

While gardening provided an opportunity to teach others how to grow their own food, a number of participants noted that they were also interested in ‘experimenting’ with new or different crops and varieties, or different techniques in their gardens. Thus for some one of the reasons they gardened was because gardening provided an opportunity for continuous life-long learning: “...*It’s not out of necessity* [that I garden, it’s]...*because I am interested in trying new things and new crops and that sort of thing.*”

5.1.3 Gardening and Health

To begin the conversation on gardening and the perceived impact on health, the gardeners were first asked about their understanding of the term ‘good health’. The questions in this section focused on aspects such as: what does a healthy person do, what are the characteristics of a healthy person, or simply, what does good health mean to you? Once the participants expressed their conception of ‘good health’, they were then asked to talk about if and/or how gardening contributed towards promoting and maintaining ‘good health’ in their lives.

Definitions of Good Health: Participants noted that the term ‘good health’ meant different things to people of different backgrounds. The differences in the meanings of health were reflected in the broad array of responses that the gardeners provided to the question “what does good health mean to you?” For the purposes of this analysis, the gardener’s responses regarding the meanings of health have been divided into two main categories: 1) practical definitions of good health, i.e. what a healthy person does/ characteristics of a healthy person, and 2) theoretical definitions of good health, i.e. broad, philosophical explanations or definitions of good health.

i) Practical Definitions of Good Health: What a healthy person does/ characteristics of a healthy person:

Most of the gardeners, likely influenced by the research topic, stated that good health entailed ‘eating healthy’, which various participants described as a diet rich in fruit and vegetables, with limited amounts of processed food or sugars, etc. For some

gardeners, eating healthy also meant consuming more organic foods than non-organic foods which participants noted could be a challenge due to the higher price of organic foods. In addition to eating well, one participant added that good health also meant being able to access healthy food options: “...*Having access to sufficient healthy food, when it’s needed, at a reasonable cost...I think if you have that, then you are more likely to have good health.*”

The gardeners also indicated that good health involved maintaining an active lifestyle. For the participants interviewed, maintaining an active lifestyle was not restricted to being a part of a gym or exercise program, rather it could include activities like walking, hiking, gardening, going for bike rides, etc.; activities which prevented people from being “*a couch potato.*” Some participants went further to indicate that maintaining an active lifestyle was about maintaining a balance and moderation in one’s health. In discussing aspects of good physical health, some participants also noted that a healthy person would be one who avoided smoking and (excessive) alcohol intake.

A few of the home and community gardeners indicated that maintaining one’s mental health was an important aspect of having good health. Thus a healthy person could be described as someone who has access to, and was able to take part in activities that allowed them to feel happy, relaxed, or actively engaged within their community: “...*Having access to activities that make you feel good because good health is partly mental health...*” A few participants also added that good health meant being connected socially with family and neighbors: “*I think a healthy person...has healthy social relationships...*” and so ultimately, a healthy person was connected to their community.

ii) *Theoretical definitions of good health, i.e. broad, philosophical explanations or definitions of what good health means.*

Some of the participants interviewed, particularly the home gardeners, also provided conceptual definitions of ‘good health’. Firstly, these participants saw health as multifaceted concept that extended beyond the scope of medical definitions provided by most scientific literature. Good health for these participants was not simply a lack of disease, or as lightly put by one participant “...*the successful avoidance of the health care system...*” Rather, good health meant being able to live independently outside of the healthcare system.

In addition to maintaining a balance with respect to active living and healthful eating, some home gardeners expressed the idea that good health also meant being in a state of balance with one’s community: “...*Basically, what health is, is it’s a state of balance, of equilibrium...it’s of being in a state of resilience...In the native world, health means being in balance with your community...*” Good health was thus a property of living in community, rather than an individual’s responsibility: “...*Health is not something that an individual does. Health is something that a community does...*” According to this participant, healthy communities were most likely to have healthy people with mutual respect for each other, willing to and able to work together to maintain the overall health and well-being of that community.

In expressing their idea of health as being a state of balance, some participants indicated that good health also meant living in harmony with the environment: “... *I think health is really the ability to live independently and in harmony with your environment.*

That's very important to me...” In the words of another participant, in order for ‘good health’ to exist, it was important for individuals and communities as a whole to be in sync with the environment and the rest of the eco-system

“...when you take that basic principle of balance, and you extend it to the level of community or continent or planet, what you're really talking about is not just the health of individual peoples, or human beings, but the health of the entire ecosystem. You can't separate yourself....”

Perceived Impact of Gardening on Health: When the gardeners were asked about the perceived impact of gardening on their health, both the home and community gardeners agreed that gardening had an impact on at least one of five aspects of their health described below:

1. Gardening and Active Living

A few of the gardeners indicated that gardening had an impact on their health with respect to their levels of physical activity. The participants noted that having a garden provided an opportunity for people to go outside into the fresh air, and then an additional opportunity to move their bodies and do work such as digging, lifting, weeding, watering, etc.: *“...it's a lot of work, physically; it's A LOT of work. You're carrying pounds of dirt...”* One gardener who indicated that he was in his 80s noted that while strenuous, gardening allowed him to remain active, a factor which he felt allowed him to be in better health in comparison to some of his peers: *“It's hard on the back if you've got to weed or something, but I'm surprisingly...active for my age group ... I consider it [gardening] a*

blessing because I am that much more active.” In addition to keeping him physically fit, this participant also noted that gardening also kept his mind alert, a factor he considered essential for good health, particularly for anyone retired.

While some participants felt that they did get some physical activity benefits out of gardening, a few respondents were unsure about whether taking part in gardening at the level that they did really had any health benefits for them: *“...to be very honest, does having those plants in the pots outside my door make me more physically active? Maybe not, cause I mean having to walk to the grocery store would get me more activity.”*

2. Gardening and Mental Health

A few participants noted that they saw their gardens as a place where they could get away and recover both mentally and physically:

“Well, I work ...dealing with poisonous things and hazardous things and you never feel like you are in a very healthy environment...And the other half of it ... You sittied by your leg to your desk ... hunched over your desk so you feel like you’re crippled when you get up...So I come over [at] lunch time and I dig, and I water, and I feel like I am recovering mentally and physically from the work I have to do. So it’s really... really nice.”

Other participants added that gardening had a positive impact on their mental health as it allowed them to relax. For some gardeners, the aesthetic appearance of their gardens was what helped them relax. For other gardeners the tasks involved in gardening were what they found to be therapeutic, pleasurable

and useful in helping them relax: “...*there’s nothing more satisfying and gratifying than getting your hands in the soil. And to smell the soil. I find that...it’s like taking a drug of some kind. And it’s very helpful and very therapeutic...*”

For most participants, gardening was something that they did outside and so the participants noted that going outside into nature was part of what they found to be beneficial to their mental health: “*The fact that I can get out in the fresh air and work the soil and eat fresh fruits and vegetables, I find very therapeutic and very healthy.*”

3. Gardening and Nutritional Health

When asked about whether gardening had an impact in their health, the home and community gardeners noted that gardening increased their access to fresh produce, which in turn increased their chances of eating more fresh produce:

“...I don’t think I would be eating near as much fruits and vegetables if we didn’t have it that accessible. I mean you can always buy it in a grocery store and stuff, it’s no excuse. But having it at your doorstep is different too...”

In addition to increasing access to fresh produce, one home gardener noted that having a garden allowed them to eat a greater variety of fresh fruit and vegetables. Furthermore, some participants indicated that having access to the fresh produce from their gardens encouraged them to make choices in food preparation that incorporated more fresh produce in their diet:

“...When I have the food available, I am much more salad oriented...I make a lot more lentil soups – things that take the odd one of these, one of those...you tend to sort of cook according to what’s available from the garden....”

For some participants, taking part in gardening led to an increased appreciation and awareness of the benefits of eating healthier, fresh unprocessed foods as they were able to experience these benefits first hand:

“.... Last year...I was extremely busy and all year long I ate Lean Cuisine’s for lunch...I gained so much weight and was so puffy, cause it seems like a healthy alternative to eating McDonald’s but it’s really not once you start looking into the additives and the preservatives and things like that. It’s just bad stuff. So now this year, pretty much every day for lunch since I have had the garden, I have a salad.”

In turn, being able to experience the health benefits associated with consuming the fresh produce from gardens provided further encouragement to garden even more: *“And so it’s sort of a cycle. I want to have salad everyday so I am invested in growing my food”*. This participant went on further to explain that taking part in gardening also led them to be more critical of the food choices they were making outside of the garden environment:

“...It...opened my eyes...you think you are doing this healthy thing...but until you start looking at food labels, you really don’t understand what is in it...I try to eat as much food without a label.”

While gardening was perceived to have an impact on nutritional health by participants, a few of the gardeners also noted that they were not sure if gardening did in fact have a significant impact on their nutritional health. For instance, some of the gardeners interviewed indicated that while their gardens increased their access to fresh produce, they generally ate a lot of fruit and vegetables and would most likely go to the grocery store for their fresh produce if they did not have access to a garden. In response to the question about whether gardening changed the way they ate one participant stated:

“...I’ve always been conscious you know of what I am eating and stuff...having said that...I’m just trying to think, the types of things that we grew – I would buy those at the supermarket anyway if I didn’t grow, so it wasn’t really anything drastic.”

One home gardener’s response to whether gardening changed the way they ate or meant that they ate a little better was: *“Well that’s sort of a secondary factor I suppose... Whether it’s enough to make any difference in my health is something I couldn’t conjecture on. I doubt very much...”*

4. Gardening and Environmental Health

A few of the home gardeners indicated that a concern for the environment was a motivating factor for joining the local food growing movement. That is, some of these gardeners took part in gardening because of the impact they perceived gardening would have on the environment. When asked why they gardened, some participants noted that they were interested in consuming food with a smaller carbon footprint:

“...with [gardening], you do start reducing the demand at the grocery stores which takes maybe one truck off the road a week and you look at that over the course of a year, and that’s just a footprint lessened – a little less greenhouse gases.”

As stated earlier, some participants felt that the way food was produced was harmful to environment. And so, gardening was one of the ways in which they could play a part in reducing the damage of destructive industrial food production and transportation processes.

Additionally, a number of the home and community gardeners perceived their home grown produce, which was often free from chemical preservatives and fertilizers, as a safer choice when compared to store-bought produce.

Subsequently, some of the gardeners believed that gardening had an impact on their health because it allowed them to lead healthier lives by consuming organically grown (and safer) produce: *“... I would much rather live a healthy life... by growing food myself...”*

5. Gardening and Social Connections

As noted in the review of the literature, strong social connections are important for maintaining and/or improving overall health and wellbeing. The analysis of the home and community gardeners interviews showed that one of the benefits associated with gardening were the interactions and relationships that resulted because they took part in the activity. One participant noted:

“...it’s helped us establish relationships that we would normally not have known. Like somebody would ask me, can you have a look at my potatoes; there is something wrong with them. So I go and have a look at the potatoes. Well I would have never visited them before. And that’s one thing about gardening in general: It’s that it does help to tie the community together...”

In the case of community gardeners, one participant indicated that the gardens provided opportunities for families from different socio-economic backgrounds to come together and share in this activity.

Similarly, another gardener noted that having a garden allowed them to socialize with their neighbours. For some participants, these interactions with neighbours were opportunities for them to plant seeds of interest in gardening:

“...It’s amazing how many neighbours have sort of wandered by and said, oh can we take a peek at your garden... you get to meet people and you get to socialize with them. Actually one of our neighbours, they decided they were gonna build some raised beds and start gardening as well. And we are always keen to show them how to do it. So there’s I think a social dimension [to gardening]...”

One community gardener shared a similar experience in which they shared food with their friends who in turn joined the garden in order to be able to grow their own food:

“...you can pass it [the produce] around to your friends and it’s amazing how often you see them next year in the garden because they enjoyed the food so much that they sign up and try to get a garden of their own...” The shared experience of having a garden also acted as a kind of social lubricant between neighbours: *“...my neighbour and I sometimes*

we get along, sometimes we don't. But we maintain our connection partly because we're both gardeners. It patches over the rough spots..."

With fresh vegetables and fruit being the main produce of their gardening efforts, some of the gardeners noted that they strengthened connections with neighbours, friends and families through the sharing of food:

"Within the neighbourhood, when we have excess vegetables that we know we're not going to utilize, we'll take them to our neighbours. The people next door, we bring them stuff on a daily basis, the people down the way, by a weekly basis..."

For another participant, their garden produce was a tool they used to meet and interact with new people: *"...I am constantly giving gifts of food to people I meet. There was a...man who had driven across Canada...I brought him a salad. And then we got talking and I found out about his life and what he's doing..."*

Individuals involved in community gardening often noted that at end of season, a harvest dinner was often held in which community garden members would come together and share a meal prepared from some of the produce that came from the garden plots. This was yet another opportunity in which the garden, and in this case food brought people together:

"...in September, when we harvested all the vegetables...all the gardeners...contributed something from their garden and we had a boil up, we had a few turkeys... We lined up the tables and all the gardeners and their families are welcome and it was literally the best meal of the summer in terms of what you are doing..."

While discussing the topic of gardening and connections, participants were also asked about whether they thought that gardens had the potential to bring families or communities together. Some of the participants indicated that they did see the potential of an activity such as gardening, particularly community gardening, unifying or bringing people out to take part in this shared activity. However, one of the participants felt that in order for connections to be created, it would be important to ensure that there were communal spaces in which people could come together, where someone would take the lead in helping and showing newer gardeners how to get started and also being there to provide support and encouragement where needed.

5.1.4 Gardening and Food Security

In order to explore the perceived impact of gardening on food security, participants were asked questions about their understanding of food security, their perceptions of the role and/or impact gardening had on their access to food, as well as any potential role they thought gardening could have on the food security status of this province. For the purposes of this analysis, the concept of food security included aspects such as access to fresh produce, food self-sufficiency or independence from imported food, issues of sustainability, and food safety.

Understanding of Food Security: To start the conversation regarding food security and gardening, participants were asked: What does food security mean to you? As noted in the literature review, the WHO defines food security as existing “when all people at all times have access to sufficient, safe and nutritious food to maintain a healthy

and active life” (WSFS & FAO, 2009).). It is important to highlight that in general, while most participants’ responses reflected an understanding of the key principles and aspects of food security, the term “food security” did not always appear to be familiar to participants.

For a few gardeners, food security meant “...*having enough food, that sort of thing...*” While for others food security meant being able to avoid food shortages:

“to me, it’s living on an island and knowing that ...different weather events could cut us off easily for a couple of days and things could get scarce quickly...I know that there is poverty issues, and stuff like that all around food security, but when I hear food security, that’s what I think of – shortages.”

In general, when talking about food security in NL, most participants talked about the province’s vulnerability and reliance on outside food sources: “...*I know that in Newfoundland we’re...very insecure. I know when ... there was a strike in Montréal a few years back ... fresh vegetables just didn’t come so ... that’s kind of the scary thing about living on an island...*” In addition to this, participants also referred to the challenges of growing food in the province. The acknowledgement of the vulnerability of the province reflected the idea that food security for these participants was about becoming more self-reliant as individuals, or as a province, and consequently less dependent on outside food sources.

Lastly, for a few gardeners, food security was about sustainability. Sustainability as it extends to food systems, i.e. being able to produce food in ways in which were less harmful to the environment:

The perceived role/impact of gardening on food security: In general, a number of participants interviewed appeared skeptical about the impact of gardening on their food security status. Some of the participants felt that due to the short growing season it was difficult for them to produce enough food to last them throughout the year. As such, while agreeing that gardening could help improve their food security for part of the year, it was not yet something that they felt would improve their food security status year round:

“...Now it’s one of those things where I don’t have any hope enough food to feed us through the year in the land here. I could but I’d probably...I’d build a big green house, that’s what I would do. That’s part of the reason I’d like to have more land to grow on...”

While acknowledging the limitations associated with growing food in this region, a few participants noted that gardening combined with food storage and food preservation techniques did allow them to increase their levels of food security for a little longer than if they ate all their produce fresh:

“...Not only gardening – gardening combined with storage...I’ve been thinking about it a nice bit ever since the last few years and that – about this whole business of preservation of food. Because I shouldn’t say there’s no problem to grow – but you can grow a lot in a small area. Like that garden out there can supply our family easily for all the storable vegetables. But if you don’t have a building to store them, then you’re gonna lose them. So gardening really has to be combined with storage.”

A few participants, particularly those participants who made the connection between gardening and sustainable food systems, also noted that gardening did have an impact on their food security status when viewed through the food system lens. These gardeners noted that by growing their own food, gardening allowed them to help in reducing the impact of transport trucks bringing in food within the province: “... *there is absolutely no doubt in my mind that if every home in this community had one or two raised beds in their backyards...it would take a big strain off of the food network in bringing food into the island...*” As mentioned by another participant, reducing the demand for food brought in from outside sources, which then had to be transported across the island would reduce the levels of greenhouse gases emitted and consequently be a way to promote a more sustainable food system.

The perceived potential role of gardening on food security: The home and community gardeners were also asked their opinions regarding the potential role that they saw gardening playing in improving the food security status of this province. As noted earlier, some participants were skeptical about the role that gardening could actually play in improving the food security status of this province because of the limited capability of producing food year round:

“Food security is always a thought. And I am never quite resolved on it. That this is not a place where I would really say food security was a great possibility because it’s very hard to grow things, or produce seed...”

However, despite this skepticism, a few participants indicated that they saw gardening as having a big role in improving the food security situation in NL:

“...If every back yard could have one or two raised beds, just imagine if every home in this community had small gardens, what it could do for people’s health, but also to decrease reliance on imported foods. And the challenges in the winter time. How do we meet our food security needs? You know, if they could encourage an agricultural industry here, there’s greenhouses that could provide the food just like they do in other places...”

Another participant felt that gardening could have a potential role in improving the food security status of this province. However, in order for this to happen, this participant felt that there was still a need for more education and awareness to happen across the province, for individuals, families, communities, and those in decision and policy-making positions: *“...It could definitely have a role, but once again I think the big issue is getting people started on it. The problem...is that...a lot of people don’t have any knowledge of gardening. A lot of people wouldn’t know where to start with gardening...”*

5.1.5 Challenges and Barriers to Gardening

The challenges and barriers identified by the home and community gardeners were grouped into the following main categories: weather & climate; soil quality; knowledge, education & attitudes; structural challenges; government policies & support; produce related challenges; and other.

Weather: The most common response to the questions about challenges and barriers identified by the interview participants was the weather. Similarly, the weather was also the most common challenge identified by the survey participants. The specific

aspects of the weather that the participants identified as challenging included: the lack of sunlight, the short growing season, and the occasional low temperatures experienced during the summer season, the high winds, as well as the (sometimes) constant rain, drizzle and fog (RDF).

The gardeners also indicated that it was not just the weather that was a challenge, rather, it was the unpredictable nature of the NL weather conditions from one year to the next that made growing food challenging: “...*This is such a variable climate, you never know what it’s gonna do from one year to the next*”. The uncertainty of the weather made it difficult for some gardeners to plan when, or what to grow, or how to protect crops in the event of frost or cold episodes during the summer months like June and July. While a number of participants noted that the weather was a challenge to gardening in NL, there were some participants who felt that the weather itself was not challenge; rather, the lack of information on how to deal with the weather was the real barrier to growing food.

Soil Quality: Another common response to the challenges and barriers that gardeners faced while growing food in the region was related to the soil or the soil quality. Specific aspects of the soil quality identified as challenging included the rocky and acidic nature

Challenges/ Barriers:

- Weather
 - Soil quality
 - Knowledge/ Attitudes/ Education
 - Produce-related challenges
 - Structural challenges: Space/ Accessibility/ Cost
 - A lack of government policies & support
 - Lack of time
-

of the soil. In some instances, contaminated soil was an issue, particularly for those gardeners living around the downtown area:

“...I can still remember my first garden ... I just dug soil over and put seeds in and they came up about two inches and they were purple and green and black. And then I was talking to someone who knew the history of the area...it’s very hard to grow anything...People used to dump their coals from their fire down into the gulley...And that soil is totally contaminated with all that clinker - and clinker is radioactive for one thing. And all the other heavy metals that accumulate in coal would be there in concentrated form as well...”

Good soil is an essential ingredient in growing food. However, as the participants revealed, good soil was not easy to come by in NL. Gardeners thus had to work at creating good soil conducive to growing fruits and vegetables: *“... what I have to do is bring in lots and lots of soil. And every year I bring in peat and good soil and bags and bags and bags of leaves.”* One participant noted that creating good soil was particularly challenging and expensive in the new subdivisions where often times the top soil had been stripped in preparation for construction thus leaving behind very minimal, nutrient-poor soil in which to grow food: *“...if you’re living in a subdivision, soil gotta be brought in because the developers take all the soil away, build the house, then they sell you back the soil...”*

Knowledge, Education & Attitudes: Another barrier that was also identified by some of the home and community gardeners was the lack of information or knowledge about gardening in NL, as well as the misconceptions or negative attitudes about

gardening within the area. A few of the gardeners felt that there was insufficient basic knowledge available to the general public about gardening, or how to start a garden.

These gardeners considered that this could be a barrier for those interested in pursuing the practice: *“...the couple who are a few doors down...asked if we could show them...They didn’t know how to build a raised bed. They didn’t know what kind of wood to use. They didn’t know how to prepare the soil...”*

In addition to a general lack of information, some of the participants noted that there was a lack of information that was accurate, reliable, and specific to NL. Given the unique climatic and soil conditions in the province, often times crops that did well in other parts of the country did not always do well in NL. To further compound this issue, one participant noted that the seeds, seedlings, or other plant-related material made available in local home improvement stores were sometimes not suited for this province: *“...There’s a lot of gimmicks like in the food business...And then there is gimmicks in the gardening business. Products that don’t work and are not suited to NL, and to be able to sort that out, that’s the challenge...”* This participant added that while there was some information available online, it could be a challenge for the inexperienced gardener to sort through this information:

“...there is only 3 or 4 basic things you need to do for gardening. You’ve got to improve the soil, control the weeds, and select the right types of plants for gardening. But this is the problem for the ordinary person. They are bamboozled by all these things on television and everything else...if you don’t have a little bit of basic knowledge, how do you sort out fact from fiction?”

According to a few of the gardeners, the lack of information about gardening in Newfoundland leads to yet another barrier to gardening: i.e. misconceptions or negative attitudes about growing food in the region. As one participant framed it, one the biggest barriers to gardening was, “...*not a physical barrier. It’s a conceptual barrier...*” This participant went on to add that they observed that as soon as people were equipped with basic information about gardening, they were quick to realize that they could grow their own food:

“A lot of people think that gardening is hard work. And it can be - but really doesn’t have to be. A lot of people think there are people who garden and there are people who don’t garden and I am one of the ones who don’t garden. And that’s a barrier to break through. And one of the satisfactions of the [gardening] workshops that I did was to see people light up and say, well that’s really simple, I could do that!”

Structural Challenges: Land Availability & the Accessibility and Cost of gardening: Other common aspects identified by gardeners as challenges and barriers to gardening were issues of land or space availability, accessibility of some gardening locations (particularly community gardens), and the various costs associated with setting up a garden within the region. For the purposes of this analysis, these challenges were grouped into one category which I have identified as structural challenges and barriers.

Land Availability: The lack of or limited availability of land to garden was identified as a barrier by a number of community gardeners. Firstly, some participants indicated that they were interested in growing their food at home but were unable to do so

for a number of reasons such as: the lack of a backyard to grow food, poor growing conditions in their backyards (heavily treed yards, contaminated soil), no permission to start a garden from landlords (for those participants who were renting), etc. The second issue identified by community gardeners regarding space was that there was never any guarantee that they would have a garden plot in any given year. In some cases, participants noted that the community garden plots were randomly assigned through a draw, which meant that it was possible to miss out on a garden plot if their name was not drawn.

Another key issue identified by a few of the home gardeners regarding space for gardening was the recent surge in urban development. As noted in the section on challenges related to soil quality, some participants felt that the clearing and removal of good topsoil during construction often left behind soil that was too poor to easily grow food in. Furthermore, some home gardeners also felt that the land being used for the new developments was good arable land, which could be used for growing food. One home gardeners indicated that in the newer developments, the land was often divided into such small spaces, such that once a house was built, there was very little free land available to grow food: “...*I mean if I had a little fifty by a hundred plot for a house and shed and driveway and everything else, how much room do I have for gardens right...*”

Land Accessibility: The accessibility of gardens was another structural barrier identified by community gardening participants in the study. Some participants noted that community gardens were not always located in convenient locations. As such, participants had to travel long distances to get to their gardens, which could be a barrier

for some. Additionally, a few participants indicated that access to some community gardens was even greatly reduced for individuals with no private transport. The Brother Jim McSheffrey's Community Garden on Mt. Scio in St. John's was noted as an example of one of the community gardens located in an area not serviced by public transport, thus being somewhat inaccessible to individuals with no vehicles:

"...it didn't make a difference to us, cause we got our own vehicles... when you've got a car it's not a big deal to drive anywhere. But yes, if there was a garden over at Victoria park, you'd get a lot of people in the community that would definitely be interested."

Cost: An issue closely related to accessibility was the cost associated with gardening. For some community gardeners, the cost of travelling to and from a local community garden could be a barrier for some. This was especially true if a community garden was not located nearby a community: *"...a lot of the families we work with perhaps don't have a lot of money and maybe they didn't have the transportation to get there and we didn't really have the money..."*

Both the home and community gardeners also indicated that the cost of starting up a garden could be a barrier to gardening. Some participants felt that a lot of money went into the initial set up which could include the cost of building the raised beds, buying the soil and compost, and buying the seeds or transplants to get started. While some participants felt that the cost of maintaining the garden decreased over time, one participant argued that there was always a financial cost to gardening. As such, this

participant did not view gardening as a financial investment, but rather, they looked at gardening as an investment in health:

“...The amount of money that we put into just buying soil would have been able to pay for vegetables for probably ten years. We don’t make any money, we don’t save any money. It’s not an economical choice... We also spend a fair amount of money on seeds...Also the extra energy that it takes to start the seedlings – economically, no, there is no savings. There really isn’t... I don’t look at this as a financial investment. I look at it as a wellness investment.”

Government Policies/ Support: While participants acknowledged that there was some support available at a commercial level, some participants felt that there was a lack of, or limited resources or funding available for community organizations to establish community gardens (as an example). One participant also felt that a barrier to gardening was the lack of incentives for people to grow their own food: *“...And there really ought to be better provincial, regional and municipal incentives for food growing and for agriculture...”* Some participants also felt that there was a lack of leadership or support in terms of getting people started in growing their own food. Furthermore, a few participants noted that they felt that there was a lack of direction at a municipal level in terms of land use in some of the public green spaces, i.e. public parks not having some space allocated for growing food.

Produce Related Challenges: The participants interviewed also identified general challenges associated with gardening such as pests, growing techniques suited to this environment, seed selection, etc. Slugs were a commonly identified problem. A few

participants also indicated that at times, wildlife such as moose and rabbits wandered into their gardens to eat the fresh produce. Other participants also noted that at times access to seeds or seedlings could be challenging. The key issue for some of these participants was knowing which seeds or seedlings were best suited to grow in this region and where to find them. Additionally, a few participants also noted that if their first crop of the season was damaged due to the unpredictable weather conditions, it could be difficult to access new seedlings or transplants midway through the season.

The other produce related challenge identified by a few of the participants was related to some of the gardening techniques used in the region. One participant thought that there was a barrier in terms of the difficulty of changing ideas and techniques used for gardening in the region. That is, some people had been growing food one way all their lives and were not open to trying out new techniques that could potentially protect their crops from general gardening issues and the unpredictable elements of NL weather:

“...I have the weeds under control...the black plastic out there...that helps control the weeds a lot. A lot of people in Newfoundland don’t use - most people don’t use it. But it’s a technology that I learned years ago and it works and I’ve been trying to encourage people to do that. But you know, changing techniques is just like in cooking, changing your techniques is not easy – it doesn’t come easy.”

Lack of time: A few of the home and community gardeners noted the lack of time was sometimes a barrier for them, and thus could also be a potential barrier to individuals interested in taking part in gardening. The time barrier appeared to be particularly significant for those participants who had children, a sub-group sometimes at a higher

Overcoming Challenges and Barriers

- Providing education and awareness
 - Gardening in schools
 - Community green spaces
 - Increasing government role and support
 - Social media gardening campaign
 - Season extension practices
-

risk of food insecurity. These individuals indicated that they usually already had several demands on their time which made committing to gardening a challenge.

5.1.6 Overcoming Challenges and Barriers to Gardening

The following section presents the key suggestions, recommendations and solutions identified by both community and home gardeners on how they thought the challenges and barriers highlighted in the previous section

could be overcome.

Providing Education and Awareness: As shown in the previous section, a number of the challenges and barriers related to gardening identified were rooted in the limited education, knowledge or awareness about gardening within NL. Accordingly, the most common suggestions for overcoming challenges and barriers centred on addressing these gaps.

Firstly, a number of participants echoed the idea, succinctly stated by one participant, that:

“...there is a lot of basic information [about gardening] that if people knew it, would radically change the way people are raising food here and make it a lot

easier for a lot more people to grow a lot more food, without spending a lot of money...”

The kind of basic information participants were referring to included information on how to get a garden started, how to build a raised bed, how to start gardening economically, the best type of plants to grow in this region, how and when to start planting, and so on.

Participants noted that in providing education or information on gardening, it was essential to ensure that the information was specific to Newfoundland and Labrador. One participant suggested that one way to ensure that the information new gardeners received was reliable was to provide education and/ or training for those working in the gardening retail industry (for example local gardening and home hardware stores) within the province:

“...eliminate all the gimmicks in the gardening business and stick to basics... train more people that are in the business ...train them properly so that they have some good basic knowledge about the subject. A lot of the gardening centers unfortunate to say – a lot of them have people working there – they don’t know a petunia from a pumpkin. So education and training would be well up on my list. And with basic knowledge comes the ability to be able to do things...”

Another suggested avenue through which reliable information could be shared was through blogs or other forms of social media, such as the Root Cellars Rock! (<http://rootcellarsrock.ca>). Participants suggested that the information on such blogs could be targeted towards new gardeners, or anyone interested in knowing more about growing their own food within NL.

In addition to providing basic education about gardening, some participants also considered it important to raise awareness around gardening within the region. The participants thought it would be important to raise general awareness about the ability and potential for growing food within NL. Even more, it was important to ensure that people were aware about the various gardening opportunities that were available to them. For example, the opportunity to participate in a community garden if one did not have access to a home garden, or how one could practice container gardening if accessing a community garden was a challenge. A few participants also thought that it was important to raise awareness among the general public about the importance of preserving food production skills such as gardening, or even the benefits of having an increased access to fresh produce: “...*more educations as to why it’s [gardening] still a skill that we need, and how it can save you money and like give you fresh vegetables.*”

When interviewed, a few of the home gardeners felt that growing one’s own food still appeared to be an uncommon activity: “...*it [gardening] still seems like it’s uncommon you know...I’m in an area where everybody’s got a lot of space if ...there’s 20 houses on my street, there might be 2 with any kind of garden – you know vegetable gardening. So it’s still rare...*” As such, these participants felt that one key step to encouraging more home and community food production would be to publicize gardening. Another participant added that maybe gardening needed to be romanticized in order for the practice to become something that appealed to a wider group of people “...*And maybe what has to happen is it [gardening] has to be romanticized or glorified, or made cool for people to do it...*”

Early Exposure - Gardening in Schools: For most of the participants interviewed, gardening was an activity that they were first exposed to during their childhood or youth. Early exposure was thus a common factor that appeared to influence the gardeners to continue doing so later in life. Considering the impact early exposure to gardening had on their lives and their decision to continue gardening in their adult life, a number of participants indicated that they thought that it was critical to expose young children to gardening:

“...get children involved at a really young age and maybe bring them around the farms to see how things grow so they don’t think everything comes from Costco...I would really like to see some time and energy bringing kids into the whole cycle of things...these kids will more than likely grow up to garden – some of them will anywhere.”

In discussing the concept of early exposure to gardening as one way to promote and encourage gardening within the province, a number of home and community gardeners also suggested introducing, supporting and sustaining gardening within the school system. As illustrated by the following statement from a home gardener, introducing gardening within the school system would hopefully plant seeds of interest in food growing among children:

“...I grew my first carrots in junior high school on the back lot of the school that I attended. And my elementary school which was right below the house had goats and rabbits and a garden – thanks to a very visionary principal... I would have a

garden in every school – just to begin with. Because if there isn't that early exposure, you wouldn't even think of this stuff..."

Community Green Spaces: A third suggestion by participants on how to overcome barriers to gardening focused on addressing the issues of accessibility of gardening (cost, space, etc.). When participants were asked what they would do if they were able to make changes within the gardening environment, a number of participants stated that they would create more community green spaces. An example of the community green spaces was community gardens within all neighbourhoods so that people would be able to easily access land to grow food. Some participants also suggested creating community gardens that could be accessed by individuals in need: "... *they have ... flowers that... the city plants every year and I mean, they're pretty to look at, but wouldn't it be nice if they were something that people who couldn't afford vegetables could ...go and pick them*"

Some of the participants felt that if more people could be exposed, or get an opportunity to see gardens throughout the province, then they might be encouraged to try their hand at gardening:

"...I think if people could see just how easy it is and how good it feels to get your hands in the dirt...If they could just get that sense of satisfaction from growing it yourself and eating it and the health benefits from it, I think the overall health status of urban areas in particular could improve significantly..."

Having community green spaces for gardening within neighborhoods could thus be one way in which individuals not currently growing food could be exposed to gardens to

potentially stimulate their interest in the idea. In developing the community green spaces, some of the participants noted that it would be essential to ensure that there was leadership or support provided on how to garden: “...*I think that if there were others doing it [gardening] and ...I think if there was a support network to help people along, that they may be more willing to give it a try...*”

Some participants also felt that it was essential to ensure that every neighbourhood, small community, or small town had a community garden. A few participants even added that these community gardens could be combined with communal root cellars. It was suggested that such a set up (community gardens and community root cellars) could be established as part of an emergency disaster plan for food security. Community gardens and the excess produce from these gardens could be stored in a community root cellar for access to residents in the event of catastrophic event that halted a community’s access to fresh produce:

“...I think the more community gardens we have, if we could organize a bit better – you could have a disaster plan if say something happens.... If there was some sort of an effort to build some more root cellars ...where you could specifically grow food to store, in the event of emergencies or things like that, I think that would be a great thing to do...”

In addition to developing communal green spaces, a few of the participants also thought that it would be helpful to construct community greenhouses along with the gardens. A few participants indicated that this was especially important for some of the isolated towns and communities within the province: “...*the provincial government or*

somebody ...should be paying people to build greenhouses down the Burin and in every other isolated part of the province so that they can raise their own tomatoes, and lettuce, and squash and potato ...provide at least... the basics of what they need.” Participants suggested that these greenhouses could allow for season extension, as well as allowing people to grow a greater variety of crops.

When participants talked about community greening, the idea also extended to encouraging and/or promoting all households to have backyard gardens as part of the re-greening efforts: “*...just imagine if every home in this community had small gardens, what it could do for people’s health, but also to decrease reliance on imported foods...*” Another home gardener suggested that re-greening efforts could also focus on changing the use of front yards into gardens where people also grew food: “*...communities themselves, or municipalities put more of an emphasis on utilizing space as opposed to everybody having this big green lawn in front of their houses – make half of it a garden you know...*” Other participants visualized re-greening efforts as a process where vacant public green spaces were used for growing food as noted earlier, with a community garden within each major park being an example.

Government Role and Support: The biggest role for government identified by the gardeners was in making land available for those interested in growing food. In most instances, participants described making land available for the establishment of community gardens. A number of home and community gardeners indicated that those in decision-making roles either at the municipal or provincial level could make land available either through changes in by-laws or land re-zoning: “*...make sure that the city*

and ... municipalities as well as provincial government...would make certain space available...” A few participants indicated that making land available for gardening could mean the legislation of community gardens in each neighborhood or community: “...*in terms of policy...legislating community gardens and working on recycling the materials that create or protect the structures that would be what I would wish for...*”

An important point made by one of the participants was that changes at the policy level would require ensuring that those within these decision-making positions were educated and informed about the importance and benefits of gardening. Additionally, the changes would also only be possible if the political will was present and someone was willing to take the lead in initiatives such as community gardens and other local food production activities:

Another way in which governments could be involved in overcoming the challenges and barriers to gardening suggested by participants was in providing financial resources or funding in order to establish community gardens within each community that was interested in having a garden. In addition to providing funding, some gardeners noted that it would also be important to ensure that support services were put in place to help people (particularly newer gardeners) through the process of growing food. These support services could be things like workshops on how to build raised beds, seed selection, etc.

As discussed earlier, some participants also thought that gardening should be introduced in all schools, a suggestion which would also entail government involvement and support. Other ways in which the government could support gardening was through providing incentives to those individuals or groups growing food:

“...there really ought to be better provincial, regional and municipal incentives for food growing and for agriculture. When I say incentives, I don’t mean subsidies. I mean incentives...let’s say if you dedicate a certain portion of your land to raising food, even if you’re on a city lot, then we’ll take 10% off your taxes...”

Lastly, some of the gardeners also suggested that government could also focus on creating a permanent space for the Farmers’ Market in St. John’s:

“... We do have a farmer’s market now. I would love to see a large, permanent space for that. The Sobeys that was in Churchill square, I would turn that into the farmers’ market. I would take that space that was a grocery store, and is an empty space now They have a refrigerator there, they have a really large space, there is parking...I could see that being a really vibrant spot for a farmer’s market...”

One of the participants noted that the Farmers’ Market was not only a place where people could access locally grown produce, but it was also a place for people to learn about where their food was coming from, as well as a place where gardeners could sometimes buy seeds and seedlings to get started on their own gardens as well.

Social Media Gardening Campaign: Recognizing the need to promote and raise awareness about gardening, one of the suggestions made by some home gardeners, regarding what to do to encourage more local food growing within the region was a social campaign for gardening. Participants making this suggestion noted that a social campaign for gardening, (possibly led by government), similar to previous campaigns

about drinking and driving or smoking could be one way in which to reach a wider audience across the province. A few of the participants suggested that the social media campaign could be tailored in a similar way to the ‘Dig for Victory’ campaigns or ‘Victory Gardens’ held during the second world war. One participant stated:

“...I would start a Dig for Victory campaign...if the NL government could start a similar advertising campaign...if they started a Dig for Health campaign, or Dig for Food Security... just imagine if every home in this community had small gardens, what it could do for people’s health, but also to decrease reliance on imported foods...”

Season Extension Practices: While most participants indicated that the weather was a major challenge to gardening in this province, they also acknowledged that the weather was not something that they could change. However, participants noted that adapting one’s gardening techniques was one way in which to overcome the challenges brought on by the weather. To combat the issue of the short growing season, a few gardeners indicated that they used season extension practices in order to extend their growing season. Some season extension practices used by participants involved starting their seeds or seedlings inside their homes using grow lights, or using row covers to protect crops that were planned earlier or later in the season from the cold.

5.2 Key Informants

Semi-structured face-to-face interviews were conducted with key informants working in and around the area of food production, health, and food security. The

interviews with the key informants were focused on more broad discussions of gardening and its potential role and/or impact on food security and health at a policy or decision-making level. The interview questions explored five key aspects which included: the perspectives of key informants on the importance, role and benefits of gardening within a NL context; suggestions for how best to support gardening and gardeners; gardening and food security; challenges and barriers to gardening; and lastly key informant suggestions on how to overcome the challenges and barriers. The data obtained from these interviews were analysed organized into four main categories: 1) Importance & relevance of gardening; 2) gardening and food security; 3) challenges and barriers to gardening; and 4) solutions/suggestions for overcoming barriers to gardening.

5.2.1 The Importance & Relevance of

Gardening in NL

The first few questions directed at the key informants focused on gaining some insight into their opinions and perspectives on the relevance of, and benefits associated with gardening in in NL. Analysis of the interview data identified five key roles and/or benefits of gardening: a) gardening and its impact on health in NL (discussed in section 5.2.2); b) gardening and the preservation of tradition,

Relevance of Gardening in NL

- Gardening and the impact on health
- Gardening and the preservation of tradition, heritage and food skills
- Gardening as a method of creating connections
- Gardening as an educational tool
- Gardening and the associated financial benefits

heritage and food skills in NL; c) gardening and connections; d) gardening and its role as an educational tool; and e) gardening and associated financial benefits.

Gardening and the preservation of NL traditions, heritage and food skills: A number of the key informants noted that gardening was once an integral part of what it meant to be a Newfoundlander. This was particularly true during earlier days where the statement, “if you didn’t grow it, you didn’t eat it” resonated with many. However, the key informants noted that over the years, the levels of home food production had decreased. The key informants indicated that along with the decline in home food production, other food skills, such as food preparation, food preservation, and various traditional practices around food within the province were also being lost:

“Just like gardening ... is somewhat a lost art, so are other things around food, like bottling, preserving, cooking, all those food skills which I would consider gardening as a piece of that and so I think food skills in Newfoundland have diminished...”

According to some of the key informants gardening was important because the renewed interest in gardening by home and community gardeners happening across the province could be one way in which to foster the re-emergence and re-learning of the diminishing food skills.

Similarly, a few of the key informants thought that gardening was relevant in NL because it provided an important opportunity for people to start making connections with other important steps in the food skills spectrum as exemplified by the experiences in Marystown, NL:

“...it’s interesting because if you interview the people out in Marystown...they started with a community kitchen and after they had it, then there was an interest to have a community garden because they wanted actually to grow their own food to use in the community kitchen...”

Some of the key informants also suggested that gardening was important because it presented an opportunity to foster intergenerational learning around food skills. The key informants indicated that: “... we’ve had a generation where I think there are lost food skills and I think we need to go back to basics again...” Some key informants noted that the loss of food skills was particularly problematic because if the youth and young adults did not learn about traditional NL food practices, then a critical part of the NL heritage and traditions could potentially be lost: “...if we don’t...transfer the skill to the younger people and they have no idea how to do a garden, or how to get started, or the benefits of it, then eventually it will just die off.” Some key informants felt that gardening was important as it presented an opportunity not only for the preservation of food skills as highlighted above, but also an opportunity for younger generations to connect with and learn from their elders. In so doing, it was indicated that gardening had the opportunity to be part of the way in which the Newfoundland heritage was preserved and passed on to future generations.

One of the key informants indicated that compared to other provinces in Canada where food-production related knowledge had been lost for generations, Newfoundland and Labrador had a unique advantage for ensuring intergenerational learning. The following excerpt from an interview with a key informant clearly highlights and captures

his/her opinion pertaining to the unique connections to the sources of traditional NL food practices, and the importance of promoting gardening within the province:

“something that is really unique about NL compared to other provinces ...is that, a lot of the food skills - not just gardening, but cooking and preserving and wild foods and all of that ... the grandparents generation are still doing a lot of those things... Whereas if you are in other provinces in Canada, you have to go back a few more generations before people were actively providing for themselves from the lands like that. So it’s really nice here because we have an older generation that still has a lot of knowledge that we can tap into. So – I think for me personally, that’s a really important reason to garden in this province – is to just preserve that information and to connect ourselves a bit more with the heritage and to connect ourselves with the older people...it’s a really nice, healthy , fun out-door way to do some inter-generational learning and pass on information...”

Gardening and connections: A particularly important theme that emerged from the analysis of key informant responses regarding the importance and benefits of gardening in NL centered on the idea of gardening and its role in creating connections. Firstly, the key informants highlighted how gardening connected children with where their food came from within schools and/ or community gardens: *“...sometimes when you ask children where food comes from, they tell you it’s from the grocery store...”* Consequently, the key informants noted that gardening was relevant and critical for

reconnecting children and youth with the source of their food: “...*that’s why gardening is important I think because it takes the children back to where it comes from...*”

Beyond simply allowing children to learn about where their food came from, some of the key informants highlighted that gardening was also a key piece of the spectrum of food skills (i.e. from food production, food preparation, food preservation, etc.). These key informants believed that by teaching children and youth how to grow their own food, for example, through the integration of gardening within the school curriculum, there was an opportunity to also develop an interest in other aspects related to food like food preparation, healthy eating, etc. This kind of experience was exemplified in one school in the Northeast Avalon region, St. Francis (Harbour Grace):

“I know that the experiences that have happened out in Harbour Grace...they have a greenhouse that’s connected to St. Francis school in Harbour Grace ... What’s happened is that gardening as been integrated in everything, they use it in math, they measure how much the tomato things have grown, they do it in science they talk about photosynthesis. They do it in health, they talk about eating...”

The critical point around gardening and the connection that it created between children and their food made by the key informants centred on the idea that the future of this province is within the hands of the children and youth. That is, if children and youth are taught what it means to grow their own food, what it means to prepare and preserve their own food, what it means to make healthier food choices, etc., then we are investing in the health of this province:

“... there’s a number of different things that are happening around the province in schools and with children that I think are invaluable because that’s where our future is, with our children. And so we need to make sure that we look further down the chain, and look at how can we help our children understand that and then we need to work at the other end with our decision makers that it’s important for the children to have that and everybody coming together to make that difference...”

Gardening was also highlighted as being important in creating connections with the earth and nature. Key informants indicated that those who take part in gardening have an opportunity to learn about, and connect with their natural world, understand plant cycles, as well as seasonal changes: *“...Well I think the nice thing about gardening is that what it does is that it connects people to food and makes them think about food and where it comes from...it connects people back to the earth...”* A similar idea was also raised in interviews with the home and community gardeners.

While there was the obvious connection between people and their food that occurred because of gardening, there were other connections of interest that were highlighted by the key informants. One key informant stated that gardening was about more than just food. That is, the connections that were created as a result of gardening extended beyond food or harvest: *“...when they come together to garden...that builds community that builds family, that is a whole lot more than the food. Like the food is wonderful but all the things that happen to get the food is wonderful... it’s bigger than just the food...”* As noted earlier, in sharing the knowledge about how to produce food in

the province, there were also opportunities for social connections and intergenerational learning to happen between the older and younger generations, thus preserving Newfoundland traditions and heritage.

Some of the key informants indicated that one of the important benefits associated with gardening, particularly community gardening, was that it allowed for building connections between people within communities. Gardening connected people with people, people with similar interests in growing food, or people who could teach those less experienced in the practice. Furthermore, as people learned how to grow their own food within the province, this was one way in which capacity building occurred within communities: “... *it’s the coming together...you know all that building – capacity building, that sharing that happens in community that wouldn’t happen if you just served kids a bunch of food you know.*”

Some key informants noted that the benefits of gardening could be seen the most in community garden spaces which could also play a role as safe community spaces in which residents could come together and discuss ideas or issues of importance. One key informant indicated that community gardens had the potential to be accessible places of outreach, that is, a relaxed atmosphere for connecting with vulnerable populations:

“...with community gardens too, some organizations really use them to create a community space because they become like a safe space where people can just hang out and spend time and relax. And depending on what kind of organization it is, like some organizations might be connected with clients in crises or that are vulnerable...”

Additionally community gardens could also simply be a place for people to connect with people that they might never meet or connect with outside the garden:

“... and a community garden is a really accessible space for people to connect with each other – it’s different than being in a meeting room or a venue – you know what I mean – just people feel a little more relaxed I think in an out-door garden setting and I think that’s a really valuable thing for outreach too.”

Gardening as an educational tool: As noted above, one of the key roles attributed to gardening was the teaching life skills. This idea of gardening being an important teaching and/or educational skill was noted by a number of the key informants who agreed that gardening was important because it was one way in which children and youth could be taught a number of things such as: where food comes from, how to grow your own food, healthy eating and healthy food preparation, etc. A key aspect of the importance of gardening in educating the young was also around the idea of the longevity of the knowledge that was gained while gardening as well as the transferability of those skills:

“...it [gardening] is relevant because I find...the knowledge you gain by actually going through that process of making the item, or doing the growing in your own garden – what you learn as a result of that and the longevity – it stays with you as you grow older, you’ll probably do it again and again and again. And probably teach somebody else how to do it. So the transferability plus the longevity of those skills I think is important for this province.”

Financial Benefits: One of the key informants also indicated that though minor, there were also some financial benefits associated with taking part in gardening. This key informant thought that with the rising cost of living occurring across the province, it would become increasingly more important to find ways to save money and/or avoid the high costs of food. The key informant suggested that within Newfoundland where fresh produce is often shipped over long distances, which in turn translates to higher food prices at the grocery stores and supermarkets, gardening was one way in which individuals and families could reduce some of the high costs associated with purchasing this fresh produce:

“When you look around – everything just keeps going up and up and up in terms of cost of living. So I mean if you can provide some food stuffs for yourself and your family... it would be a nice way to help with the family situation. In terms...of the financial aspect of it...”

However, it is important to highlight that the idea of gardening for financial benefits as raised by the key informant is in stark contrast to the comments made by gardening participants. As noted in section 5.1.5 (Challenges and Barriers to Gardening), some gardeners felt that there was a high financial cost as well as a lot of time and effort required to overcome the challenges of gardening in NL, so much that gardening was not necessarily viewed as an economical choice, but rather an investment to their wellness.

5.2.2 Gardening and Health in NL

Some of the key informants interviewed indicated that gardening was important to health in NL because of its potential to increase access, and ultimately the consumption of fruit and vegetables among gardeners. Due to the unique geographical characteristics of the province NL has a limited access to fresh and affordable produce. One key informant speculated that this limited access to fresh produce could be a factor contributing to the lower levels of fruit and vegetable consumption in the province. Consequently, by increasing physical access to fresh produce, gardening would not only have a potential role in increasing the provinces food security (a topic discussed in greater detail in section 5.2.3), but possibly also in increasing the consumption of fresh produce. Essentially, the key informants noted that gardening was important due its potential impact on the nutritional health of the province's population: *"...what we have noticed and observed is that if people are involved in the process of growing those foods, particularly children, then they are just way more keen to eat them and to try experimenting with cooking them and using them..."*

In addition to the nutritional health benefits that could be gained from gardening, some of the key informants also noted that gardening was important in encouraging and/or increasing physical activity among the population of gardeners in NL. As highlighted earlier in the literature review, NL has low levels of physical activity, a factor that contributes to the high levels of chronic dietary diseases. In order to improve and maintain the health of the NL population it is essential to encourage activities that increase physical activity. While gardening is a seasonal activity, the key informants

indicated that the physical activity tasks associated with working in the garden, such as, digging, weeding, etc. were also most likely beneficial to health.

Some key informants were quick to note that the benefits of gardening extended beyond just the nutritional and physical activity aspects. Gardening was also perceived as beneficial to the mental health of those taking part in the activity: ... *it's not just physical health in terms of eating, but it's also mental health...*” Gardening was noted to have a positive impact on mental health as it was often perceived to be relaxing and therapeutic: “...*it's good to have dirt on your hands, it's good to be working the soil, it's good you know [to] watch something grow – the things that comes from that are far beyond...just swallowing the food...*” As noted by some of the home and community gardeners, being outside and just simply interacting with nature can often be a form of therapeutic relaxation: “...*getting a bit more connected with the natural world and understanding the cycle of plants and how the seasons change and all of that is a good thing too for the soul.*”

The key informants also indicated that there were some positive social health benefits associated with gardening. Some key informants noted that community gardens in particular created a place where people could meet and socialize, and learn from each other. The creation of these social connections and networks were beneficial to good health, with social support networks being one of the social determinants of health. Gardening was thus one way in which to begin creating these social networks, and thus a bridge to promoting positive social health among participants:

“...the benefits associated with gardening are mental, physical, and ...yes, even social...It’s community building...it’s more than just the food, it’s what happens when you sit together at the table. And it’s the same thing with the gardening. It’s more than just that. It’s about all the stuff that comes from that, so the social, the physical, the mental and all that stuff...”

5.2.3 Gardening and Food Security

Understanding of Food Security: Another key area explored with the key informant’s focused on gardening and their opinions and perceptions on how gardening could impact or influence food security. As with the gardening participants, the interviews first focused on gaining insight into the key informant’s understanding of what food security meant to them. As these individuals represented key stakeholders, and policy and decision-makers in and around the area of food security in NL, it was critical to know what their background and understanding was in the area. The responses provided by the key informants reflected a broad understanding of the meanings of food security. Their understanding of food security focused on three key areas: i) food security as access to food, ii) food security as a focus on the food system, and iii) food security and the link with food skills.

i. Food security as access

All the key informants agreed that food security was about the access to healthy food by all people. An important point raised by these key informants was that access to food was not simply focused on physical access, that is, physical access to food within

grocery stores, or farmers markets, or home gardens, etc.: “...a lot of times when people talk about food security, they are talking only about [physical] access...but we’re trying to get it more into the diversity of food security and talk about is it accessible, but is it also affordable? Is it also the kind of food that is...culturally acceptable for you? Is it what you want to eat...does it suit whatever your dietary preferences are... Is it safe...is it also healthy and going to help you have an active, vital life... all these other things as well.” Food security according to these key informants thus also considered a number of diverse factors, which were: economic access (affordability of healthy food), cultural acceptability, and food safety.

With regards to NL, one key informant also highlighted that access to produce was not simply just access to *fresh*, healthy produce. Access could also refer to frozen and/ or canned healthy food because in some remote and isolated regions, frozen or canned might sometimes be the better option if there was no access to fresh local produce:

“...in all fairness we are trying to get things as close as we can from the field to the table, so ideally that’s what we want. But sometimes when you live in a place like Newfoundland...some of the choices that we would make are better frozen than we would get fresh, because by the time it gets to us, it’s nutrient depleted versus if it’s flash frozen when it’s most nutrient dense, then that would make more sense that, that would be more nutritious than something that’s travelled however long and however many hours in a truck sort of thing...”

ii. Food security and the food system

Some of the key informants indicated that when discussing food security, it was important to emphasize other parts of the food system beyond the access and consumption of food. These key informants highlighted that food security also meant the right of people to take an active role in food systems. Food security was also closely connected to “food sovereignty”, defined as “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” (La Via Campesina as cited on Food Secure Canada, 2014). This key informant thus noted that food security was also concerned with the food system, particularly at a local level:

“...food sovereignty...it sort of inserts the politics of food. It takes food from just being a simple choice ...if a person is concerned about where their food comes from or wants to have that choice...if that’s considered a right...if the sovereignty of that choice is recognized...then how does that play out in terms of say how does...the local government or the local community....facilitate your access to, or allow you to exercise your right...to grow your own food, or to at least have someone growing it for you?”

Accordingly, when exploring food security and food sovereignty, some key informants noted that it is important to think about questions such as:

“...are you able to participate to create the kind of food system that you want in your community...are you being welcomed into consultations with government and are you able to start programs and activities like a farmers’ market if you

want to? ... Do your local bylaws...allow you to have a backyard garden and all that kind of stuff as well?”

Some of the key informants noted that when food security focused on the food system, then it also placed an emphasis on those individuals who were working within the food system. This would include those people working in food production, food preparation, food preservation, manufacturing, food distribution, etc. A food-system-focused lens would thus be interested in ensuring that those people who were working to bring food from the farm to the table were able to make a decent living while working within the food industry:

“... also look at the production side of things, whether or not the people at all levels of the food system that are growing, catching, producing, processing, transporting, serving, all of those jobs that are in the process of getting your food from the ocean or field, or whatever to your plate - are they able to earn a decent level wage...is food production a viable way to live in this province that can help you support your family and have a good life...too.”

iii. Food security and food skills

The third area of focus that was raised during the interviews with key informants regarding their understanding of food security was the link between food security and food skills. Some of the key informants felt that it was difficult to discuss food security without looking across the spectrum of food skills. In this case, the discussion focused more on the loss of food skills across the province, which the key informants thought also contributed to lower levels of food security. That is, some of the key informants thought

that food security went beyond having access to food, but the full range of food skills i.e. preparing food, preserving food, safely storing food, etc.:

“...there’s a skill aspect to this too. In terms of food security – like do I know what to do when I get it [fresh produce] home? Do I know how if I can’t get jam...can I make jam – do I know how? And if I make a lot, do I know what I’m gonna make that’s gonna stay safe over the course of the next 3 or 4 months however long it will last - right. So those kinds of things – that’s food security...”

Misconceptions about food security: Some of the key informants also noted that misconceptions and misunderstandings about food security still persisted: *“...sometimes that’s a challenge with people because they think food security is locking food up. They don’t understand that it’s access to healthy food.”* One of the key informants indicated that the misunderstandings could be a result of the use of the term “food security” which could mean or evoke different meanings for different people:

“...I think there’s a challenge with the term food security...because people don’t understand what food security is. Sometimes they think its food safety...the term unto itself is problematic and it actually can even be problematic in government. So that’s a challenge.”

Food security as an evolving concept: Despite some of these misunderstandings, overall the key informants noted that the food security topic was gaining regional, provincial, and even national attention. At a regional and provincial level, the attention on food security was reflected in some of the changes in programs and policies that were happening in and around food security. Some examples of this work and programs

included: the formation of an interdepartmental working group on food security; the core funding provided by the Department of Health to Food First NL; school food programs such as Kids Eat Smart (KES), breakfast programs, school lunch programs, snack programs, etc.; the development of Buy Local, Buy Fresh maps; the recent project with seniors through Food First NL which focused on learning about food skills; the funding support for market gardens in Labrador; the development of food skills workshops and resources for community group use; Agriculture in the Classroom, and so on. However, while applauding this work, some of the key informants noted that even more could be done to increase food security within NL: *“I think the conversation has started, should we be doing more – absolutely. We can always do more...things are happening; it’s not happening fast enough. It never does...”*

Some of the key informants also noted that food security as a concept was also becoming better understood, that is, the language was becoming more familiar within public discourse:

“...it’s just showing up more in people’s language... a few years back when you talked about the Food Security Network, you had to start by defining food security...so that you felt like they were all on the same page as you and I think that that’s not as necessary now...the terminology, what is food security...is much more commonly understood so that makes things a lot easier....”

Furthermore, some key informants thought that food security topics were now as also receiving increasing media coverage, which was helpful in raising awareness about what it means, and how people could be involved: *“And it’s been in the media and the public*

discourse a lot more. People are talking a lot lately about the cost of food, vulnerable communities...”

While the key informants highlighted the increasing knowledge and understanding of food security issues, they also emphasized the importance of persisting with the message of food security in order to ensure that it remained a priority among policy and decision-makers in the province:

“...I guess having it on your radar, making sure that it doesn’t slide off the radar...keeping it on your radar is the key, keep it out there. Keep the messages there, keep the visuals, keep ... the little things that you see in your day to day, or hear on the radio, or whatever – the little things that keep reminding you. Keep hammering at the same message...”

The Role/ Importance of Gardening in Food Security: Having gained some insight into the key informants’ understanding of food security, key informants were then asked about what they considered to be the key roles of gardening on food security within the province. Two key points were made by the key informants which included the role of gardening in increasing: i) access to healthy food, and ii) self-sufficiency/ independence.

i) *The role of Gardening in Increasing Access to Healthy Food*

The key informants noted that most of the produce in the stores had to be imported into the province via the ferry service, and often traveled very long distances to get to the grocery stores. Consequently, the amount and quality of fresh produce was vulnerable due to the unpredictable weather conditions that often times make ferry

services unavailable. Considering the limited access and the vulnerability of the island with respect to fresh imported produce, some of the key informants suggested that gardening and garden produce was one way to potentially increase access to fresh produce could be increased in the province:

“... if we are able to produce anything more locally, it just gives us a better sense of security in the province...a bit less vulnerability in the case of some kind of emergency ...there hasn’t been – thankfully – any sort of really major cut-off that went for more than a week or two, but it is conceivable that that kind of thing could happen – so developing those gardening skills here gives us a bit more security.”

ii) *The Role of Gardening in Increasing Self-Sufficiency/ Independence*

In addition to identifying gardening as having a role in increasing access to healthy, fresh produce, some key informants also felt that gardening was important for building and increasing the self-sufficiency and independence of Newfoundlanders and Labradoreans. Some key informants noted that when people grew some of their own produce in their home and community gardens, they removed a layer of dependence from outside food sources:

“...From a food security level –we’ve been around different tables where you hear that if the trucks don’t get in, then you see a difference in the grocery store. But if you are not relying on somebody to bring it in, and it’s home grown, then that dependence is not there.”

One key informant added that the practice of gardening provided important life skills and lessons that could in turn promote practices that encouraged self-sufficiency in general. This could be a skill that would be particularly important in children and youth:

“... if you can teach a child to be self-sufficient or to be more financially independent because they can grow some of their own things or make some of their own things ... they can actually make what they would normally have to buy...it’s self-sufficiency – that kind of skill which can be transferred to anything they want to grow.”

5.2.4 Challenges and Barriers to Gardening

Questions regarding challenges and barriers to gardening were also presented to the key informants in order to gain some insight on what they perceived to be the key challenges and barriers to growing food within the province.

Knowledge, Education and Awareness (lack of): The most common barrier to gardening that was identified by all key informants in this study pertained to knowledge, education and attitudes, as well as perceptual barriers which perpetuated negative attitudes among those who might not know or have any experience with gardening. Some key informants felt that there was

Challenges/ Barriers:

- Knowledge/ Attitudes/ Education
 - Structural Challenges: Space/ Accessibility/ Cost
 - Policy & Bureaucratic Challenges
 - Weather/Climate
 - Other (Soil quality & Moving from theory to practice)
-

insufficient information easily available on how to even begin gardening should there be individuals or groups who were interested in pursuing the activity:

“... from my own experience, I...would love to have a little garden...I have an interest in it yes...but oh my...where do I start... how do you get the garden ready to begin with? When do I plant what... how does this work...what are the things that you have to do in order to get a crop at the end of the season...I wouldn't know where to go to get that [information]...”

In addition to the lack of (sufficient) information on how to start gardening, the key informants noted that at times there was also a lack of supports, that is, mentoring to help new gardeners along as they tried out gardening for the first time. The key informants noted that the lack of supports to help gardeners through the growing and harvesting season could be a challenge for some.

Some key informants also echoed issues raised by the gardeners about the lack of gardening knowledge specific to Newfoundland and Labrador conditions: *“... I think gardening is very specific to the geography so what works on the mainland where it's nice and hot is probably not gonna work here, where it is not nice and hot. But you would need some local expertise I think...”*

Another key issue within the category of knowledge that was raised by some of the key informants was around the issue of perceptual barriers. One key informant noted that along with the lack of information around gardening, there were also misconceptions surrounding the practice. This informant indicated there were some misconceptions about

the weather, for example, being considered a barrier that would make gardening nearly impossible within the province:

“...I don’t know if it’s so much the actual weather that’s a barrier as it is people’s perception of the weather, because people feel like you can’t grow things here...and people just think that because we have a really wet, short growing season, that it’s just not possible to grow things. So...a little bit of I guess an obstacle would be breaking down those myths of food production in the province...”

In addition to perceptual barriers regarding the weather, some of the key informants also felt that there were other misconceptions regarding gardening most likely stemming from the lack of easily accessible information or knowledge on gardening in NL. One such misconception is the amount of time required to be able to do gardening. One key informant felt that if people knew about the time commitment required for gardening, then they might be more open to trying it out. In some cases, key informants indicated that there could even be misconceptions about how much knowledge one needed to have before starting a garden:

“People sort of feel like they need to know everything before they can start and we’re trying to tell them no, just start – just do one thing, plant one head in one pot and get yourself going and try it out...”

One of the key informants also noted that the education or awareness around gardening was an issue, not just for the general public, but also at the municipal and

provincial level. This key informant felt that there was a lack of understanding of the benefits of gardening among the policy and decision-makers:

“...there’s probably relatively few people in city council who - they might publicly say they understand the benefits but they might not be, or just coming around to be willing to change some of the regulations that allow for it – that allow for community gardens to exist, that allow people to grow in their own yards, or have animals in their own yard...”

Additionally, this key informant also felt that there were misconceptions about the risk associated with home food production:

“...there’s a misperception of the risk involved...say if you have a yard with animals, well are they going to disturb the neighbours? If you have a garden, you gonna have compost, is that going to attract rats... and I have been in many places and I have not seen rats attracted to compost...”

One of the key informants also felt that it was possible that there was a general lack of interest and/or political will to make changes in home and personal home food production among those in decision making positions. Further compounding this issue was the lack of awareness about the benefits of gardening, and how any perceived risks associated with gardening could be overcome:

“...there is a misunderstanding of what is gardening, what can be done, what are the alternatives on how it can be made to work... I would say that there is a lack of awareness. And honestly I think that most of the people in city government aren’t really interested in learning how it can be different...”

Consequently, this made it difficult for zoning laws or policies around food production to be made or to be passed through city council.

Land Space/ Accessibility/ Cost: The key informants echoed home and community gardener's sentiments that limited access to land was a potential barrier to gardening. However, further to this, the key informants noted that at times the lack of, or limited access to land to grow food could be especially challenging among individuals trying to grow food for commercial purposes. One key informant noted that these individuals might not have access to the kind of capital required to purchase larger pieces of land, or they might have to circumvent various land policy or zoning regulations in order to grow their food for commercial purposes.

Some of the key informants also noted that the cost of set up (clearing land, creating and improving, building raised beds, buying seeds and seedlings, protective coverings (for the unpredictable weather or pests), etc. could be a potential barrier to growing food within the province. While the cost of set up was a barrier, one key informant noted that it was possible to reduce the costs associated with starting up a garden, by using recycled material, or re-used material in building a garden bed, as an example. However, this key informant noted that this was not information always readily available to new gardeners. In essence, the key informants highlighted that a lack of knowledge or education about gardening could in turn greatly increase costs and thus create a financial barrier to growing food for some people:

“...it depends on the scale that you're looking at. But some people do find it difficult in terms of costs...if you are trying to buy everything new – we really

promote the use of recycled material and re-used materials and kind of getting creative. But if you were going out and buying all new soil, and all new pots and everything and seeds and tools – that would be very expensive and in that case finances would be an obstacle...”

One other comment made about land-related barriers was related to the accessibility of garden spaces. One of the key informants noted that at times physical health (trouble bending, kneeling, etc.) might limit how much and how people grow food in the region. However, the key informant was quick to note “...*you can design your garden space to make it more accessible depending on what people’s different mobility levels are.*”

Discussions around accessibility also focused on the issue of physical accessibility to resources required for gardening. The key informants noted that it was sometimes difficult for some people to access to resources for gardening like seeds or seedlings, or other material required to build a garden due to the distance required to travel in order to purchase these resources.

Policy & Bureaucratic Challenges: A third key challenge identified by the key informants was around policy and the bureaucratic processes within the decision-making organizations that have an influence on how and where food is grown within the province. Firstly, one of the key informants noted that there was a disconnect in the language or communication between those working in government or other decision making organizations and the people who were interested in growing their own food. The

key informant noted that at times the language used at the policy and decision-making level was different to that used at the community and at the individual level:

“... there’s a disconnect in how the language that’s used...like people at the community level and individual level and then people who are doing really positive work in government could be talking about the same things, but they sound like they are speaking two different languages right...”

Essentially some information was getting lost in translation. That is, while there were programs or resources that might be accessible to home, community or market gardeners wishing to grow their own food, the jargon or bureaucratic processes that one might have to go through in order to access these programs or resources could be a major barrier to growing your own food in the region and province:

“...a lot of times there are government programs, or there are policies already there that are positive but that are not trickling down. People don’t realize that they are available...”

Furthermore, some key informants noted that while there was a chance to take each of the challenges and barriers presented by gardeners and turn it into an opportunity to develop policy or programs to support gardening, there were also a number of bureaucratic processes and steps required in order to go from knowing what people want, and then developing a policy: *“...with each of those barriers, we can turn it into a challenge and an opportunity to do something...”* These steps would most likely include a consultation phase with the public to learn more about what they want with respect to growing their own food; developing a cabinet paper; and then moving that cabinet paper

along from simply being a paper, to something that could be drafted into some kind of policy or program. However, questions arising from this process would be things like “who writes the paper,” “what is included in that paper?” etc.

As noted above, one major challenge in moving from identifying challenges and barriers and moving to exploring opportunities was around “whose responsibility is it?” A similar issue was also identified as a barrier to growing food within the school systems. In Newfoundland and Labrador, the school year ends around the time the growing season is picking up. Consequently, if the school system encouraged growing food within the school system, once the school year was over, whose responsibility was it to follow up with the gardens during the summer breaks? Would this be placed on a teacher or students? Would they be willing to have that responsibility and follow through:

“Well the school year would be a barrier...most of the growing happens in the summer. Kids are out, school’s over - if there are gonna do outside gardening, there would have to be some accommodation for transfer of the responsibility of that garden to somebody else. Or a commitment from the teacher or from the kids to say they will continue to look after the garden over the summer. That would be a barrier for them...”

Weather/ Climate: As expected, the weather was also identified as a barrier to growing food within the province. As noted in the discussion on the lack of knowledge and perceptual barriers, the key informants suggested that the weather itself might not be a major barrier, but rather, people’s perceptions of the weather was the barrier to growing food in the region. One of the key informants felt that there was a misconception about

the weather which made people think they could not grow anything here, or that they could only grow the traditional NL crops.

Other Challenges and Barriers: The other two key barriers identified by the key informants included: 1) the quality of NL soil and 2) the challenge associated with moving from the theoretical to the practical dimensions of growing our own food. Discussions around the soil reflected the same issues raised by the home and community gardeners, i.e. the soil is rocky, acidic, contaminated (in some cases) and often times difficult to work. Of interest however, was the second issue that focused on moving from the theoretical to practical aspects of gardening. One of the key informants noted that a major barrier or challenge to growing our own food in the province would be around the rate at which ideas move over time. This key informant noted that it would take time to move from the point at which people knew and understood the benefits of gardening and growing your own, to a point where people actually got up and went to grow their own food:

“... Things move slowly – alright. It takes time, like you may know of all about gardening and all the benefits of gardening and how to do it and that kind of stuff, but unless you actually do it...it’s the doing. Like how do you move from everyone knowing everything about it, to people doing it? That’s the big bridge.”

5.2.5 Overcoming Challenges and Barriers to Gardening

Five key areas of action were identified by the key informants and included: increasing and promoting education and awareness on gardening; increasing government's role and support; a social campaign for gardening; providing communal green spaces; and encouraging / promoting gardening in schools.

Promoting and Increasing Education and Awareness around Gardening: The most common suggestion for overcoming the barriers to gardening centred on increasing education and raising awareness around gardening in NL. In order to address the knowledge gap, some key informants suggested a gardening awareness raising campaign among the general public. The focus of the

campaign could be multi-dimensional including:

- a) breaking down myths around food production;
- b) encouraging people to simply go out and try gardening;
- c) educating people on how to start gardening economically by using recycled material; and
- d) informing people about the benefits of joining a community garden for cost savings and to learn from other knowledgeable people within the community.

One proposed avenue through which information and knowledge on gardening could be provided was through a provincial gardening

Overcoming Challenges and Barriers:

- Providing education and raising awareness
- Exposing school children to gardening at an early age
- Providing community green spaces
- Encouraging and increasing government role and support
- Using social media for gardening campaigns

website: “... *provincial gardening website on what grows here or something like that ...so that you would know what does do well here, what doesn’t do well here, you know the kind of soil that you would need, or how much soil ...*” This website could be constructed with knowledge and information from local experts: “...*you would need some local expertise I think...*” and would provide information specific to growing food within the province.

One of the key informants suggested that for newer gardeners, a local gardening video series might be helpful for providing basic information like how to prepare your land, building a raised bed, preparing your soil, etc.: “...*something as simple as a series of videos. You know like an actual virtual garden....Yeah this is how you do it. So you video tape somebody - the key steps and then you film it that way...*” The key informants suggested that the gardening video series could be distributed locally or shared though the provincial gardening website in order to be easily accessible.

Some of the key informants suggested that working with community groups could also be another method with which to spread information and awareness about gardening within NL. One key informant noted that by reaching out and getting more community groups interested in food security issues or even just starting a community garden, a larger number and variety of people could be exposed to the benefits of gardening and some food security issues. By connecting with community groups and hosting information sessions or workshops on food security and gardening, through organizations like Food First NL, information could trickle down to the community residents:

“...what I’m hoping is that more community groups...will start hosting information sessions and workshops... I think that if more of those groups start hosting that kind of event, and then individuals attend, that’s what will spark individuals’ interest...It’s when you actually see it in your community and realize that it’s possible to talk to other people. And I think that the way to do that kind of outreach is through the community level through existing social networks...there [are] all these existing groups that are across the province and getting those groups interested in food security will get them hopefully to host more events and things like that.”

Gardening in Schools: As suggested by the home and community gardeners, the key informants also indicated that an important step in supporting gardening would be to promote and provide support for gardening within the school system. A few key informants mentioned the school garden in Harbour Grace as an example of how gardening could be used as an educational tool. These key informants thought it was important to extend the concept of school gardens across the province.

While there was value in encouraging and supporting gardening within the school curriculum, one of the key informants also noted that the support provided needed to go simply beyond providing ideas and directions within the curriculum: *“...well supporting the curriculum [is] one thing, but words on paper, well that’s one layer...”* The support provided to schools to begin and sustain school gardens would also need to include funding, as well as resources such as access to skilled and knowledgeable experts in gardening within the province, or even access to land to establish the school gardens.

Providing/Increasing Government's Role and Support: As suggested by the home and community gardeners, the key informants also thought that increasing government's role and support could be one way in which to remove some of the challenges and barriers associated with gardening within the region. Some of the key informants indicated that the topic of gardening, food security and health was one that covered a broad range of topics such as health, education, agriculture, municipal planning, etc. As such, a few of the key informants noted that any attempts to address the challenges and barriers associated with gardening would need to be multidisciplinary approaches that involved various key players:

“...the thing is with food, it goes into different places, so we are talking agriculture, we're talking health, we're talking education. ... it's trying to get everybody together at the table in order to figure out what it is we can do in order to make a difference.”

While acknowledging that it was up to communities to take the lead in encouraging residents to grow their own food, some of the key informants felt that it was important for government to assist these communities by providing support or resources:

“...it's about supporting community groups to be able to support people in the community to do gardening...” Government support could be in the form of funding and other resources directed to community groups working in the communities:

Some key informants also thought that it was particularly important to ensure that there was funding provided to groups working in the area of food security such as Food First NL: *“...So it's core funding for the [Food First NL] to be able to do what they*

do...” The funding to these groups could be used to purchase resources that Food First NL could use in educating communities on how to grow their own food, as well as other skills along the food security spectrum: “...*I think people like [Food First NL] would be key people in transferring the skill...So they would need resources obviously to do that or some kind of sustained funding in order to make this happen...*” Additionally, funding could also be provided in order to ensure that once community groups had the knowledge and education that they needed, they were actually able to apply this knowledge into programs that the community could use: “...*there needs to be some kind of funding so that they have the start-up money to do things that they want to do...*”

A few of the key informants thought that it was important to ensure that there were support structures in place across the food security spectrum (food growing, harvesting, food storage, food preparation, etc.): “...*there would have to have a support structure put in place to carry that process through.*” One suggestion of this support provided by a participant was connecting gardeners with community organizations during the harvest season in order for them to have options for where to take their surplus should they have any, rather than letting it go to waste.

Another suggestion regarding the role of government in removing challenges and barriers was in increasing the amount or access to land on which people could grow food. As noted in the discussion earlier, access to land was a barrier for some participants. Consequently, a few key informants noted that municipalities could focus on creating or providing spaces where people could establish community gardens.

As noted by one of the home gardeners, although there was support for large-scale producers, it was a challenging environment for some of the smaller-scale or new market gardeners interested in entering the commercial realm. A similar sentiment was also echoed by one of the key informants who then suggested that it was important for government to also provide support for small-scale producers.

Another key informant thought that it could be helpful for supporting local food growing if the local food institutions (i.e. those supplying or preparing food for schools, hospitals, restaurants, etc.) were encouraged or mandated to buy produce from local producers:

“..... I don’t know if there is any way to encourage or to mandate that you know a certain percentage of what they bring in or use is local. Promote the local...for example...developing partnerships between local farms and food suppliers to schools or to grocery stores, hospitals, senior’s homes... rather than buying from a distributor who may not be buying local, who may be bringing it in.”

Lastly, a few of the key informants thought that in order to begin the process of moving ideas along related to growing food locally into policy, it was important for the provincial government to consult with the public about what the public’s needs and priorities were: *“...taking that and connecting it back and asking [Food First NL] and...people that are interested in gardening, the gardeners...So I think it’s time and we’re ready for that consultation phase...”* As noted by another key informant, the development of any policies on gardening, local food growing, or food security had to be rooted in public consultations in order to reflect the needs of the people and thus be

potentially useful and relevant once developed: “...*really listening to the community groups to find out what it is they need...it really needs to be rooted in public consultations so that what you’re making is useful and doesn’t just sit on a shelf somewhere.*”

Urban Green Spaces: The key informants also suggested the creation and promotion of community green spaces, such as community gardens as one way to remove the barrier associated with access to land. A few of the key informants thought that it would be helpful to ensure that communal green spaces were included in city-planning: “...*I think municipalities need to jump on board and like designate an area of town where community garden can happen...*” One suggested advantage to these community green spaces would be that they could be more affordable options for growing food for some gardeners in comparison to growing food at home: “...*I think community gardening too is also a lot more affordable because you don’t have to buy everything for your home. A lot of that stuff is shared in a community garden...*” Additionally, community gardening spaces would also provide an opportunity for tool and resource sharing to happen among gardeners.

5.2.6 General Comments on Gardening

During the course of the interviews, the key informants were asked to make general comments regarding changes in gardening that they had observed over the years, or any other general comments that they had related to gardening or local food growing

within the region. The following section highlights some key points of interest brought up by the key informants:

Increased Media Attention on Local Food Production: Some of the key informants indicated that they thought there was an increased interest by the general public, as well as in the media coverage of issues related to local food production, as well as some issues of food security: *“...not just in this province, but like overall in the media and all over the place, there’s been more talk about gardening and about food security and that kind of thing and people are getting more interested in it even if they are not associated with a community garden at all...”* When asked whether they thought this interest in local food production was a trend, one of the key informants thought that while there were certain trends within the food growing movement, such as, trendy crops to grow in a growing season, they believed that interest for people to grow their own food was a movement that was here to stay:

“...I think this sort of overall increased interest in sustainable living, green living, homesteading and all that, I don’t think that’s a trend that is going away quickly...the trend to provide one’s self more and live a bit more sustainably – I think is here to stay – hopefully. And I think that an increased interest in gardening is here to stay...”

Gardening as an Exclusive Activity: While a number of the key informants applauded the growth of local food production, one of the key informants was concerned about whether gardening or local food growing was a movement that involved a diverse group of people, and thus have the potential to be encouraged at a large scale. This key

informant noted that some people considered the gardening movement a “yuppie” movement: “...*I think there is a real movement happening [but] some people consider it a yuppie – young, upwardly mobile sort of you know educated people versus just the regular Joe Regular...*” The concern for this key informant was around how to make gardening an activity that was universal and accessible to all people: “...*So what we need to do is to make it for everyone, not just the yuppies, we want Joe Regular to know you can do that...*”

In the discussion regarding how to make gardening or local food production a more universal activity that was not limited to a certain group of people, a number of the key informants highlighted the importance of ensuring that the introduction of community gardens or home gardens followed a community development approach, or a grass roots approach. That is, the key informants noted that it was essential to ensure that the communities and community members were involved from the beginning of any gardening initiatives or projects. It was important to ensure that gardening projects were not something designed within a bureaucratic system and then handed down to communities to be applied. Rather, any gardening or local food growing initiatives had to come from the interest and willingness and input of the community members. One suggestion regarding how this could be done was introducing gardening projects into some of the already existing programs within communities:

“...*Well my ideas with that would be to start with the programs that are already there, which is to use the community gardens and use the NL housing projects where people come together already naturally and then introduce them to that*

and use models, and have them involved in it. So again using that community development model in order to make it happen. We can't do unto people, we need to work with people..."

CHAPTER 6: DISCUSSION

This study explored gardening, health and food security within a Newfoundland and Labrador context in order to contribute to the local body of food research. The objectives of this study were: 1) to describe the demographic characteristics of individuals participating in gardening in the Northeast Avalon region; 2) to explore their key reasons and motivations for gardening; 3) to study the opinions and experiences of gardeners and key informants regarding the perceived impacts of gardening on health and food security and; 4) to explore the challenges and barriers faced by these gardeners in pursuing this practice, and subsequently their suggestions on how to address these challenges and barriers. In order to provide a focused and relevant discussion, this chapter will focus on the following application questions:

- 1) Does gardening have a role to play in promoting and supporting health in NL?
- 2) Does gardening have a role to play in increasing food security in NL?
- 3) What key recommendations can be drawn from this research in relation to gardening as an activity/tool to improve health and food security in NL?

The demographic questions in the survey component of this study showed that most of the respondents were aged 25 to 54 years (82.4%), well educated, with some college/university education or higher (98.5%), with an annual household income of at least \$50, 000 or more (58.1%). Additionally, most survey participants (85.5%) indicated that they were either employed part time (22.6%), full time (50.0%) or self-employed (12.9%). This snapshot of the demographics of gardeners suggests that it was young to middle aged, well-educated, mid to high income individuals taking part in gardening at

the time of data collection. Based on this picture, where gardening seems to engage a particular demographic group, it is important to consider whether there are ways in which to attract and engage more of the population (regardless of age or income) to take part in this practice, thus making gardening a worthwhile and relevant public health and food security initiative? Or is gardening, as suggested by one of the key informants, a practice exclusive to “yuppies”, that is those individuals who are young and/or upwardly mobile in society?

6.1 Does gardening have a role to play in promoting and supporting health in Newfoundland and Labrador?

There are numerous benefits of gardening on health highlighted in the literature, which include: increasing the consumption of fresh produce, increasing physical activity, improving and sustaining mental health, creating social networks, improving the local physical environment, encouraging ecological and sustainable living, and increasing food security (Carney et al., 2012; FSN, 2011b; Burges & Moore, 2011; Heim et al., 2011; Hale et al., 2011; Sempik, 2010; Barbolet et al., 2009; Alaimo et al., 2008; Stein 2008; Wakefield et al., 2007; Infantino, 2004). Recognizing the potential health benefits associated with gardening, it is important to point out that only 25.8% of survey participants indicated that they were gardening for general health and wellbeing. This is in contrast to the 82.3% of participants who responded that their top reason or motivation for taking part in gardening was for food & food quality, followed by those gardening for enjoyment & self-satisfaction (46.8%).

On the surface, the survey results appear to suggest that most participants' primary motivation for gardening was for food and food quality, as well as for enjoyment and self-satisfaction, and less so for health and well-being. However, it is important to note that when coding the responses to the question regarding reasons and motivations for gardening, the category "general health and well-being" (page 52) specifically referred to survey responses that referenced physical activity, nutrition/healthy eating, and mental health. While these are important aspects of health, they represent only a narrow view of health.

In contrast to this view of health, the interview participant responses to the question about the meaning of "good health" reflected a broad, holistic understandings of health, where good health included more than just eating healthy and maintaining an active lifestyle. Good health included a mix of ecological attributes, such as living in harmony with the environment, maintaining a state of balance and equilibrium, having access to healthy food options, consuming more organic (considered safer) foods, being socially connected, as well as maintaining one's mental health by taking part in activities that allowed one to feel happy, relaxed and actively engaged in community. The participant responses clearly show that health was seen as a multifaceted concept, where the different elements and levels of influence were interconnected - revealing an ecological mindset. McLaren (2005) describes the ecological perspective to health as an approach that views health as a complex web of factors, which emphasizes both the individual and contextual systems and the interdependent relations between the two.

Bearing in mind this holistic definition or understanding of health allows one to consider the survey results in a different light. That is, while most of the survey participants indicated that they gardened for food and food quality as well as for enjoyment and self-satisfaction, using this holistic lens of health, both categories (gardening for food and food quality and gardening for enjoyment and self-satisfaction) would be considered aspects of good health. Similarly, gardening for food security or access, environmental concerns, to be in touch with nature, and to build or maintain social connections would also fall under this broad, ecological perspective of health.

It is also significant to note that a few of the interview participants mentioned being unsure about whether taking part in gardening was significantly beneficial in increasing their levels of physical activity, or increasing their nutritional health. As an example, while participants noted that gardening increased access and consumption of fresh produce, most participants interviewed also indicated that they generally ate a lot of fresh produce outside of their gardens. As such, even without their gardens, they would probably still purchase this fresh produce at the grocery stores and supermarkets. Additionally, these participants also noted that they were already conscious of healthful eating habits, and while gardening increased their access to fresh produce, it did not change the way they ate.

This finding confirms that a number of participants who took part in gardening were already aware and conscious about their health, and were gardening to supplement other healthy practices that were already a part of their lives. Gardening was thus more of an extension of their ecological mindset. These findings are in line with other studies

which show that for gardeners, “lifestyle choices such as being outside in the community, learning about natural rhythms, connecting with one’s roots, and sharing food support a broader notion of health...gardening has less to do with the physical health benefits of increased physical activity or fruit and vegetable consumption and more to do with relational associations they view as contributing to their overall well-being” (Hale, et al., 2011, pp.1861).

Recognizing the apparent connection between those individuals who are well educated, in the mid to high income bracket, health conscious and those taking part in gardening, begs the question: how can gardening become an accessible tool for promoting and/or supporting health and wellness in NL? Successful health promotion initiatives aim to facilitate healthy environments where people have access to healthy options, while also being respectful of the individual’s autonomy and preferences. Not everyone will choose or want to garden for their health and wellness. However, for those who would like to: how can we facilitate the process of gardening becoming an accessible option or tool for promoting and supporting health, regardless of an individual’s demographic background? Suggestions to address this question are provided in section 6.3.

6.2 Does gardening have a role to play in increasing food security in Newfoundland and Labrador?

Food security exists when “all people, at all times, have physical and economic access to sufficient, safe and nutritious food which meets their dietary needs and food

preferences for an active and healthy life” (WSFS & FAO, 2009). Of importance is the idea that access in this definition refers not only to physical access, but also economic access. In exploring home and community gardeners’ understanding of food security, this study highlighted two important issues. Firstly, the term “food security” was not always familiar to all home and community gardeners. Secondly, for those participants who were familiar with the term, food security was often associated with physical access to food. That is, when defining food security, participants talked about: avoiding food shortages, the vulnerability and dependence of NL on outside food sources, as well as issues of environmental sustainability and self-reliance. However, economic access to food was not an issue that was raised by the gardeners, but only by the key informants.

While one cannot make any conclusions regarding this omission, it is imperative to consider whether this oversight confirms that for these particular gardeners, gardening was not so much an activity done out of economic necessity. Rather, their motivations to garden were largely fueled by their ecological mindset. That is, most gardeners agreed that gardens increased their access to fresh produce during the growing and harvesting season, and for some gardens allowed them to reduce their demand on the regular food system, while promoting sustainable methods of food production. However, overall, participants appeared to be skeptical about the impact that gardening had on food security. While gardening coupled with food storage and preservation techniques could allow participants to eat their home grown produce for a longer span of the year; most participants felt that it was difficult to produce and store enough food from their gardens to sustain them year round.

In order to comprehend the role that gardening could play in increasing food security in NL, it is also important to ask whether gardening is an activity that can be an accessible option for all individuals interested in taking part in the activity. Specifically, is gardening accessible to all demographic groups, regardless of income or employment status, to allow for it to be promoted as a tool for increasing/supporting household/community food security? As highlighted in the literature review, some researchers argue that many of the problems of food insecurity are rooted in inadequate incomes (McIntyre & Rondeau, 2009; Kirkpatrick & Tarasuk, 2009). Consequently in lower income households, the grocery budget is often considered flexible and is often compromised when individuals experience financial constraints (McIntyre, et al., 2001). In contrast to these food insecure households who may be unable to access healthy food due to financial constraints, participants in this study appeared to have resources available to ensure that their grocery budget was not compromised. Gardening for these participants was an investment in their wellness rather than a financial one. Considering that those individuals or families who are in a low income bracket may not have the ability to make such an investment into gardening, is it feasible to consider gardening as a tool in increasing food security in NL?

The limited responses about gardening's impact on food security shown in this study gives us pause and echoes key concerns raised by critics of ad-hoc community based food initiatives (like community gardens, soup kitchens, etc.). These critics note that, while community-based initiatives have attempted to address issues of food insecurity, there is little evidence to suggest that these programs do in fact reduce food

insecurity or improve the nutritional status among vulnerable populations (McIntyre & Rondeau, 2009; Kirkpatrick & Tarasuk, 2009). As noted by one key informant: food insecure people are not necessarily thinking about gardening; nobody who is hungry is thinking about gardening. Rather, hungry people are thinking about how they can get their next meal, i.e. short-term, immediate strategies. Consequently, it may be best to consider gardening as a complement to other policy-based strategies that address food insecurity (by addressing the lack of an adequate income), rather than as an independent tool for increasing food insecurity.

6.3 What key recommendations can be drawn from this research in relation to gardening as an activity/tool to improve health and food security in NL?

As noted in the last two sections, not everyone will choose or want to garden for their health and wellness and/or food security. Furthermore, there are limitations of using gardening as a tool for directly addressing food insecurity. However, we must also acknowledge the potential role that gardening could have in promoting and supporting health. As such, how can we facilitate the process of gardening becoming an accessible option for those who wish to engage in the activity for their health and/or food security, regardless of income and education? What can we learn from the challenges and barriers faced by gardeners and the suggestions and recommendations on how to overcome these challenges and barriers in order to be able to support individuals in NL to either begin or continue to garden?

To recap, the key challenges and barriers identified by the survey and interview participants as well as the key informants were: weather/climate; soil quality; availability and accessibility of land; limited NL-specific gardening knowledge; a lack of general public education and awareness of gardening; and the lack of/ limited support and policies encouraging food growing at the municipal and provincial government levels. Key strategies and solutions for addressing these challenges and barriers and to encourage and support gardening and more local food growing included: providing education or information and local supports for gardeners in the region; promoting and supporting early exposure to gardening, specifically through gardening in schools; providing more community gardens or communal green spaces; encouraging and increasing government role and support (for example, by-laws which support communal green spaces in all communities, or providing funding to local food growing ventures); using season extension practices and adapting methods of gardening to combat the weather; and creating a social media gardening campaign. The following section highlights key recommendations that came from the research findings that can be applied in order to support and encourage gardening in NL.

1. Increase and encourage early exposure to gardening (Gardening in schools)

One of the key observations made through the course of this research was the importance of early exposure to gardening on those individuals who were taking part in the activity. As noted by some of the participants, growing food was something that they had started to do during their early days or had learned from their parents and as such, a

skill and activity that they were more likely to continue to pursue as they got older. Consequently, in discussing ways that gardening could be promoted or increased throughout the province, a number of participants noted that introducing gardening within the school system was one way through which to expose children and youth to gardening. It was suggested that by promoting and encouraging the activity during the early years, children could: i) learn about where their food came from; ii) gain an appreciation and understanding about those working in the food industry; iii) learn about healthy food options; iv) learn about how to prepare and/ store these foods; and v) foster and develop an interest in growing their own food that could be perpetuated into their adult years.

Thus a key recommendation for moving forward is to introduce, and support gardens within the school system. This can be at the primary, elementary and high school level. Examples about how to go forward with such projects can be taken from the Harbour Grace school gardens. Agriculture in the Classroom N.L. (AITCNL), a non-profit group that works with teachers and agriculture professionals also runs programs such as Little Green Thumbs. The Little Green Thumbs program provides classes with supplies and expertise for creating indoor gardens. The findings from this research suggest that there is value in investing in such educational programs. It is critical to ensure that schools have the financial and human resources required to develop and support such programs. As noted by both key informants and gardeners, teaching children and youth what it means to grow, prepare and preserve their own food and what it means to make healthier food choices is an investment in the health of this province.

2. Increase education and awareness about gardening in NL

The general lack of education and awareness about gardening, or the benefits of gardening, or even the possibilities of growing food in the region was a common issue echoed in the surveys and participant interviews. As such providing education and raising awareness about growing food in the region is a key recommendation for supporting gardening in NL. Two key strategies for increasing education/information and awareness were suggested by participants:

a. Gardening Campaign: Dig for health

A number of participants suggested that one way in which to increase awareness and education, and spread information about gardening could be through a province wide gardening campaign aimed at the general population. This campaign could be framed in a similar way to other health campaigns previously launched in the province, for example smoking cessation, breast feeding promotion, etc. and widely promoted via social media, local radio and television, etc. The benefit of such a wide-spread campaign would be the potential capacity to reach a wide audience, and not just those individuals already interested or taking part in gardening. The focus of this campaign could include: i) addressing misconceptions about growing food in this province; ii) providing information on where people can access materials or resources related to gardening for food within NL ecosystem; iii) teaching people about the importance of growing their own food to increase or support food security in the province, and so on.

b. Gardening website or resource center specific to NL

In addition to the general lack of education and awareness regarding gardening in NL, most participants also indicated that gardening in this province could be especially challenging because of a lack of NL-specific information about how, where and when to grow food among other concerns. While there are some social media resources available, for example Facebook groups like Backyard Vegetable Farmers NL and Backyard Farming & Homesteading NL, there is still no centralized list of resources or information about backyard or home gardening in NL. As such, a popular suggestion for addressing the lack of NL-specific education or information on gardening was the creation of a gardening website. This website would be developed in collaboration with local experts who would be able to provide NL-specific information to help walk new (and experienced) gardeners through each step of gardening. It was suggested that the website could include step-by-step how-to videos or manuals, and even links for whom to contact in the different regions for more information.

Food First NL launched an online healthy eating resource for NL in 2016 (healthyeatingnl.ca). This website provides resources to Newfoundlanders and Labradoreans who may be interested in learning about healthy eating and provides relevant, reliable and up-to-date information. Based on the suggestions presented by participants in this study, creating a similar resource focusing on gardening could be greatly beneficial for new gardeners, or would-be gardeners in this province.

3. Encourage and support the establishment of urban green spaces

(government's role in gardening):

A number of participants suggested that government could play an active role within the home and community food production. One specific recommendation was that governing bodies - municipal, regional, and provincial should encourage and support the establishment of urban green spaces. Participants noted that it was important to ensure that those involved in city planning were knowledgeable about the value of urban green spaces. As such, education for those involved in municipal planning was critical in order to ensure that green spaces for urban (edible) parks and community gardens were included in all new developments. Some participants went even further to suggest that municipality planning departments should mandate the creation/allocation of a green space for all new developments.

Other ways in which the government could support gardening and encourage urban green spaces put forward was by providing incentives at a provincial, regional and municipal level to individuals or groups growing food. As noted by some participants, incentives could be in the form of direct financial support, or tax credits for those growing their own food.

4. Conduct public consultations: Develop a discussion paper on food security

In order to move forward with developing policies around local food production, it is important to know what the people of NL consider as important with regards to their

food security concerns. As stated by some key informants, engaging with the public is an important first step in the development of policies relevant to food security in NL. One key informant suggested that a discussion paper could be one way to get the people of NL involved in talking about food security and health. Since the collection of the data for this research, Food First NL in partnership with the NL Public Health Association (NLPHA) released a discussion paper on food security titled “*Everybody Eats: A discussion paper on food security in Newfoundland & Labrador*”. The purpose of this document is to start a provincial conversation on the future of food security in NL. Food First NL and the NLPHA intend for organizations across the province to host regional forums and use the discussion paper as a tool for discussing local food security issues and opportunities. Once these regional forums are completed, a provincial food security assembly will be held “to develop a roadmap for the future of food security in NL” (Food First NL, November 2015).

The development of this discussion paper and the regional forums which have followed is a positive step forward in addressing food security issues in NL. It is critical that the momentum is maintained and that the findings from the process of the regional forums are moved along until they are developed into policies. This in turn means it is critical for food security to remain a priority for those in policy and decision-making positions within the provincial and municipal governments.

6.4 Study Limitations and Future Research

While this study provides a snapshot of the demographics of gardening participants at the time of data collection (August 2012 to January 2013), it is important to note that this was only a small sample of gardeners within the Northeast Avalon region, recruited through specific email lists. Furthermore, the use of the online survey excluded any gardening participants in the region who had no access to the internet. As such, it is difficult to generalise these findings to the general population of gardeners in the region, and even across Newfoundland and Labrador. To gain a better picture of gardeners in NL, future studies may need to broaden the data pool and include gardeners from across the province.

As noted in section 6.1, in the coding of survey data, a narrow definition of health was used for the survey responses than that provided by the interview participants. It is important when considering future research studies to ensure that the definition of health used considers the multifaceted nature of health and not just the physical dimensions of health.

This research study explored gardeners' perceptions of the impact of gardening on their health and food security status. No standardized measures of health or food security were used. As such, the impact of gardening on health and food security cannot be quantitatively measured. Future studies exploring the impact of gardening on health and/or food security could employ more quantitative measures of health and food security.

6.5 Gardening for health and food security in NL: Concluding remarks

There are a number of reasons why people chose to garden in Newfoundland and Labrador despite the many challenging factors. There were gardeners in this study who gardened in order to display and perpetuate traditional values and values of self-reliance and subsistence skills as suggested by Cadigan (1994) and Omohundro (1995). However, for most study participants, gardening was not an activity done out of economic necessity. Rather, a number of individuals taking part in gardening were doing so as an extension of an ecological mindset. For these participants good health was viewed as a mix of ecological attributes, such as living in harmony with the environment, maintaining a state of balance and equilibrium, having access to healthy food options, consuming more organic foods, being socially connected and actively engaged in community, as well as maintaining one's mental health. Gardening was thus one way of achieving and/or maintaining good health.

While increased physical access to fresh food (a component of food security) was a secondary benefit of gardening identified by gardeners, it is important to reiterate that food security at its core is about access to an adequate income, which in turn ensures economic access to food. As such, the finding that gardening did not significantly impact the levels of food security for these participants is in line with studies that report that interventions promoting gardening may be important in achieving public health goals such as increasing fruit and vegetable consumption. However, such interventions are unlikely to impact the rates of food security in Canada (Huisken, Orr & Tarasuk, 2017). Rather, gardening interventions are more likely to make a difference in improving the

overall food security when considered as a complement to other policy-based strategies that address food insecurity (i.e. by addressing the lack of an adequate income).

While acknowledging the limitations of gardening in directly addressing food security, this study highlights the following: firstly, there are a number of individuals or groups successfully growing food in NL despite the persistent misconception that successfully growing food in NL is not possible. Secondly, there is a unique opportunity to use gardening as a tool for promoting and supporting health. Successful health promotion initiatives aim to facilitate environments where people have access to tools and options that improve their health. As such, the key contribution of this study is that it provides program, policy and decision-makers with direction, based on contextualized research data, on how best to promote gardening in NL as an accessible tool for improving and maintaining health. The recommendations, based on the suggestions by participants include: 1) encouraging early exposure to gardening through gardening in schools; 2) increasing education and awareness about gardening in NL through i) a gardening campaign: *Dig for Health* and ii) a gardening website or resource center specific to NL; 3) encouraging and supporting the establishment of urban green spaces; and 4) developing a discussion paper on food security.

“...just imagine if every home in this community had small gardens, what it could do for people’s health...”

REFERENCES

- Alaimo, K., Packnett, E., Miles, R. A., & Kruger, D. J. (2008). Fruit and vegetable intake among urban community gardeners. *Journal of Nutrition Education and Behavior*, 40(2), 94-101. doi:10.1016/j.jneb.2006.12.003
- Anderson, M. D., & Cook, J. T. (1999). Community food security: Practice in need of theory? *Agriculture and Human Values*, 16(2), 141-150.
doi:10.1023/A:1007580809588
- Armstrong D. (2000). A survey of community gardens in upstate New York: Implications for health promotion and community development. *Health & Place*, 6(4), 319-27.
- Barbolet, H., British Columbia. Ministry of Community Development & Union of British Columbia Municipalities. (2009). Dig it! A practical toolkit how local governments can support community gardens. Retrieved from
<http://www.toolkit.bc.ca/sites/default/files/DIG%20IT-%20MAY%208-FINAL%20WITH%20LOGOS.pdf> (December 21, 2017)
- Bellows, A.C., Brown, K., Smit, J. (2004). Health benefits of urban agriculture. In Community Food Security Coalition. Retrieved from <http://hcgnc.ca/wp-content/uploads/2015/04/UAHealthArticle.pdf> (December 21, 2017)
- Berg, v. d., A.E., Dillen, v., S.M.E., Vries, d., S., & Winsum-Westra, v., M. (2010). Allotment gardening and health: A comparative survey among allotment gardeners and their neighbors without an allotment. *Environmental Health : A Global Access Science Source*, 9(1), 74-74. doi:10.1186/1476-069X-9-74

- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3, 2, 77-101.
- Burges, D. L., & Moore, H. J. (2011). Community gardening and obesity. *Perspectives in Public Health*, 131(4), 163-164. doi:10.1177/1757913911412475
- Cacioppo, J. T., & Cacioppo, S. (2014). Social relationships and health: The toxic effects of perceived social isolation. *Social and Personality Psychology Compass*, 8(2), 58-72. doi:10.1111/spc3.12087
- Cadigan, S. T., & Memorial University of Newfoundland. Eco-Research Program. (1994). *The historical role of marginal agriculture in sustaining coastal communities on the Bonavista Peninsula*. St. John's, Nfld.: Memorial University of Newfoundland, Eco-Research Program.
- Carney, P. A., Hamada, J. L., Rdesinski, R., Sprager, L., Nichols, K. R., Liu, B. Y., . . . Shannon, J. (2012). Impact of a community gardening project on vegetable intake, food security and family relationships: A community-based participatory research study. *Journal of Community Health*, 37(4), 874-881. doi:10.1007/s10900-011-9522-z
- Che, J., & Chen, J. (2001). Food insecurity in Canadian households. *Health Reports*, 12(4), 11.
- Chen, T., & Janke, M. C. (2012). Gardening as a potential activity to reduce falls in older adults. *Journal of Aging and Physical Activity*, 20(1), 15.

- Corrigan, M. P. (2011). Growing what you eat: Developing community gardens in Baltimore, Maryland. *Applied Geography*, 31(4), 1232-1241.
doi:10.1016/j.apgeog.2011.01.017
- Creswell, J.W. (1998) *Qualitative Inquiry & Research Design. Choosing Among Five Approaches*, 2nd ed. Thousand Oaks, CA: Sage Publications.
- Elton, S. (2010, November 2). The food storage secret our grandparents knew. *Globe and Mail*. Retrieved from <http://www.theglobeandmail.com>
- Ewtushik, M., Dietitians of Newfoundland and Labrador., Newfoundland and Labrador Public Health Association., & Newfoundland and Labrador Association of Social Workers. (2005). *The cost of eating in Newfoundland & Labrador 2003 : A discussion paper*. St. John's, N.L.: NLASW.
- Flanigan, S., & Varma, R. (2006). Promoting community gardening to low-income urban participants in the women, infants and children programme (wic) in New Mexico. *Community, Work & Family*, 9(1), 69-74.
- Food First NL. (November 2015). *Everybody eats: A discussion paper on food security in Newfoundland and Labrador*. Retrieved from http://static1.squarespace.com/static/54d9128be4b0de7874ec9a82/t/56572239e4b0b807738c5ad0/1448550969272/Everybody+Eats_NL+Discussion+Paper+2015.pdf
- Food First NL (2012). 2012 Food Security Initiative Inventory in *Food Security Network of Newfoundland and Labrador*. Retrieved from <http://www.foodsecuritynews.com/Publications/FSN%20Inventory.pdf> (Date: December 19, 2017)

- Food First NL. (2011). Community gardening best practices toolkit: A guide for community organizations in Newfoundland and Labrador. Retrieved from https://static1.squarespace.com/static/54d9128be4b0de7874ec9a82/t/562ae740e4b09e3cc1c01831/1445652287999/Community_Garden_Best_Practices_Toolkit.pdf (Date: December 19, 2017)
- Food First NL, Ferber, S. (2012). Root Cellars Rock Food Skills Workshops. A resource for community organizations in Newfoundland & Labrador. Preserving: Root Cellars. Retrieved from http://static1.squarespace.com/static/54d9128be4b0de7874ec9a82/56269f77e4b01ff5d3302f67/56269f43e4b01ff5d3302140/1445371715993/RCR_8_Root-Cellars-Workshop.pdf?format=original (Date: December 19, 2017)
- Ginn, F. (2012). Dig for victory! New histories of wartime gardening in Britain. *Journal of Historical Geography*, 38(3), 294.
- Grabbe, L., Ball, J., & Goldstein, A. (2013). Gardening for the mental well-being of homeless women. *Journal of Holistic Nursing*, 31(4), 258-266.
- Guest, G., Bunce, A., and Johnson, L. (2006). How many interviews are enough? : An experiment with data saturation and variability. *Field Methods*, 18, 1, 59-82.
- Hale, J., Knapp, C., Bardwell, L., Buchenau, M., Marshall, J., Sancar, F., & Litt, J. S. (2011). Connecting food environments and health through the relational nature of aesthetics: Gaining insight through the community gardening experience. *Social Science & Medicine* (1982), 72(11), 1853–1863.
doi:10.1016/j.socscimed.2011.03.044

- Hamm, M., & Bellows, A. (2003). Community food security and nutrition educators. *Journal of Nutrition Education and Behavior* *Journal of Nutrition Education and Behavior*, 35(1), 37-43.
- Health Canada. (2008). Food and Nutrition: Vegetables and Fruit. Retrieved from <http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/choose-choix/fruit/index-eng.php>
- Heim, S., Bauer, K. W., Stang, J., & Ireland, M. (2011). Can a community-based intervention improve the home food environment? Parental perspectives of the influence of the delicious and nutritious garden. *Journal of Nutrition Education and Behavior*, 43(2), 130-134. doi: 10.1016/j.jneb.2010.01.003
- Huisken, A., Orr, S., & Tarasuk, V. (2016). Adults' food skills and use of gardens are not associated with household food insecurity in Canada. *Canadian Journal of Public Health*, 107(6), E526-E532.
- Infantino M. (2004). Gardening: A strategy for health promotion in older women. *The Journal of the New York State Nurses' Association*, 35(2)
- Jennings, V., Larson, L., & Yun, J. (2016). Advancing sustainability through urban green space: Cultural ecosystem services, equity, and social determinants of health. *International Journal of Environmental Research and Public Health*, 13(2) doi:10.3390/ijerph13020196
- Kawachi, I., & Berkman, L. (2001). Social ties and mental health. *Journal of Urban Health*, 78(3), 458-467. doi:10.1093/jurban/78.3.458

- Kirkpatrick, S. I., & Tarasuk, V. (2009). Food insecurity and participation in community food programs among low-income Toronto families. *Canadian Journal of Public Health, 100*(2), 135-139.
- Kortright, R., & Wakefield, S. (2011). Edible backyards: A qualitative study of household food growing and its contributions to food security. *Agriculture and Human Values, 28*(1), 39-53. doi:10.1007/s10460-009-9254-1
- Lawson, L.J. (2005). City bountiful: A century of community gardening in America. Berkeley, CA: University of California Press.
- Mackinnon, R. (1991). Farming the rock: The evolution of commercial agriculture around St. John's, Newfoundland, to 1945. *Acadiensis, 20*(2), 32-61.
- McCormack, L. A., Laska, M. N., Larson, N. I., & Story, M. (2010). Review of the nutritional implications of farmers' markets and community gardens: A call for evaluation and research efforts. *Journal of the American Dietetic Association, 110*(3), 399-408. doi: 10.1016/j.jada.2009.11.023
- McIntyre L, Glanville NT, Raine KD, Dayle JB, Anderson B, & Battaglia N. (2003). Do low-income lone mothers compromise their nutrition to feed their children? *CMAJ : Canadian Medical Association Journal = Journal De l'Association Medicale Canadienne, 168*(6), 686-91.
- McIntyre, L., Walsh, G., Connor, S., & Canada. Human Resources Development Canada. Applied Research Branch. (2001). *A follow-up study of child hunger in Canada.* (No. W-01-1-2E.; W-01-1-2E). Hull, Quebec: Applied Research Branch, Human Resources Development Canada.

- McIntyre, L. (2003). Food security: More than a determinant of health. *Policy Options*, March 2003, pp. 46-51.
- McIntyre, L. and Rondeau, K. (2009) Food insecurity. In Raphael, D (Ed). *Social determinants of health: Canadian perspectives* (pp. 188-204) Toronto: Canadian Scholars' Press Inc.
- McLaren, L., & Hawe, P. (2005). Ecological perspectives in health research. *Journal of Epidemiology and Community Health*, 59(1), 6-14.
- Mikkonen, J., Raphael, D., & York University (Toronto, Ont.). School of Health Policy and Management. (2010). *Social determinants of health: The Canadian facts*. Toronto, Ont: York University School of Health Policy and Management..
- Moss, M. (2013). *Salt sugar fat: How the food giants hooked us*. New York: Random House
- Murray, H.C. (2002). *Cows don't know it's Sunday: Agricultural life in St. John's*. St. John's, Nfld: ISER Books – Faculty of Arts Publications, Institute of Social and Economic Research, Memorial University of Newfoundland, St. John's.
- Nelson-Hamilton, L. (2011). *Growing together: The intersections of food, identity, community and gardening in St. John's, Newfoundland* (Master's thesis). Memorial University, St. John's, NL.
- Newfoundland and Labrador. (2006). *Eating healthier in Newfoundland and Labrador: Provincial food and nutrition framework and action plan (phase 1: 2005-2008)*. [St. John's, N.L.]: Government of Newfoundland and Labrador.

- Newfoundland and Labrador Federation of Agriculture. (n.d.). Agriculture in the Classroom: Welcome. Retrieved from <http://www.aitcnl.ca> (Date: December 19, 2017)
- Okvat, H. A., & Zautra, A.J. (2011). Community gardening: A parsimonious path to individual, community, and environmental resilience. *American Journal of Community Psychology*, 47(3-4), 374-87.
- Omohundro, J. (1995). "All hands be together": Newfoundland gardening. *Anthropologica*, 37(2), 155-171.
- Omohundro, J. (1994). Rough food: The seasons of subsistence in Northern Newfoundland. Institute of Social and Economic Research, Memorial University of Newfoundland, St. John's.
- Omohundro, J. (2006). An appreciation of lazy beds. *Newfoundland Quarterly*, 99(1).
- Park, S., Lee, H., Lee, K., Son., K., and Shoemaker, C. (2013). The metabolic costs of gardening tasks in children. *HortTechnology*, 23(5), 589-594.
- Park, S., Shoemaker, C., & Haub, M. (2008). Can older gardeners meet the physical activity recommendation through gardening? *HortTechnology*, 18(4), 639.
- Patton, M.Q. (1990a) Qualitative evaluation and research methods (pp. 169 -186). Beverly Hills, CA: Sage
- Patton, M. Q. (1990b). *Qualitative evaluation and research methods*, 2nd ed. Newbury Park, California: Sage Publications.
- Porter, M. (1985). "She was skipper of the shore-crew:" Notes on the history of the sexual division of labour in Newfoundland. *Labour / Le Travail*, 15, 105-123.

- Public Health Agency of Canada. (2011). Benefits of physical activity. Retrieved from <http://www.phac-aspc.gc.ca/hp-ps/hl-mvs/pa-ap/02paap-eng.php> (Date: December 19, 2017)
- Public Health Agency of Canada. (2009). Bringing health to the planning table: A profile of promising practices in Canada and Abroad. Retrieved from <http://www.phac-aspc.gc.ca/publicat/2009/be-eb/pdf/be-eb-eng.pdf> (Date: December 19, 2017)
- Sandelowski, M. (2000). Whatever happened to qualitative description? *Research in Nursing & Health*, 23(4), 334-340. doi:10.1002/1098-240X(200008)23:4<334::AID-NUR9>3.0.CO;2-G
- Sempik, J. (2010). Green care and mental health: Gardening and farming as health and social care. *Mental Health and Social Inclusion*, 14(3), 15-22.
doi:10.5042/mhsl.2010.0440
- Shaw, A. M., & Newfoundland. Royal Commission on Agriculture. (1955). *Report of the Royal Commission on Agriculture, 1955*. St. John's, NL: Queen's Printer
- Slater, J., Dietitians of Canada, & Canadian Electronic Library (Firm). (2007). *Community food security: Position of dietitians of Canada*. Toronto, Ont.: Dietitians of Canada.
- Statistics Canada. (2013). Fruit and vegetable consumption, 2013. Retrieved from <http://www.statcan.gc.ca/pub/82-625-x/2014001/article/14018-eng.htm> (Date: December 19, 2017)

- Statistics Canada. (2010). Household food insecurity, 2007-2008. Retrieved from <http://www.statcan.gc.ca/pub/82-625-x/2010001/article/11162-eng.htm> (Date: December 19, 2017)
- Stein, M. J. (2008). Community gardens for health promotion and disease prevention. *International Journal for Human Caring*, 12(3), 47-52.
- Swift, J. & Tischler, V. (2010). Qualitative research in nutrition and dietetics: getting started. *Journal of Human Nutrition and Dietetics*, 23,559-566.
- Tarasuk, V. (2001). Discussion paper on household and individual food insecurity. *Health Canada*, 68.
- Tarasuk V. (2003). Low income, welfare and nutritional vulnerability. *CMAJ : Canadian Medical Association Journal = Journal De l'Association Medicale Canadienne*, 168(6), 709-10.
- Tarasuk, V, Mitchell, A, Dachner, N. (2014). Household food insecurity in Canada, 2012. Toronto: Research to identify policy options to reduce food insecurity (PROOF). Retrieved from http://proof.utoronto.ca/wp-content/uploads/2014/05/Household_Food_Insecurity_in_Canada-2012_ENG.pdf (Date: December 19, 2017)
- Teig, E., Amulya, J., Bardwell, L., Buchenau, M., Marshall, J. A., & Litt, J. S. (2009). Collective efficacy in Denver, Colorado: Strengthening neighborhoods and health through community gardens. *Health & Place*, 15(4), 1115-1122.
doi:10.1016/j.healthplace.2009.06.003

Townsend, M. S., Peerson, J., Love, B., Achterberg, C., & Murphy, S. P. (2001).

ARTICLES - community and international nutrition - food insecurity is positively related to overweight in women. *The Journal of Nutrition.*, 131(6), 1738.

Traverso-Yepez, M. Audas, R., Montgomery Keough, T., Ryan, A., Wadden, M. (2012).

Ever Green program evaluation. Retrieved from

[http://www.med.mun.ca/HRU/docs/Ever-Green-Recycling-Program-](http://www.med.mun.ca/HRU/docs/Ever-Green-Recycling-Program-Evaluation_Final-Repo.aspx)

[Evaluation_Final-Repo.aspx](http://www.med.mun.ca/HRU/docs/Ever-Green-Recycling-Program-Evaluation_Final-Repo.aspx)

Twiss, J., Dickinson, J., Duma, S., Kleinman, T., Paulsen, H., & Rilveria, L. (2003).

Community gardens: Lessons learned from California healthy cities and communities. *American Journal of Public Health*, 93(9), 1435-1438.

Vozoris, N. T., & Tarasuk, V. S. (2003). Household food insufficiency is associated with poorer health. *The Journal of Nutrition*, 133(1), 120.

Wakefield, S., Yeudall, F., Taron, C., Reynolds, J., & Skinner, A. (2007). Growing urban

health: Community gardening in south-east Toronto. *Health Promotion*

International, 22(2), 92-101. doi:10.1093/heapro/dam001

Willig, C. (2008) *Introducing Qualitative Research in Psychology: Adventure in Theory and Method*, 2nd ed. Buckingham: Open University Press.

World Summit on Food Security & Food and Agriculture Organization of the United

Nations. (16-18 November, 2009). *Declaration of the World Summit on Food*

Security. Retrieved from <ftp://ftp.fao.org/docrep/fao/Meeting/018/k6050e.pdf> (Date:

October 23, 2017)

APPENDICES

Appendix 1: Online Survey – Gardening in Newfoundland

Consent to Take Part in Research:

Thank you for your interest in this study.

My name is Mercy Dhlakama and I am completing this research project titled “Newfoundland, Newfoundland...how does your garden grow? Exploring gardening, health, community and food security in the Northeast Avalon region” as part of the requirements for my Master’s in Applied Health Services Research at Memorial University.

The primary goal of this study is to explore the opinions and experiences of gardeners in the Northeast Avalon region related to the role of gardening on their health, sense of community and access to fresh, healthy food (food security). This study also seeks to explore who is gardening in this region and their reasons and motivations for doing so. This study will focus primarily on gardeners who are growing food, such as, vegetables, fruits, herbs, and edible flowers.

You are invited to participate in this research project because you are growing food within the Northeast Avalon region (St. John’s, Mount Pearl, CBS, Goulds, Portugal Cove St. Phillips, etc.) The following survey will take approximately 10 to 15 minutes to complete. Your responses will be confidential and no identifying information, such as your name or email address will be collected.

Taking part in this study is voluntary. It is up to you to decide whether to participate in this research survey or not. You can decide not to complete the survey. If you decide to take part in the survey, you can leave blank any questions you feel uncomfortable answering, and you are free to stop at any time.

The questions in this survey will be related to your experience in gardening within this province, your reasons for taking part in this activity, and challenges and barriers you face as a gardener in this region. The last section of this survey will ask a few demographic questions, such as year of birth, sex and employment status, etc.

Protecting your privacy is an important part of this study. Every effort to protect your privacy will be made. However it cannot be guaranteed. For example we may be required by law to allow access to research records. To help protect your confidentiality, the surveys will not contain information that will personally identify you. The results of this study will be used for scholarly purposes only and may be shared with Memorial University representatives.

If you have any questions about the research study, please contact the investigator, Mercy Dhlakama, by phone at 709 579 8585, or via email at mercyd@mun.ca.

This research has been reviewed according to the Memorial University Health Research Ethics Board procedures for research involving human subjects.

ELECTRONIC CONSENT: Please select your choice below.

Clicking on the "agree" button below indicates that:

- you have read the above information
- you voluntarily agree to participate
- you are at least 19 years of age

If you do not wish to participate in the research study, please decline participation by clicking on the "disagree" button.

<input type="radio"/>	Agree
<input type="radio"/>	Disagree

SECTION 1: About your gardening experience

1. How long have you been growing food (i.e. vegetables, fruits, herbs or other edible plants) in this region?

<input type="radio"/>	Less than a year
<input type="radio"/>	1 year
<input type="radio"/>	2 years
<input type="radio"/>	3 years
<input type="radio"/>	4 years
<input type="radio"/>	5 years
<input type="radio"/>	6 years
<input type="radio"/>	7 years
<input type="radio"/>	8 years
<input type="radio"/>	9 years
<input type="radio"/>	10 years
<input type="radio"/>	10 – 20 years
<input type="radio"/>	More than 20 years

Section2: About Your Garden

2. What type of garden do you have – where are you growing your food? (Select all that apply).

<input type="radio"/>	Container Gardener (on your deck, window sills, etc.)
<input type="radio"/>	Backyard Garden
<input type="radio"/>	Community Garden
<input type="radio"/>	Rooftop Garden
<input type="radio"/>	Farm
<input type="radio"/>	Other (Please specify)

3. What are you growing in your garden? (Feel free to include foods that you grew this year and in previous years)

<input type="radio"/>	asparagus	<input type="radio"/>	lettuce	<input type="radio"/>	apples
<input type="radio"/>	beans	<input type="radio"/>	onions	<input type="radio"/>	bake apples
<input type="radio"/>	broccoli	<input type="radio"/>	parsnip	<input type="radio"/>	blueberries
<input type="radio"/>	Brussel sprouts	<input type="radio"/>	peas	<input type="radio"/>	cranberries
<input type="radio"/>	cabbage	<input type="radio"/>	peppers	<input type="radio"/>	crowberries
<input type="radio"/>	carrots	<input type="radio"/>	potatoes	<input type="radio"/>	currants
<input type="radio"/>	cauliflower	<input type="radio"/>	radishes	<input type="radio"/>	gooseberries
<input type="radio"/>	celery	<input type="radio"/>	rhubarb	<input type="radio"/>	partridge berries
<input type="radio"/>	chard	<input type="radio"/>	rutabagas	<input type="radio"/>	pears
<input type="radio"/>	corn	<input type="radio"/>	salad greens	<input type="radio"/>	plums
<input type="radio"/>	cucumbers	<input type="radio"/>	spinach	<input type="radio"/>	raspberries
<input type="radio"/>	garlic	<input type="radio"/>	spring onions	<input type="radio"/>	strawberries
<input type="radio"/>	Jerusalem artichokes	<input type="radio"/>	squash	<input type="radio"/>	herbs (basil, parsley, etc.)
<input type="radio"/>	kale	<input type="radio"/>	tomatoes	<input type="radio"/>	edible flowers
<input type="radio"/>	kohlrabi	<input type="radio"/>	turnips	<input type="radio"/>	
<input type="radio"/>	leeks	<input type="radio"/>	zucchini		
Other					

Section 3: Why you Garden

4. What are your main reasons and motivations for taking part in gardening? (Please include all reasons that apply to you)
5. What do you enjoy most about gardening?

Section 4: Challenges and Barriers to Gardening

6. What do you see as challenges and barriers to gardening in this region?
7. What do you think could be done to overcome the challenges and barriers you and others face while gardening in this region?

Section 5: Demographic Information

8. What year were you born?
9. What is your sex?

<input type="radio"/>	Female
<input type="radio"/>	Male

10. What is your current marital status? (Please select one)

<input type="radio"/>	Single, Never Married
<input type="radio"/>	Living Common Law
<input type="radio"/>	Married
<input type="radio"/>	Separated/Divorced
<input type="radio"/>	Widowed

11. What is the highest level of education you have completed?

<input type="radio"/>	Less than High School
<input type="radio"/>	High School or Equivalent
<input type="radio"/>	Some College/University
<input type="radio"/>	College Diploma or Certificate
<input type="radio"/>	Undergraduate Degree/ Diploma
<input type="radio"/>	Some Graduate School
<input type="radio"/>	Graduate Degree/Diploma
<input type="radio"/>	Some Post-Graduate School
<input type="radio"/>	Post-Graduate Degree/Diploma
<input type="radio"/>	Other

12. Which of the following best describes your current occupational status?

<input type="radio"/>	Student
<input type="radio"/>	Employed Part Time
<input type="radio"/>	Employed Full Time
<input type="radio"/>	Self-Employed
<input type="radio"/>	Retired
<input type="radio"/>	Unemployed
<input type="radio"/>	Other

13. What is your current annual household income?

<input type="radio"/>	\$0-\$15,000
<input type="radio"/>	\$15,000-\$24,999
<input type="radio"/>	\$25,000-\$34,999
<input type="radio"/>	\$35,000-49,999
<input type="radio"/>	\$50,000-\$74,999
<input type="radio"/>	\$75,000-\$99,999
<input type="radio"/>	\$100,000 and higher

14. Were you born in Newfoundland?

<input type="radio"/>	Yes
<input type="radio"/>	No

15. Please feel free to add any further comments in the box below

--

Thank you!

Appendix 2: Gardening Participant Interview Guide

Section 1: Breaking the ice

1. Tell me about your garden/ farm?
 - *What are you growing in your garden this year/ what did you grow in previous seasons?*

Section 2: About your Gardening Experience / Reasons and Motivations for Gardening

I would like to explore/ learn more about your gardening experience. I am interested in knowing about when and why you first started gardening, and why you continue to do so.

I also want to learn about some of the things you like and dislike about gardening.

2. Can you tell me about when you first started gardening/ growing locally at a commercial scale?
 - *What gave you the idea to start growing your own food/ farming?*
 - *How long have you been gardening/ farming for?*
3. What would you say are the main reasons you take part in gardening/ farming?
4. Where are you growing your food?
5. How much time do you spend working in your garden/farm?
6. Who does most of the work in your garden/farm?
7. What don't you enjoy about gardening/farming?

Section 3: Gardening and Health

In this section, I would like to learn a little more about gardening and any impact that you think or feel it has on your health. To explore this more, I would like to learn about your understanding of health, as well as the various impacts that gardening may have on your health, or your ability to be healthier or live in a healthier environment.

8. In your opinion, what do you see/define as good health?
 - *What do you consider key characteristics of healthy person?*
9. Considering your understanding of health, in what ways would you say that gardening/ farming impacts your health?

Section 4: Gardening and Social Connections

10. Can you tell me about how gardening/farming has impacted any of the relationships that you have with the people in your community or neighbourhood?
11. Are you part of any gardening/farming networks?
12. Do you think that gardening activities/ farming have/has the potential to bring communities closer?
 - *For example, through intergenerational sharing of knowledge or through sharing of food.*

Section 5: Gardening and Food Security

One of the things I would like to explore in this study is how much gardening impacts/increases your access to fresh and healthy foods (your food security).

13. Does gardening/farming change the way you eat?
 - *For example, do you find that you eat more fresh fruit and vegetables?*

14. There is information that says that in the event of a crisis which prevents fresh food from coming in across the ferries, the province only has about 2 -3 days' worth of fresh fruit and vegetable outside of the growing season. What would you say is the role of gardening or local food production in improving this situation?
15. Do you store or process some of your produce for use later in the year?
- *What are some of the vegetables or fruits that you store, preserve, or process?*
16. Does growing your own food help you save money on groceries in any way?

Section 6: Barriers to Gardening and Broadening the Practice

17. What are some of the challenges/barriers you face as a gardener/farmer in this region?
18. If you had a magic wand/ or the power to bring about changes to gardening/farming in NL (or to address challenges and barriers you face as a gardener/farmer), what changes would you make?
19. Why do you think there aren't more people taking part in gardening in this region?
20. Do you have anything else related to gardening/farming that you would like to add? Any questions, comments, suggestions?

Appendix 3: Key Informant Interview Guide

Section 1:

1. Can you tell me a little bit about your role in this organization/ group?
2. How are you involved with gardening or local food production in this province?
3. In what ways do you see gardening being relevant in this province?

Section 2: About Gardening in General

4. What can you tell me about the history of gardening (or food production) in Newfoundland and Labrador?
5. What changes have you seen in the area of gardening or local food production over the last few years?

Section 3: Benefits of Gardening

6. What do you see as key benefits associated with gardening?
7. Considering the benefits of gardening, what would you say are some policies that could be put in place to support gardening in this region/province?

Section 4: Gardening and Food Security

One of the things I would like to explore in this study is how much gardening impacts/increases the access to fresh and healthy foods (food security) among gardening participants?

8. What is your understanding of food security?
9. Is food security a primary concern at the provincial or regional level? If so, what kind of role is it playing? Should we as a province be doing more?

Section 5: Barriers to Gardening and Broadening Practice

10. What are some of the barriers that current gardeners face when it comes to gardening in Newfoundland and Labrador?
11. In your opinion, what can be done to remove the barriers that gardeners face in order to support those individuals working in local food production?

Section 6: General Questions

12. Is there anything else that we haven't covered that you would like to share regarding gardening or food production in this province or region?
13. Do you have any suggestions for key contacts/ stakeholders in the area of gardening that I should contact for interviews relating to this project?

Appendix 4: Gardening Participant Consent Form

Consent to Take Part in Research

**TITLE: Newfoundland, Newfoundland...how does your garden grow?
Exploring gardening, health, community and food security in the North-East Avalon region**

INVESTIGATOR(S): Mercy Dhlakama

You have been invited to take part in a research study. Taking part in this study is voluntary. It is up to you to decide whether to be in the study or not. You can decide not to take part in the study. If you decide to take part, you are free to leave at any time.

Before you decide, you need to understand what the study is for, what risks you might take and what benefits you might receive. This consent form explains the study.

Please read this carefully. Take as much time as you like. If you like, take it home to think about for a while. Mark anything you do not understand, or want explained better. After you have read it, please ask questions about anything that is not clear.

The researchers will:

- discuss the study with you
- answer your questions
- keep confidential any information which could identify you personally
- be available during the study to deal with problems and answer questions

1. Introduction/Background:

Research on gardening shows a number of positive benefits to individuals and communities. Gardening may improve overall health and well-being of participants, while stimulating the local economy through farmers' markets or local farm markets. Additionally, there is research highlighting gardening as one way of increasing access to fresh, healthy foods (food security). Most of the research on gardening has been carried out in environments or climates which are conducive to gardening in general (e.g. Ontario and California). Newfoundland and Labrador has unique gardening challenges, such as a short growing season, a cool climate, rocky and acidic soils, harsh winds, etc. In spite of these obstacles, there are people taking up gardening in this province. However, there is little current literature around gardening within a Newfoundland context. This study will explore gardening within a Newfoundland context.

2. Purpose of study:

The primary goal of this study is to explore the opinions and experiences of gardeners in the Northeast Avalon region in order to see what they see as the impact of gardening on their health, sense of community and access to fresh, healthy food (food security).

3. Description of the study procedures:

During the interview, you will be asked some questions related to your experience with gardening. Questions will be asked related to the research objectives, but the interview is mostly a chance for you to discuss gardening in your own words and help me understand why you take part in gardening, what benefits you get out of gardening, as well as some of the challenges and barriers you face as a gardener in this region. The interview will be recorded using an audio-recording device.

At the end of the interview, you will be asked to fill out an anonymous survey form with a few questions related to age, sex, marital status, education, occupation, average household income and number of years you have been gardening.

4. Length of time:

You will be expected to participate in one interview which should last 1 hour. The interview will take place at a location most convenient to you.

5. Possible risks and discomforts:

There are no known major risks of taking part in this study. However, some participants may experience some of the following:

- Inconveniences for the time spent to fill the short survey or partake in the interview.

6. Benefits:

It is not known whether this study will benefit you.

7. Liability statement:

Signing this form gives us your consent to be in this study. It tells us that you understand the information about the research study. When you sign this form, you do not give up your legal rights. Researchers or agencies involved in this research study still have their legal and professional responsibilities.

8. What about my privacy and confidentiality?

Protecting your privacy is an important part of this study. Every effort to protect your privacy will be made. However it cannot be guaranteed. For example we may be required by law to allow access to research records.

When you sign this consent form you give us permission to

- Collect information from you
- Share information with the people conducting the study
- Share information with the people responsible for protecting your safety

Access to records

The members of the research team will see study records that identify you by name. Other people may need to look at the study records that identify you by name. This might include the research ethics board. You may ask to see the list of these people. They can look at your records only when supervised by a member of the research team.

Use of your study information

The research team will collect and use only the information they need for this research study.

This information will include your

- year of birth
- sex
- marital status
- place of birth
- highest education level
- employment
- average household income
- information from study interviews and questionnaires

Your name and contact information will be kept secure by the research team in Newfoundland and Labrador. It will not be shared with others without your permission. Your name will not appear in any report or article published as a result of this study.

Information collected for this study will kept for five years.

If you decide to withdraw from the study, the information collected up to that time will continue to be used by the research team. It may not be removed. This information will only be used for the purposes of this study.

Information collected and used by the research team will be stored at Memorial University – Faculty of Medicine – Office # H2830B. Mercy Dhlakama is the person responsible for keeping it secure.

Your access to records

You may ask the researcher to see the information that has been collected about you.

9. Questions or problems:

If you have any questions about taking part in this study, you can meet with the investigator who is in charge of the study at this institution. That person is: Mercy Dhlakama

Principal Investigator's Name and Phone Number

Mercy Dhlakama and her phone number is 709 579 8585

Or you can talk to someone who is not involved with the study at all, but can advise you on your rights as a participant in a research study. This person can be reached through:

Ethics Office

Health Research Ethics Authority

709-777-6974 or by email at info@hrea.ca

After signing this consent you will be given a copy.

Signature Page

**Study title: Newfoundland, Newfoundland...how does your garden grow?
Exploring gardening, health, community and food security in the North-East Avalon region**

Name of principal investigator:

Mercy Dhlakama

To be filled out and signed by the participant:

Please check as appropriate:

I have read the consent.	Yes { }	No { }
I have had the opportunity to ask questions/to discuss this study.	Yes { }	No { }
I have received satisfactory answers to all of my questions.	Yes { }	No { }
I have received enough information about the study.	Yes { }	No { }
I have spoken to _____ and he/she has answered my questions	Yes { }	No { }
I understand that I am free to withdraw from the study	Yes { }	No { }

- at any time

- without having to give a reason

I understand that it is my choice to be in the study and that I may not benefit.

Yes { } No { }

I understand how my privacy is protected and my records kept

Confidential

Yes { } No { }

I agree to be audio taped

Yes { } No { }

I agree to take part in this study.

Yes { } No { }

Signature of participant

Name printed

Year Month Day

Signature of person authorized as *Name printed*

Year Month Day

Substitute decision maker, if applicable

To be signed by the investigator or person obtaining consent

I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

Signature of investigator

Name printed

Year Month Day

Telephone number: _____

Appendix 5: Key Informant Consent Form

Consent to Take Part in Research

**TITLE: Newfoundland, Newfoundland...how does your garden grow?
Exploring gardening, health, community and food security in the North-East Avalon region**

INVESTIGATOR(S): Mercy Dhlakama

You have been invited to take part in a research study. Taking part in this study is voluntary. It is up to you to decide whether to be in the study or not. You can decide not to take part in the study. If you decide to take part, you are free to leave at any time.

Before you decide, you need to understand what the study is for, what risks you might take and what benefits you might receive. This consent form explains the study.

Please read this carefully. Take as much time as you like. If you like, take it home to think about for a while. Mark anything you do not understand, or want explained better. After you have read it, please ask questions about anything that is not clear.

The researchers will:

- discuss the study with you
- answer your questions
- keep confidential any information which could identify you personally
- be available during the study to deal with problems and answer questions

1. Introduction/Background:

Research on gardening shows a number of positive benefits to individuals and communities. Gardening may improve overall health and well-being of participants, while stimulating the local economy through farmers' markets or local farm markets. Additionally, there is research highlighting gardening as one way of increasing access to fresh, healthy foods (food security). Most of the research on gardening has been carried out in environments or climates which are conducive to gardening in general (e.g. Ontario and California). Newfoundland and Labrador has unique gardening challenges, such as a short growing season, a cool climate, rocky and acidic soils, harsh winds, etc. In spite of these obstacles, there are people taking up gardening in this province. However, there is little current literature around gardening within a Newfoundland context. This study will explore gardening within a Newfoundland context.

2. Purpose of study:

The primary goal of this study is to explore the opinions and experiences of gardeners in the Northeast Avalon region related to the role of gardening on health, sense of community and access to fresh, healthy food (food security). Realizing the importance of creating an ongoing dialogue between gardeners and policy/decision makers working in health, food production, and food security, this study will also explore the opinions of key authorities working within these areas.

3. Description of the study procedures:

During the interview, you will be asked some questions related to your knowledge and experience around gardening, health and food security in Newfoundland and Labrador. More importantly, the interview will be an opportunity for you to discuss and help me understand the relevance of gardening in Newfoundland and Labrador from a policy or decision-makers perspective. The interview will be recorded using an audio-recording device.

4. Length of time:

You will be expected to participate in one interview which should last a maximum of 1 hour. The interview will take place at a location most convenient to you.

5. Possible risks and discomforts:

There are no known major risks of taking part in this study. However, some participants may experience some of the following:

- Inconveniences for the time spent to fill the short survey or partake in the interview.

6. Benefits:

It is not known whether this study will benefit you.

7. Liability statement:

Signing this form gives us your consent to be in this study. It tells us that you understand the information about the research study. When you sign this form, you do not give up your legal rights. Researchers or agencies involved in this research study still have their legal and professional responsibilities.

8. What about my privacy and confidentiality?

Protecting your privacy is an important part of this study. Every effort to protect your privacy will be made. However it cannot be guaranteed. For example we may be required by law to allow access to research records.

When you sign this consent form you give us permission to

- Collect information from you
- Share information with the people conducting the study
- Share information with the people responsible for protecting your safety

Access to records

The members of the research team will see study records that identify you by name. Other people may need to look at the study records that identify you by name. This might include the research ethics board. You may ask to see the list of these people. They can look at your records only when supervised by a member of the research team.

Use of your study information

The research team will collect and use only the information they need for this research study.

This information will include:

- the information from study interviews

Your name and contact information will be kept secure by the research team in Newfoundland and Labrador. It will not be shared with others without your permission. Your name will not appear in any report or article published as a result of this study.

Information collected for this study will kept for five years.

If you decide to withdraw from the study, the information collected up to that time will continue to be used by the research team. It may not be removed. This information will only be used for the purposes of this study.

Information collected and used by the research team will be stored at Memorial University – Faculty of Medicine – Office # H2830B. Mercy Dhlakama is the person responsible for keeping it secure.

Your access to records

You may ask the researcher to see the information that has been collected about

you.

9. Questions or problems:

If you have any questions about taking part in this study, you can meet with the investigator who is in charge of the study at this institution. That person is: Mercy Dhlakama

Principal Investigator's Name and Phone Number

Mercy Dhlakama and her phone number is 709 579 8585

Or you can talk to someone who is not involved with the study at all, but can advise you on your rights as a participant in a research study. This person can be reached through:

Ethics Office

Health Research Ethics Authority

709-777-6974 or by email at info@hrea.ca

After signing this consent you will be given a copy.

Signature Page

**Study title: Newfoundland, Newfoundland...how does your garden grow?
Exploring gardening, health, community and food security in the North-East Avalon region**

Name of principal investigator:

Mercy Dhlakama

To be filled out and signed by the participant:

Please check as appropriate:

I have read the consent.	Yes { }	No { }
I have had the opportunity to ask questions/to discuss this study.	Yes { }	No { }
I have received satisfactory answers to all of my questions.	Yes { }	No { }
I have received enough information about the study.	Yes { }	No { }
I have spoken to _____ and he/she has answered my questions	Yes { }	No { }
I understand that I am free to withdraw from the study	Yes { }	No { }
• at any time		
• without having to give a reason		
I understand that it is my choice to be in the study and that I may not benefit.	Yes { }	No { }
I understand how my privacy is protected and my records kept confidential	Yes { }	No { }
I agree to be audio taped	Yes { }	No { }
I agree to take part in this study.	Yes { }	No { }

_____ Signature of participant	_____ Name printed	_____ Year Month Day
-----------------------------------	-----------------------	-------------------------

_____ <i>Signature of person authorized as Substitute decision maker, if applicable</i>	_____ <i>Name printed</i>	_____ <i>Year Month Day</i>
--	------------------------------	--------------------------------

To be signed by the investigator or person obtaining consent

I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

_____ Signature of investigator	_____ Name printed	_____ Year Month Day
------------------------------------	-----------------------	-------------------------

Telephone number: _____