

Growing Pains: The Relationships Between Commercial Urban Agriculture and Peri-Urban
Organic Farms in Montreal, Quebec

By

Monica Allaby

A Thesis Submitted to McGill University in Partial Fulfillment of the Requirements for the B.A.
in Geography Honours Degree

Department of Geography
McGill University
Montréal (Québec) Canada

April 2018

© 2018 Monica Allaby

Acknowledgements

I would like to express my sincere thanks to Dr. Graham MacDonald and Dr. Sarah Turner, who provided exceptional support and insight throughout this research. I am grateful to have had such engaged supervisors, both of whom believed in this work and in this story. Many thanks also go to the farmers who participated in this study and who continuously amazed me with their generosity. I will always be grateful to them for their committed stewardship of our land and our food system.

Table of Contents

LIST OF ABBREVIATIONS	v
LIST OF FIGURES	vi
LIST OF MAPS.....	vi
LIST OF TABLES	vi
THESIS ABSTRACT	vii
CHAPTER 1: INTRODUCTION.....	1
1.1: Research Aim and Questions	2
1.2: Significance of Research.....	2
1.3: Thesis Structure	3
CHAPTER 2: CONCEPTUAL FRAMEWORK.....	4
2.1: Urban Political Ecology	4
2.1.1: Political Ecology and the Production of Urban Space.....	5
2.1.2: Political Ecology & Urban Agriculture	6
2.1.3: Critique	7
2.2: Alternative Food Networks.....	7
2.2.1: Short Supply Chains	8
2.2.2: Critique	9
2.3: Critical Geography of Urban Agriculture.....	10
2.3.1: Re-localization of Resources & Networks	11
2.3.2: Conflicting Urban Agriculture Motivations	12
2.3.3: Critique	13
2.4: Conceptual Framework Conclusion	13
CHAPTER 3: METHODOLOGY	15
3.1: Participant Demographics	15
3.2: Interview Structure and Analysis	15
3.2.1: Sampling and Recruitment	15
3.2.2: Interview Structure.....	16
3.2.3: Interview Analysis	17
3.4: Positionality Concerns	17
3.5: Limitations of Methods.....	17
3.6: Methodology Conclusion	18
CHAPTER 4: LUFA FARMS.....	19
4.1: Company History and Vision	19
4.2: Production System.....	21
4.3: Online Marketplace and Supplier Network	22
4.4: Chapter Conclusion	25
CHAPTER 5: CSA FARMS.....	26
5.1: Farm Characteristics.....	26
5.2: Marketing Strategies	27
5.2.1: Key organizations supporting small-scale farmers	29
5.3: Livelihood Challenges	30
5.4: Chapter Conclusion	31
CHAPTER 6: TENSIONS BETWEEN DIFFERENT MODELS	32
6.1. Consumer misconceptions about local and organic produce	32
6.1.1: Organic Certification	32

6.1.2: Distribution Network	34
6.2: Conflicting Values.....	35
6.3: Responses of Small-Scale Farmers to Increased Competition	37
6.4: Chapter Conclusion	39
CHAPTER 7: DISCUSSION & CONCLUSION.....	40
7.1: The Implications of Lufa's Production and Distribution Model	40
7.2: Lufa as Market-Driven Urban Agriculture	41
7.3: Thesis Conclusion	42
REFERENCE LIST	44
APPENDIX A: Research Ethics Approval	50
APPENDIX B: Semi-Structured Interview Guide	51
APPENDIX C: Growing new farmers in Quebec.....	52

LIST OF ABBREVIATIONS

AFN	Alternative Food Network
CAPÉ	<i>Coopérative pour l'Agriculture de Proximité Écologique</i>
CSA	Community-Supported Agriculture
FAO	Food and Agriculture Organization of the United Nations
Lufa	Lufa Farms Inc.
UPE	Urban Political Ecology

LIST OF FIGURES

Figure 4.1: Photo of Anjou Greenhouse.....	21
Figure 5.1: Years of farm operation.....	27

LIST OF MAPS

Figure 4.1: Major pick-up locations in Quebec and Ontario.....	23
--	----

LIST OF TABLES

Table 4.1: Timeline of Lufa’s business operations.....	20
Table 4.2: Characteristics of Lufa’s rooftop greenhouses.....	20

THESIS ABSTRACT

In the past decade, the discourse of urban sustainability has created a climate ripe for innovation in urban agriculture; commercial-scale rooftop greenhouses are an example of such innovation. Commercial rooftop greenhouses have allowed for year-long production of food in cold climates, without requiring any additional land for production. Presently, there are only a handful of commercial rooftop farming operations in North America, but they are quickly attracting media attention and financial investment. Despite the benefits of local food production, very little research has been conducted on the potential social, economic and environmental trade-offs of commercial rooftop greenhouses. To my knowledge, no other study has addressed the unintended consequences that commercial rooftop greenhouses might have on small-scale peri-urban and rural vegetable producers. Thus, I investigate the relationships between commercial rooftop greenhouses and small-scale organic farmers in Montreal, Quebec.

CHAPTER 1: INTRODUCTION

In 2011, the world's urban population reached 51 percent of the global total population (Bloom, 2011). In North America, 80 percent of people now live in urban areas (Population Reference Bureau, 2017). City residents are beginning to reimagine how urban space can be used to increase food sovereignty through urban agriculture, "the practice of growing, processing and distributing food in towns, cities and peri-urban areas" (FAO, 2003: online). The growing interest in new modes of urban agriculture is a response to growing urban population and concerns about the ability to meet changing diets with reduced environmental impacts. The motivations behind urban agriculture projects vary across the world. In the Global South, urban agriculture is promoted to increase food security and family income (Memon and Lee-Smith, 1993; McClintock, 2010). In the Global North, engagement with food production in urban spaces has been limited except in moments of economic crisis (McClintock, 2010; Tornaghi, 2014). Urban agriculture has also been used as an education and community development tool in urban areas where access to the natural environment is limited (Duchemin et al., 2008). More recently, urban agriculture enterprises have emerged to tap into the growing market for local food.

Despite widespread interest in urban agriculture, scholars contest the purpose and usefulness of urban agriculture as a tool to address the concerns brought about by urbanization. Scholars have debated whether urban agriculture has the yield capacity to significantly improve food security (see for example: Orsini et al., 2013; Haberman et al., 2014; Hamilton et al., 2014). These debates are becoming more complicated as new urban agriculture typologies emerge, particularly as the production capacity of urban agriculture increases through advances in technology. For example, innovation in rooftop farming has facilitated urban food production without the need for additional land. Presently, there are only a handful of rooftop farms in North America, but they are quickly attracting media attention and financial investment. Such projects have emerged in New York City, where Brooklyn Grange grows more than 50,000 pounds of organic produce every year (Brooklyn Grange, n.d.). In New York City and Chicago, Gotham Greens operates over 170,000 square-feet of rooftop growing space in four greenhouses (Gotham Greens, n.d.). In 2017, a grocery store in Montreal began growing more than 30 varieties of vegetables on its 25,000 square-foot roof and selling its harvest on its store shelves (Serebrin, 2017).

1.1: Research Aim and Questions

In the past decade, the discourse of urban sustainability has created a climate ripe for agricultural innovation in cities; however, we do not know the implications of new urban agriculture technology and distribution systems. In Montreal, Lufa Farms has emerged as an innovator of urban agriculture with an expanding network of rooftop greenhouses and an online ordering system that allows customers to choose from products grown in the company's greenhouses and by partner farms that supply it with additional produce. In this thesis, I investigate the relationship between Lufa, its partners farms and other small-scale farms in Montreal.

My research questions are:

- 1. What are the characteristics of Lufa Farms' farming operations and how do they attempt to gain and retain customers?*
- 2. In comparison with Lufa Farms, what are the characteristics of independent small-scale farming operations in the area surrounding Montreal, how do they gain and retain customers, and what resources do they need in order to succeed in an increasingly saturated market?*
- 3. Are there any tensions, concerns or rivalries arising among Lufa, its partner farms and independent small-scale farms?*

1.2: Significance of Research

Very little research has been completed on the potential socioeconomic and ecological trade-offs of commercial rooftop greenhouses. To my knowledge, no other study has addressed the unintended consequences that commercial rooftop greenhouses might have on small-scale peri-urban and rural vegetable producers. Prior research has found that rural farmers have the advantage of being able to grow more extensive crops, which carry a higher production value than vegetables that can be grown in greenhouses (Smit and Nasr, 1992). However, many small-scale farms focus on vegetable production in this region; as a result, they may be vulnerable to increased competition. In addition to investigating the potential consequences of this new mode of production, this study takes a critical approach to urban agriculture. Urban agriculture is often portrayed as an unproblematic tool for community development (Tornaghi, 2014). In this study, I highlight the ways in which commercial urban agriculture can be conflated with the values that are associated with grassroots movements, such as Community-Supported Agriculture (CSA).

1.3: Thesis Structure

In Chapter 2, I explain the conceptual framework that guides my thesis. To understand the relationships between urban and rural farms surrounding Montreal, I employ a conceptual framework with three interrelated concepts: urban political ecology, critical geography of urban agriculture, and alternative food networks. In Chapter 3, I describe the methodology that I used to conduct my study, including my research design and data analysis techniques, as well as concerns about my positionality as a researcher. The results of my research are shared in three consecutive chapters. The first results chapter focuses on describing Lufa's production and distribution model, drawing on my findings from the grey literature and my visit to one of Lufa's greenhouses. Next, I share the results from my interviews with rural farmers to characterize their operations. In the final results chapter, I tease out some of the tensions that exist between Lufa and rural farmers. In Chapter 6, I provide a synthesis of my results and conclude by analyzing the impacts that Lufa has had on farmers in Montreal.

CHAPTER 2: CONCEPTUAL FRAMEWORK

To understand how new modes of food production and distribution in cities relate to conventional rural agriculture models, I employ a conceptual framework with three interrelated concepts: urban political ecology (UPE), alternative food networks (AFNs) and the critical geography of urban agriculture. Using UPE, I highlight the uneven relations and processes that shape the local food production and distribution Montreal. I use the literature on AFNs to shape my analysis and discussion of the changing agricultural landscape in the United States and Canada, including how food is produced and consumed in cities. Lastly, I draw upon the emerging critical geography of urban agriculture literature to problematize urban agriculture as it has emerged within the dominant neo-liberal capitalist paradigm in the United States and Canada.

2.1: Urban Political Ecology

The anthropologist Eric R. Wolf first introduced the term ‘political ecology’ in 1972 “to signify how power relations mediate human-environment interactions” (Biersack and Greenberg, 2006: 3). Political ecology also takes into consideration the role of the state in reinforcing inequality through such actions as land tenure policy and the allocation of resources (Blaikie and Brookfield, 1987). While the research aims of political ecologists are diverse, they share a similar interest in the socio-political drivers of environmental change and place a heavy emphasis on fieldwork (McCarthy, 2002). Most early political ecology focused on human-environment interactions in rural areas (Freidberg, 2001). Calls for increased attention to urban environments were sound, and scholars began to apply the concepts of political ecology to link urban environmental issues to larger socio-ecological and political processes (Kiel, 2003).

UPE concerns the way socio-environmental conditions are produced, and for whom: “The central message that emerges from urban political ecology is a decidedly political one. To the extent that cities are produced through socio-ecological processes, attention has to be paid to the political processes through which particular socio-environmental urban conditions are made and remade” (Heynen et al., 2011: 2). Applying political ecology to the urban environment, scholars have unveiled the uneven production of the urban environment. In the following subsections, I will discuss some of the key contributions of urban political ecology. I begin with an explanation of the production of the urban environment. Next, I identify how concepts from

political ecology have been used to shed light on urban agriculture initiatives. I conclude this section by identifying some of the popular criticisms of UPE.

2.1.1: Political Ecology and the Production of Urban Space

Urban political ecologists investigate how economic, political and cultural processes are responsible for producing urban spaces. The idea of the production of urban space is indebted by many to Neil Smith (1984) and David Harvey (1996), whose classic studies of the urban environment relied heavily on the viewpoint of the production of the nature (Moore, 2013). Drawing from Marxism, Smith relies on a hierarchal notion of power to describe the production of nature. He also argues that the production of nature implies an understanding of the environment as external to human beings. In contrast, more recent scholarship argues that nature is an actor in urban systems (Heynen et al., 2006).

Applying political ecology to urban environments, one must consider how processes drive and are driven by unequal power relationships and economic inequities. Political ecologists recognize that urban environments are controlled and manipulated to serve the interests of the elite at the expense of marginalized populations (Harvey, 1996; Swyngedouw and Heynen, 2003). Heynen (2003) argues that the most dominant force responsible for producing urban spaces is capitalism, which contributes to the creation of unequal resource use and hazard creation. Those individuals and groups who have access to the resources required to control capitalist production, consumption and exchange are able to create, re-create and maintain urban environments (Swyngedouw, 1999). On the other hand, those who lack the required resources to control these processes tend to suffer environmental injustices (Low and Gleeson, 1998).

Metabolism is a key metaphor used by political ecologists to understand the interaction between social, economic and political processes and the production of contemporary urban space. Employing the concept of the metabolism, political ecologists are able to make sense of the flows and networks that underpin the development of cities (Swyngedouw, 2006). It alludes to the networks of agents that are create processes of environmental change, which can be helpful to those studying topics such as waste, pollution, and urban agriculture (Heynen et al., 2006; Moore, 2007). Within the metaphor of the urban metabolism, the concept of the metabolic rift is particularly relevant to my study. The metabolic rift describes the split that the spatial expansion of capitalism has created between city and country, humans and nature (McClintock, 2010). In the Global North, urban agriculture can be understood as arising in part to mitigate the

social rift by allowing urban residents to get in touch with nature and provides an opportunity for urban residents to reconnect with food (*ibid.*).

2.1.2: Political Ecology & Urban Agriculture

Alkon (2013) argues that food is the ultimate socio-nature. While food is a primary biological need, the production, distribution and consumption of food are deeply social, cultural and political processes. Actors seeking to reform city food systems are motivated by a variety of discourses, which are often divergent despite a united opposition against industrial agriculture (*ibid.*). Scholars have largely ignored the complexity of nature when writing about the social, cultural and political benefits of urban agriculture (Classens, 2015). However, political ecology has proven immensely useful for understanding the limits and potential of urban agriculture. There is a large body of work that applies political ecology to urban agriculture initiatives in the Global South. For example, Maxwell (1995) applied political ecology to his study of Botswana, where he finds that land management practices impact the potential of urban agriculture to increase food security. Hovorka (2006) has also applied political ecology to investigate urban agriculture in the Global South. In her study, she pays particular attention to the role of gender in defining opportunities within the commercial agriculture sector in Greater Gaborone, Botswana. Herein, I will focus primarily on examples from the Global North that are more relevant to my research.

When applied to urban agriculture initiatives in the Global North, political ecology can similarly highlight the complex dynamics between nature and society. Scholars studying urban agriculture appear to be split into two groups (McClintock, 2014). Some celebrate urban agriculture for its many social, economic and environmental benefits. More recently however, political ecologists have offered a more critical approach to urban agriculture. Using a political ecology framework, scholars have argued that urban agriculture projects can enable to reproduction of neoliberal policies and subjects (Allan and Guthman, 2006; Holt-Giménez and Wang, 2011; Classens, 2015). Alkon (2013) employs political ecology to understand the motivations of supporters of local organic food. He finds that supporters of local organic food generally describe their preferred foods as both the product of nature and human labour. They often attribute to it the potential to enact both ecological and social benefits, such as decreasing pollution, building healthy soil, and creating vibrant rural communities.

2.1.3: Critique

The field of political ecology has been critiqued for placing a heavy focus on socio-political processes, rather than biological ones (Scoones, 1999; Vayda and Walters, 1999). When applying political ecology to urban environments, there is a tendency to focus on the social processes that produce the urban environments. This focus neglects the important ecological dynamics that play a vital role in urban environments (Heynen, 2003). Peterson (2000) argues that ecological change (whether independent of, influenced by or controlled by human action) alters the types of environmental conflicts that can occur. He argues, “Political ecology research that does not address these ecological dynamics may be political, but it is not ecological” (Peterson, 2000: 324). Ecological processes are important because the environments that are produced through urban political-economic dynamics feed back into the continued reproduction of urban environments (Heynen, 2003).

Another critique of UPE literature is that it seldom considers the importance of scale (Heynen, 2003). Scale can be important when considering the production of urban environmental injustice. Further, there has been little emphasis on understanding how environmental injustice may or may not translate into injustices at other scales (*ibid.*). Within the literature, there is also critique of the metabolic metaphor as serving functionalist purposes. Gandy (2008) argues that the metaphor’s emphasis on the interactions between urban social and biophysical systems fails to grasp the way in which urban space is historically produced. Despite these shortcomings, UPE offers a useful framework for analyzing the complex social and natural city systems. In my study, I examine how changes in the mode of agricultural production in cities can further affect the relationships that emerge between food producers and consumers. Ultimately, it is these networks that shape and reshape outcomes in city food systems.

2.2: Alternative Food Networks

AFNs have emerged within the past 10-15 years as responses to the failure of the industrial food system, which has been criticized for its environmental impact and for distancing food consumption from production (Marsden et al., 2000; Venn et al., 2006; Maye, 2011). Several interrelated processes led to the creation of AFNs, which are characterized by niche markets particular types of products – organic, Fair Trade, local and quality, specialty foods (Goodman and Goodman, 2009). These emerging networks are commonly defined by four characteristics:

shorter distances between producers and consumers; small-scale farms that operate using sustainable practices; direct marketing through initiatives such as farmers' markets; a commitment to the social, economic, and environmental dimensions of sustainable food production, distribution and consumption (Venn et al., 2006; Clarke et al., 2008; Jarosz, 2008; Maye, 2011).

Despite the emphasis of AFNs on creating a more sustainable food system, it must be noted that some of the products associated with these networks can be inaccessible. Goodman and Goodman (2009) explain that quality is becoming the basis of food consumption in AFNs, which is creating a dualistic process of change. On the one hand, large-scale producers have emerged to capitalize on the demands of these new networks. Yet at the same time, greater demand for sustainable food creates opportunities for small-scale farms that produce for local or regional markets (*ibid.*). Goodman and Goodman claim that the differences between these two sides of AFNs are most pronounced in distribution and marketing, which is an important point to consider in light of the changing production and distribution methods that I will explore in this thesis.

2.2.1: Short Supply Chains

The growing body of literature on these networks seeks to understand the reconfiguration of the relationships between food producers and food consumers (Marsden et al., 2000; Venn et al., 2006). Three concepts dominated the initial scholarship on AFNs, the first of which is the concept of short food supply chains and the role of direct marketing (Maye, 2011). In the past few decades, there has been a resurgence of direct agricultural marketing in North America. Through direct marketing, it is believed that small and medium-scale enterprises can receive a larger proportion of the income generated by their crops and re-assert control over their production decisions, while consumers enjoy fresh and high-quality farm products (Lockeretz, 1986; Welsh, 1997; Hinrichs, 2000; Maye and Kirwan, 2010). Farmers' markets and CSA programs are seen as the central components of direct agricultural marketing, connecting consumers to producer.

CSA is a relatively new business structure that describes a direct partnership between local farmers and consumers, who share the costs and products of the farm (Fieldhouse, 1996). In this business model, each consumer purchases a share of the harvest in advance of the growing season, when farmers most require cash flow to purchase the season's inputs. Throughout the

growing season, the shareholder receives regular installments of the harvest (*ibid.*). In addition to sharing the risks of farming between producers and consumers, some farmers also emphasize the importance of community and consumer education (Hinrichs, 2000). The CSA business model has evolved significantly as entrepreneurs and market forces have opened new opportunities. CSA models have changed over time to become more diverse and innovative; producers have adapted their models to fit a variety of new opportunities such as by incorporating value-added products, offering flexible shares, electronic purchasing and marketing collaborations between farms (Ernst et al., 2017). In recent years, CSAs have also grown both in number and shareholder size (*ibid.*). Successful models almost always maintain close farmer-consumer connections (*ibid.*). Ernst et al. (2017) argue that the term is becoming increasingly confusing, particularly the meaning of community; farmers will need to pay particularly close attention to the role of community as a means of differentiating themselves to their consumers.

The process of direct marketing is supported by the theory of social embeddedness. The concept of social embeddedness has been drawn from economic sociology and heterodox economics (Goodman and Goodman, 2009). Social embeddedness supports the idea that economic behaviour is embedded in and mediated by a complex and extensive web of social relations (Maye and Kirwan, 2010). Work on social embeddedness thus recognizes the importance of social connectivity, reciprocity and trust that underpin grassroots and alternative initiatives (Hinrichs, 2000; Maye and Kirwan, 2010). In AFNs, social embeddedness refers to the re-placement of food within its social, cultural, economic, geographical and environmental contexts (Goodman and Goodman, 2009). Sage (2003) also argues that social embeddedness also reveals the significance of moral considerations in economic behaviour and the willingness of actors to offset purely personal financial incentives against social criteria involving collective, community or environmental benefits.

2.2.2: Critique

AFN literature has been criticized for neglecting theoretical development in favour of empirically grounded, case-study analyses (Venn et al., 2006; Goodman and Goodman, 2009; Maye and Kirwan, 2010). This emphasis has resulted in thick descriptions of individual food systems but consequently, the literature has not developed over time to reflect changing priorities within the alternative food movement (Maye, 2011). For example, the literature largely neglects the issue of food access: who has access to fresh, local and responsible food? Recent research

has critiqued these networks, challenging the romanticism associated with the countryside and disputing the terms 'alternative' and 'local' (*ibid.*). Likewise, AFN literature is criticized for relying heavily upon the binary of local/global, where local is associated with progressive change (Johnston et al., 2009). Johnston et al. (2009) instead argue that the local must be seen as a heterogeneous entity that contains interactions, politics and ethics. In my research, I will counter these issues by assuming a critical position and by considering the values that underpin specific types of 'alternative' food.

2.3: Critical Geography of Urban Agriculture

Beginning in the 1960s, the discipline of geography underwent considerable reorientation. These changes were a response to the failings of prevailing systems of knowledge in understanding the current political atmosphere, such as the revolutions in Africa, Latin America and Asia as well as social movements occurring across the United States (Peet, 2000; Harvey, 2001). Critical social theory emerged to help scholars investigate the oppressive features of a society and to take a political stance for those who had been victimized by dominant power structures (Fay, 1987; Blackwell, 2003). In geography, there emerged a need to develop a critical geography that could deconstruct how certain kinds of knowledge that seemed neutral could be a strategic form of political power (Harvey, 2001). Marxist thought became increasingly popular to help ground a critical theory of society that could embrace and interpret the current social and political conflicts. While critical geography incorporates components of Marxist analyses, critical geography should not be reduced to a class-based analysis; questions of culture, identity and representation are also key (Blomley, 2006). New spheres of inquiry materialized that were concerned with a whole host of issues, such as the politically contested nature of geographical knowledges, environmental issues and local political-economic developments (Harvey, 2011).

Combining critical geography and political ecology, Tornaghi (2014) develops the initial framework for a critical geography of urban agriculture. In the Global North, urban agriculture initiatives have been promoted due to their social, economic and environmental benefits; however, the dominant urban agriculture narrative has lacked critique of the social and political structures in which urban agriculture initiatives are embedded. Applying concepts from critical geography to the study of urban agriculture exposes the varying (and sometimes, conflicting) motivations of urban agriculture projects. The critical geography of urban agriculture offers

scholars a framework to identify and problematize particular formulations of urban agriculture that are profit-driven and do little to advance food justice. Urban agriculture is frequently portrayed as benevolent and unproblematic, with the potential to improve the quality of life of city residents (Tornaghi, 2014). This positive portrayal may conceal many controversial aspects of urban agriculture. The critical geography of urban agriculture provides a framework to identify and understand these controversial aspects.

Literature on the critical geography of urban agriculture exposes the forms of power, exclusion, and inequality that are embedded within urban agriculture initiatives (Tornaghi, 2014). It situates urban agriculture within particular socio-political regimes and it seeks to understand the role it plays in the reproduction of capitalism. This emerging body of literature shows that there is a difference between alleviating symptoms of injustice and disrupting the social, political and economic structures that underlie them (Alkon and Agyeman, 2011). Without paying attention to these structures, urban agriculture may reproduce the conditions that practitioners may seek to improve (Guthman, 2008). Tornaghi (2014) identified three main themes in the current body of literature: the re-localization of ecological resources and infrastructure networks, the rhetoric of the sustainable city, and the diverse forms of urban agriculture; I will discuss each of these themes in brief in the following subsections.

2.3.1: Re-localization of Resources & Networks

This body of literature overlaps with the literature on AFNs in its interest in the re-localization of resources and networks. The re-localization of ecological resources and infrastructure networks is a popular response to concerns about climate change and resource restraints (Hodson and Marvin, 2009). It is understood “as a process through which world cities, ecological resources and socio-technical infrastructures are increasingly reincorporated and re-enclosed within the metropolitan boundary” (Hodson and Marvin, 2009: 204). The process of re-localization involves supporting the provision of key resources such as water, energy and food within city boundaries, while decreasing a city’s reliance on regional or national networks. This process necessarily involves constructing an aspiration of greater autonomy among city residents and a prioritization of self-reliance within municipal governments (*ibid.*). The process of re-localization has been criticized for being seen as replicable across contexts and more specifically, the idea of ‘self-reliant’ cities has been criticized for missing the point that infrastructure and cities are never truly bounded in space or autonomous spaces (*ibid.*). The concept of a ‘foodshed’

is closely related to the process of re-localization of resources and has become quite influential in the literature. A ‘foodshed’ is defined as the geographic area that feeds a population center and has been presented as a tool for understanding the flow of food in a food system (Peters et al., 2009). As the food system creates economic and social distancing, scholars have advocated for local and regional foodsheds that put greater attention on the proximity of food production (Kloppenburger et al., 1996).

2.3.2: Conflicting Urban Agriculture Motivations

Urban agriculture is multifunctional (Lovell, 2010); it serves a range of social and ecological benefits. A critical geography of urban agriculture therefore recognizes that urban agriculture’s many different forms and functions can conflict with one another. Attention is paid to scale, function, labour and management, and integration into the market (McClintock, 2014). These characteristics of urban agriculture define its role in a food system, and in a broader political economy (*ibid.*). McClintock suggests that in its many forms, urban agriculture may exemplify both a form of neoliberalism and a radical counter-movement. He argues that urban agriculture has to be both: capitalism both creates opportunities for urban agriculture and imposes obstacles to its expansion. McClintock and Simpson (2018) find six motivational themes for urban agriculture in the United States and Canada: entrepreneurial, sustainable development, educational, eco-centric, DIY secessionist, and radical.

While many urban agriculture initiatives do challenge the industrial food system, their actions may be perpetuating neoliberal restructuring despite their actions. Urban agriculture can perpetuate a neoliberal rationality by locating solutions to social problems within the market rather than the state (Holt-Gimenez and Wang 2011; Alkon and Mares 2012). For example, organizations that promote urban agriculture may provide a safety net for those impacted by providing food to those hit the hardest by the rollback of the welfare state (Alkon and Mares 2012; McClintock, 2014). Approaching urban agriculture through the lens of critical geography, authors are able to distinguish top-down ‘allotment’ gardens (publicly owned land formally dedicated to gardening) from grassroots ‘civic’ gardens (Camps-Calvet et al., 2016). In their study of Barcelona, Langemeyer and colleagues (2018) find that these different types of gardens provide different values to users. The values associated with civic gardens were place-making, social cohesion and political fulfilment; among the values associated with allotment gardens

were food provision, relaxation and stress reduction and leisure. Their results also showed that values of urban gardeners are at least partly related to socio-economic demographics.

Some scholars have suggested that failure to recognize the different forms and functions of urban agriculture may be symptomatic of greater confusion of the multiple meanings of food sustainability. Food movement organizations have different and changing positions on food-system issues; depending on their standpoint, they will tend to focus their energy on particular issues and neglect others (Holt-Gimenez and Wang, 2011). Similarly, an initiative may transform the food system for some residents, but it may exclude marginalized residents (Alkon and Mares, 2012). Alkon and Mares (2012) found this to be the case in Seattle, where the food sustainability projects were not inclusive of the city's Latino residents. Research has also identified racial disparities and tensions within urban agriculture initiatives (Cohen et al., 2010; Meenar and Hoover, 2012; Reynolds, 2015). In her study of urban agriculture New York City, Reynolds (2015) found race and class-based disparities among practitioners of urban agriculture throughout New York City.

2.3.3: Critique

The application of a critical geography lens to urban agriculture is recent and has yet to be critically evaluated; however, scholars have raised concerns about the way critical geography has been normalized and institutionalized more broadly (Blomley, 2006). Critical geographers have been praised for problematizing certain social phenomena, but they have been criticized for being reluctant to imagine transitions from one state to another (*ibid.*). Blomley (2006) argues that critical geographers must remain wary of the social and political realities of the present but should conceive of better futures. Applying this criticism to urban agriculture, one should consider alternatives to the models of urban agriculture that are deemed problematic in the literature. Given the above examples, one might consider: *how can urban agriculture be made more inclusive?* And, *how can a food sovereignty framework be incorporated into urban agriculture initiatives?*

2.4: Conceptual Framework Conclusion

Together, the three concepts outlined in this chapter offer a solid conceptual framework that will ground my analysis in prior theoretical development. Each concept has been critiqued in the literature but when effectively combined, they will allow for a nuanced discussion of the changes

that occurring in city food systems. UPE will guide my analysis of the role of commercial rooftop farms and will help me to situate them within broad social, political and environmental processes. Concepts from AFNs will similarly help me to identify the cause of certain changes in city food systems and to distinguish the varying roles of different network actors. The critical geography of urban agriculture will then allow me to problematize certain components of AFNs, particularly those that are capitalizing on the discourse of urban sustainability. I consider commercial rooftop farms to be proponents of market-driven sustainability, thus I argue that their motivations conflict with those of small-scale organic farmers who are by-and-large striving to create social and environmental change.

CHAPTER 3: METHODOLOGY

In this chapter, I explain the methods used to answer my research questions. I begin in Section 3.1 by identifying the demographics of my research participants. In Section 3.2, I discuss my sampling strategy, recruitment process, interview structure and data analysis techniques. Next, I provide some remarks on my positionality as a researcher and reflect upon how it may influence my data collection and analysis processes in Section 3.3. I conclude in Section 3.4 by highlighting some of the limitations of my research methodology. The Research Ethics Board of McGill University granted me the permission to conduct this research (see Appendix A).

3.1: Participant Demographics

This study encompasses the perspectives of 25 farmers whose operations are located within one hundred kilometers of Montreal, as well as other five key informants who work within the agriculture sector. The 25 farmers whom I interviewed are primarily vegetable producers who are either certified organic or are in the process of obtaining organic certification. Many farmers grow some fruit and raise free-range hens for eggs, while only a few have large livestock. Almost all participants were the managers of their farms; on rare occasions, I conducted interviews with farm apprentices (2). In total, I interviewed 11 male farmers and 14 female farmers. Farm characteristics will be discussed in greater detail in Chapter 6. My key informants work for non-profit or not-for-profit organizations and that promote local and sustainable agriculture. Four of my key informants were women and one of my key informants was a man.

3.2: Interview Structure and Analysis

3.2.1: Sampling and Recruitment

In this research, I used a combination of purposeful and snowball sampling in order to recruit research participants. I used the online *Fermier du Famille* (family farm) map created by the non-profit organization, *Équiterre*, to generate a list of potential research participants. This online map allows consumers to identify CSA pick-up locations in their neighborhood [<https://www.fermierdefamille.com>]. Once I began the interview process, I then employed snowball sampling, a technique in which a few potential respondents are contacted and then asked whether they know of other people who fit the sampling frame (Browne, 2005). At the end of my interviews, I would ask the participant whether they knew of any other farmers who might

be interested in participating. I also sent a follow-up email to the farmer thanking them for their participation in my study and asking whether they knew of anyone who might be interested in participating. Sometimes, participants would offer to put me in touch with potential participants or would send me their contact information.

3.2.2: Interview Structure

Between July 2017 and January 2018, I conducted 30 semi-structured interviews¹. Interviews are popular amongst qualitative geographers because they provide rich qualitative data and allow researchers to understand the nuances of participants' lived experiences (Valentine, 2005). Interviews are typically defined as one of three formats: unstructured, semi-structured or structured (Longhurst, 2003; Dunn, 2016)². I opted to conduct semi-structured interviews in my research because they have some degree of predetermined order but are flexible in the ways themes are addressed by the informant (*ibid.*). A copy of my semi-structured interview guide can be found in Appendix B.

Interviews were conducted either in-person ($n=16$) or over the phone ($n=14$) if participants preferred. In-person interviews occurred at locations that were convenient for participants, such as farmers' markets and CSA pick-up points. Interviews varied in length between 20-60 minutes depending on the participant's availability. After greeting participants at the designated location, I would find a quiet and semi-private place to conduct the interview where we could not be overheard. I explained the purpose of my research and explained the participants' rights. Participants then completed a research consent form that outlined the purpose of my research and indicated whether or not they felt comfortable having the interview audio-recorded for transcription purposes³. When interviews were conducted over the phone, participants were emailed an electronic copy of the research consent form to sign prior to the

¹ An interview is a verbal exchange during which the interviewer retrieves information from the research participant by asking questions (Longhurst, 2003; Dunn, 2005).

² The difference in interview format relates to the degree to which the interviewer controls the conversation (Kitchin and Tate, 2000). While a structured format follows a set of questions, an unstructured format creates more participatory exchanges between researchers and participants (Bosco, 2016). In a semi-structured interview, the researcher prepares a list of questions but the interview unfolds in casual, conversational manner (Longhurst, 2003).

³ Consent forms were provided in French and English to ensure that research participants could read the form in the language they felt most comfortable using.

interview. All participants agreed to be audio-recorded. To compensate participants for their time, I bought a small amount of produce from their stand when possible.

3.2.3: Interview Analysis

Following interviews, I transcribed and coded the recordings manually in a word processor. I created an initial list of a priori and a posteriori codes using my field notes and transcripts, which reflected topics such as livelihood challenges, access to resources, sentiments towards urban agriculture and collective responses to changes in the marketplace. Coding my transcripts and field notes allowed me to identify important themes and to effectively organize my results, which I share in Chapters 4 and 5. I took several precautions to protect the confidentiality of my participants. In my transcripts, I assigned pseudonyms to each participant in order to conceal their identity and I also removed the name and location of participants' farms from my data.

3.4: Positionality Concerns

Since the inception of this research project, I have continually reflected on my positionality as a researcher. As researchers, our positionings in relation to our research participants unfold and evolve throughout our research (Nast, 1994; Valentine, 2002). It is therefore critical to continually reflect on the way our positionality interacts with the research process over time (England, 1994). My position as someone who works to advance the interest of small-scale local and organic farmers makes me particularly sensitive to the challenges that they encounter. When developing this research project, I took several steps to minimize the ways that this subjectivity could impact my research in one direction or the other. First, I had my supervisors review my research aim and questions prior to conducting fieldwork. Doing this helped me to identify how my positionality influenced the questions I asked. Then, throughout my fieldwork, I maintained a research diary to reflect upon my positionality. Whereas a fieldwork diary includes field notes, observations and maps, a research diary is a place for researchers to practice critical reflexivity throughout the research process (Dowling, 2016). I used a research diary to record my thoughts on the research process, particularly any concerns I had about my positionality as a researcher. I then critically reflected on these concerns as I proceeded with my research.

3.5: Limitations of Methods

The race, ethnicity and socioeconomic background of my research participants had little diversity. While seemingly unrelated to my research topic, prior research has shown that

agriculture is inherently intertwined with racial injustice in North America (see for example, the body of work compiled by Alkon and Agyeman, 2011). Thus, the voices of people of colour and migrant workers are critical to conversations about food justice. A more varied group of participants could have offered an important diversity of perspectives in my research. Another limitation of my methodology is its small sample size. Semi-structured interviews are not intended to represent large populations; rather they describe individuals' experiences (Valentine, 2005). It should therefore be noted that my findings are based on my participants' comments and my analysis and may not represent the experiences of a larger pool of participants.

3.6: Methodology Conclusion

In this chapter, I outlined the methodology that underscores my research. I began by discussing the demographics of the 30 participants in this study. Then, I described my sampling and recruitment process, as well as how I structured and analyzed my interviews. Next, I identified my positionality as a researcher who is deeply involved in the food movement and critically reflected on how my positionality interacts with my research. Finally, I discussed the limitations of my approach, acknowledging the lack of diversity in my research and my small sample size. In the next three chapters, I take the methods outlined in this chapter and put them into practice.

CHAPTER 4: LUFU FARMS

The results of this research are divided into three short chapters. In this first chapter, I focus on the results related to Lufa's operations, which addresses my first research question: *What are the characteristics of Lufa Farms' operations and how do these compare to the characteristics of other small-scale farms that sell vegetables in Montreal?* I begin this chapter by describing Lufa's vision and history, drawing on my findings from the company's website, grey literature, and in-person observations during a greenhouse tour in October 2017. I then discuss Lufa's greenhouse production methods, paying particular attention to the company's sustainability measures. Finally, I explore Lufa's role as both a producer and distributor of food products and how its online Marketplace impacts local farms using data from semi-structured interviews.

4.1: Company History and Vision

Founded in 2009, Lufa Farms is a privately held urban farming company that grows vegetables in an expanding network of rooftop greenhouses in Montreal. The company's vision is a "city of rooftop farms, growing food where people live and growing it more sustainably" (Lufa Farms, 2017). When he founded the company in 2009, Mohamed Hage had over ten years of experience managing software and real estate companies (*ibid.*). Hage brought together three founding members to assist in growing his vision: Lauren Rathmell, Yahya Badran and Kurt Lynn. The company's website explains that Rathmell was invited to manage plant production (she has academic training in biochemistry), while Badran and Lynn brought forth their expertise in marketing and sales (*ibid.*). In 2009, the group rented greenhouse space at McGill University to conduct production tests (*ibid.*). With a \$2 million investment, Lufa Farms began to build what has been described as the world's first commercial-scale rooftop greenhouse in the Montreal borough of Ahuntsic-Cartierville in 2010 (Elton, 2012). This greenhouse is 32,000 square-feet and produces more than 70 metric tons of produce each year (Lufa Farms, 2017).

Since opening its first greenhouse, Lufa has attracted substantial media attention and financial investment (see Table 4.2 for a summary of Lufa's greenhouses). Significant private and public investments allowed the company to construct two additional greenhouses in Montreal, in the neighborhoods of Laval and Anjou. Currently, Lufa employs a team of 150 people who plant, harvest, package and deliver vegetables to approximately 11,000 customers across Montreal (Bates, 2017). The company's recent media explains that it is hoping to expand

into other city centers in both Canada and the United States. In an interview with City Lab, Rathmell was quoted explaining the company’s vision of city self-sufficiency. She said, “We’ve created a scalable model for urban agriculture that can theoretically make cities self-sufficient in their food production by growing year-round in greenhouses” (Traleaven, 2018: online). When I toured Lufa’s greenhouse in October 2017, the tour guide expressed a similar vision. He explained that it would take the rooftops of about 15 shopping centers to feed the population of Montreal (30 October 2017).

2009	Lufa Farms is founded by Mohamed Hage, who brings together a founding team.
2010	Construction on the company’s first rooftop greenhouse begins in the neighborhood of Ahuntsic-Cartierville.
2011	The company officially opens its first rooftop greenhouse
2013	Lufa opens its second rooftop greenhouse; the online Marketplace is launched.
2016	Lufa opens its third and most technically advanced greenhouse in Anjou.

Table 4.1: History of Lufa’s operations (Lufa Farms, n.d.)

Location	Year	Size in ft2	Funding	Source	Crops
Ahuntsic-Cartierville	2011	32,000	\$2 million	Internal	Cucumbers Peppers Greens
Laval	2013	43,000	\$4.5 million	Cycle Capital Management	Tomatoes Eggplants
Anjou	2016	63,000	\$3 million	<i>Fonds de la solidarité FTQ La Financière agricole de Québec</i>	Greens Experimental

Table 4.2: Characteristics of Lufa’s greenhouses (Source: Traleaven, 2018; Lufa Farms, n.d.)

4.2: Production System

In this section, I use grey literature and in-person observations to describe Lufa's rooftop greenhouse production methods. In total, Lufa now has about 140,000 square-feet of growing space in Montreal. In its greenhouses, Lufa grows close to 50 varieties of lettuces, greens, herbs and other vegetables using hydroponic production methods (Bates, 2017). Hydroponic production involves growing plants without soil, by instead using solutions of mineral nutrients that plants would otherwise reap from the soil. Lufa grows its vegetables without pesticides and uses biological pest control for pest and disease management. Beneficial insects are released into the greenhouses in order to protect plants from harmful pests such as aphids (Lufa Farms, n.d.). Despite not using any pesticides or fungicides, hydroponic agriculture cannot be certified organic in Canada (Canadian General Standards Board, 2015). One reason that hydroponic agriculture does not meet organic certification standards in Canada is that some of the nutrients used in hydroponic production, such as iron and potassium, are mined and are non-renewable (Lufa Farms, n.d.). However, according to Lufa's website, the company is able to cut down an estimated 90% of nutrient usage of conventional hydroponic water by recirculating water.

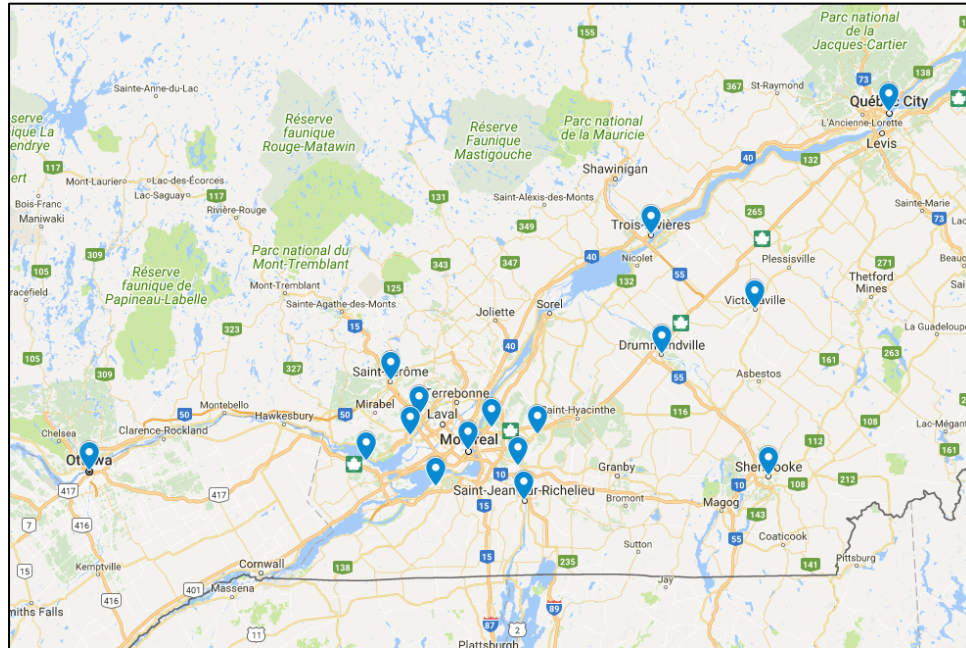


Figure 4.1: Photo of Anjou Greenhouse (Source: Lufa Farms, Creative Commons: Non-Commercial)

Despite the potential sustainability benefits of growing produce closer to urban consumers, rooftop greenhouses have been criticized for requiring substantial economic investment and significant energy demands to create optimal growing conditions (Germer et al., 2011; Specht et al., 2014). In the colder months, Lufa uses natural gas to heat its greenhouses to maintain appropriate growing conditions (Lufa Farms, n.d.). Despite using natural gas for heating purposes, Lufa makes considerable effort to reduce the amount of energy required to heat the greenhouses. According to the company's website, it uses energy curtains that are automatically deployed on cold evenings to help insulate the greenhouses (n.d.). The company also states that it recycles irrigation water and composts all organic waste produced in its facilities.

4.3: Online Marketplace and Supplier Network

In addition to growing produce year-round on its rooftop greenhouses, the company has an online marketplace where users can create a customized weekly basket with hundreds of products grown by partner farms and producers from Quebec. Each week, Lufa creates a default \$30 basket and subscribers have until midnight to customize their basket for delivery the following day so long as their order is more than \$15 (Lufa Farms, n.d.). Greenhouse vegetables are harvested from the rooftop greenhouses and baskets are assembled, along with other food products, the night before delivery (Lufa Farms, n.d.). Once customers have signed up for a weekly basket, they can select where they want to pick up their basket from more than 300 pick-up locations (see Map 4.1, which identifies Lufa's major pick-up locations) (*ibid.*). Lufa has also recently expanded its delivery zone to include other cities in Quebec, (Trois-Rivières and Quebec City, located about 140 and 250 kilometers from Montreal, respectively) (Treleaven, 2018).



Map 4.1: Major pick-up locations in Quebec and Ontario. (Source: Lufa Farms, n.d.; Google Maps, 2018)

In order to offer customers a diversity of products that can be produced in greenhouses, Lufa began to partner with dozens of farmers and food artisans in 2013 (Lufa Farms, 2017). As a result, subscribers can now choose from hundreds of products in the company's online Marketplace, not limited to the vegetables that Lufa is able to produce in its greenhouses. Currently, Lufa supplies about 25 percent of the food it sells through its marketplace, although that proportion goes up in the winter months (Treleaven, 2018). Customers can purchase vegetables, fruit, meat, cheese, bread, and other prepared foods. Products that cannot be produced within Quebec are imported from neighboring provinces; fish and seafood are imported from Atlantic Canada, while stone fruit is purchased from Southern Ontario. More recently, Lufa has partnered with farmers and producers from Florida to offer organic tropical fruit.

By partnering with suppliers, Lufa is able to offer an increased diversity of products that supplement what it can produce internally. Partner farms benefit from selling their produce through Lufa for a number of reasons, the first of which is that it allows them to specialize in production. One of Lufa's suppliers explained:

I sell to Lufa because I can deliver a good volume every week. It suits my business model – I am only growing a few vegetables and only a lot of them. I have to have clients who can buy in big quantities. The reason for choosing a few vegetables is that I think I am much better at growing a few vegetables instead of growing fifty of

them. I am more efficient and better at it because I can concentrate on them, I can lower my production costs (26 October 2017).

The farmer explains that selling to Lufa has allowed him to concentrate in a couple of products, which is more efficient and less costly than growing diversity. Another core benefit of supplying to Lufa identified in my interviews is the ability to sell to consumers without having to spend time or money on marketing. One farmer remarked:

In my experience, there aren't many people who go into small-scale farming who also want to do the marketing for their farm. There are lots of farmers out there who I think are happy with the option that Lufa provides because they can still farm with integrity and ecological morals in mind, but they don't have to do all the fancy marketing that goes with it, since Lufa does it for them (6 July 2016).

The farmer quoted above does not currently supply Lufa but explains that many producers are happy with selling to Lufa because it allows them to focus primarily on their production rather than the marketing of their foods.

Despite the benefits associated with selling produce through Lufa, two farmers who previously supplied produce to the company felt that it did not pay them adequately for their produce. One farmer explained that it is more profitable for him to sell produce without a middle-man: "Lufa came to us five years ago and asked us to sell them carrots since they can't grow them on their rooftop. I asked them how much they would pay me, and they said 50 cents. I said, 'keep walking' to them" (20 July 2017). This farmer was asked to sell carrots to the company for \$1.50 a bunch; without a middle-man, he sells his carrots for \$4.00 a bunch. He elaborated, stating that he would be happy to sell produce to the company if they paid more for the produce: "Lufa's deficiency in my opinion is that they should have been more generous to their partner farmers. For those who don't want to do farmers' markets, it's a good place to sell your stuff. I'd like to do business with them, at my price" (20 July 2017). While a couple of farmers reported being unsatisfied with their experience, current suppliers were more ambivalent. One farmer believed that the company paid him a fair price for his products, but he noted that the company made a significant profit from his produce. As an example, he explained that Lufa would purchase a squash for \$2.00 but would sell it for \$5.00. (22 September 2017).

Through my online research, I discovered that many of Lufa's partner farms are large enterprises that specialize in one or two products and can supply volume, rather than variety. For instance, *Serres Royales* is a family business that provides Lufa with extra tomatoes that are growing in the company's 60 greenhouses (300,000 square feet) in Saint-Jérôme, Quebec

(Serres Royales: online). Similarly, *Serres Lefort* produces bell peppers in 300 greenhouses with the help of 100 employees (Serres Lefort: online). Beyond greenhouse growers, *Vallons Maraîchers* supplies Lufa with root vegetables. With 90 acres of vegetable production, *Vallons Maraîchers* is one of the largest organic farms in the province of Quebec (Lufa Farms, n.d.). I have pulled out these examples to show that while Lufa does support local farms in Quebec, many of these farms are large operations that do not necessarily encounter the same challenges as small-scale producers.

4.4: Chapter Conclusion

In this chapter, I described Lufa's company history and vision of a city of rooftop farms and showed that the company has gained considerable financial investment and media attention. Lufa has created an innovative commercial-scale production model, which offers new possibilities for food production on urban rooftops. This technology demonstrates the potential of urban agriculture to significantly contribute to the diets of urban consumers. In this chapter, I also highlighted Lufa's marketing strategy, showing that the company has become both a producer and distributor of (primarily) local foods. The company's hybrid distribution model allows it to fill the gaps in its own production, positioning itself as a one-stop-shop for urban consumers who wish to eat local and sustainable foods.

CHAPTER 5: CSA FARMS

In this chapter, I introduce the agricultural industry of Quebec, drawing on national statistics to provide an overview of the industry as a whole. I then describe the unique enthusiasm surrounding small-scale, ecological farming throughout the province. Using data from my interviews, I identify the key actors who have influenced this renewal of small-scale agriculture in Quebec. In Section 5.2, I describe the operation characteristics of the farms that participated in this study, including their size, infrastructure, and number of employees. In Section 5.3, I discuss the marketing strategies employed by the farms that participated in this study. I then identify the major livelihood challenges that farmers reported in my interviews in Section 5.4 before offering some concluding remarks.

5.1: Farm Characteristics

In this section, I share key findings from my interviews that describe the operations of small-scale farms surrounding Montreal. Surrounding the Island of Montreal, there are several important farming regions. The majority of farmers interviewed in this study are from the Montérégie region, southeast of Montreal. The farms that participated in this study were also very new [see Figure 5.1]. Fifteen of the farms interviewed in this study were certified organic; eight were in the process of obtaining their certification; and the last two could not be certified organic due to their specific circumstances but did not use chemicals or pesticides in their production. Farmers interviewed as part of this study sell primarily to consumers through direct marketing—farm stands, farmers’ markets, and CSA baskets—in Montreal, with a proportion of produce sold to their local communities. The farmers in this study were located, on average, 50 km from Downtown Montreal. On average, farmers cultivated 2.4 hectares of land (*maximum*: 4.5 hectares, *minimum*: 0.4 hectares) but many study participants reported having additional land that they did not cultivate regularly.

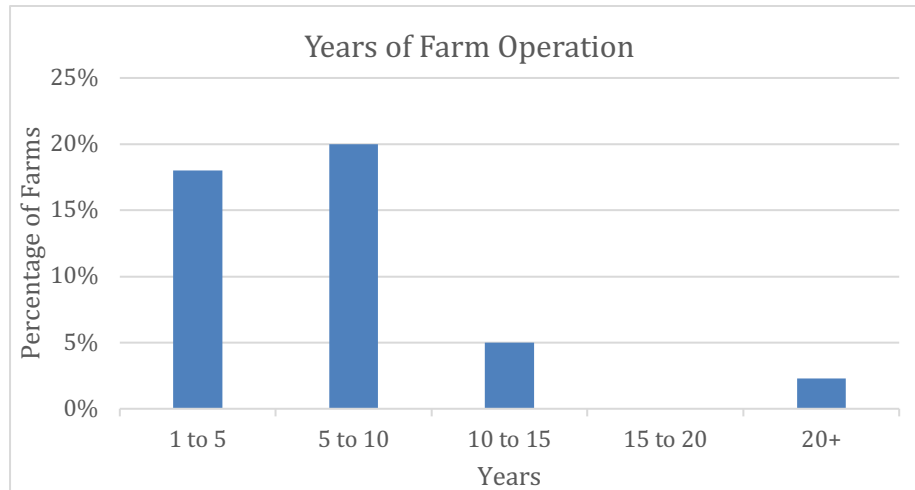


Figure 5.1: The number of years in operation (Source: author).

On average, participants had three employees working on their farms during the farming season, which lasts approximately May–November. The majority of participants reported that farming was their primary source of income; however, four participants reported having a secondary income. This was especially the case for farmers who had started their farms within the past one or two years. Additionally, some farmers reported seeking unemployment insurance in the winter. A farmer explained, “We all take advantage of this [unemployment insurance] and it would be hard to make ends meet without it. We would definitely have to get second jobs if ever we were no longer eligible” (31 July 2017).

5.2: Marketing Strategies

With more local and organic options available to consumers in Montreal, effective marketing is now recognized as one of the most important aspects of operating a successful small-scale farm. In this section, I begin by drawing heavily on semi-structured interviews with farmers to describe how increases in the number of small-scale farms have impacted access to customers. I then highlight how the new importance placed on marketing has created new opportunities for people with diverse skill sets that were previously unappreciated in the agriculture industry. Lastly, I identify the key organizations that assist small-scale farms develop a committed customer base in Montreal.

All farmers that participated in this study agreed that the number of farms attempting to break into the Montreal marketplace has increased dramatically in the past five years. Some

farmers felt that the number of farms striving to sell in Montreal has created more competition.

One farmer reflected that it is challenging to find consumers in the city:

It's very trendy right now to pursue small-scale farming, especially because of the book by Jean-Martin Fortier. So, there are many people going to study small-scale agriculture and many people creating more farms. So, I think there are more and more farms popping up around Montreal and aiming for the Montreal market. I have heard from other farmers who have been selling in Montreal for more than ten years that it's been harder and harder to find new customers in Montreal. It's getting crowded (29 August 2017).

While many participants acknowledge that there was increased competition, most did not feel that the Montreal marketplace is saturated; however, some felt that having large businesses makes it more difficult to sell their produce. One farmer reflected that breaking into the Montreal marketplace can be difficult for new producers, "It is possible, you can do it, but having large players with a lot of money who can appeal to a really large mainstream population is cutting down on the people we have access to" (11 August 2017). Farmers report that the market is becoming crowded and it's becoming increasingly important to be able to compete with large players, whether that be relatively high-efficiency independent farms or commercial greenhouses (such as Lufa). She elaborated:

Being in and around Montreal, there are a lot of people we can access and there are a lot of people who we haven't reached yet. It takes a lot of work though and a certain kind of mind. I don't think that a good grower is necessarily a good marketing person. You kind of have to have a little bit of that skillset or surround yourself with people who do. That might cost money or time that you don't have. [...] There's still a lot of room for smaller producers in the market but you have to go get that part of the pie (11 August 2017).

Despite having limited resources, many small-scale farms have recognized that strong marketing is worth the investment. One farmer who participated in this study explained that he and his business partner have chosen to divide their responsibilities accordingly:

It [marketing] is one of the most important things as a farm. The farmer always says, "I don't have time. I have to work" and the marketer will always say, "But you can't do anything without marketing." The challenge is that the middle-man will then come into the picture and say, "I'll give you 30% on that [item] and I'll make 70%". Getting [all the produce] to market is the most important challenge that farmers face. So, the way we solved this is by putting everything in-house (27 July 2017).

Many farmers choose to sell through direct marketing because they enjoy the connections they establish with customers. However, direct marketing involves a great deal more work for farmers and producers. In addition to farm labour, farmers who choose to sell their products directly to

customers must invest time into marketing and administration. One farmer explained that the additional effort required of farmers who choose to directly market their produce is sometimes overwhelming, forcing some farmers to pursue other business models:

There are many farms that choose this type of production but after a couple of years, they quit because it's so demanding. Even when the network exists and provides its services to farms, it's really hard. It's a choice of a production model that requires so much from the farmer: administration, knowledge of every different aspect of production, and it's based on diversity (11 November 2017).

Similarly, another study participant reflected that this model of production, while it has a strong set of values, might not be appropriate for all farms.

It takes a lot of energy to maintain subscribers from year to year and to cultivate that relationship. Unless you can find an economically efficient way to cultivate that relationship, it might not make sense. It's a great philosophical point of view, but at the end of the day the farmer needs to make a living. If he can more efficiently sell to a couple of restaurants than to 200 households, then it's an easy choice (14 October 2017).

These quotations demonstrate that maintaining a subscriber base can be difficult for farmers, who have little time to dedicate to marketing and administration. Initiatives that facilitate marketing and administration play an important role in relieving the demands of running a direct marketing model.

5.2.1: Key organizations supporting small-scale farmers

Through my interviews, I discovered that there are a couple of key organizations in Quebec that have proven to be tremendously helpful to small-scale farmers who might not have the financial resources, knowledge or time to market their produce online. *Équiterre* and the CAPÉ are among the most important organizations that assist farmers with marketing produce to consumers in Montreal. A farmer in his first year of production noted how important *Équiterre* has been in helping him establish a consumer base in Montreal:

We work with organizations that already have other things going on, such as *Équiterre*. We work with other organizations that already do marketing. We are still selling directly to consuming but we are shepherded by other organizations that already have experience. We get into a network that's already established and that has been very helpful (20 July 2017).

By becoming part of *Équiterre*, farmers are able to tap into a network of consumers. This is particularly important for new producers who have yet to develop a consumer base. When the CSA movement reached Quebec in the nineties, the organization launched a program in 1996. In

an interview with one of *Équiterre*'s employees, I learned that there were seven farms in the network at that time that it launched in 1996, but it has grown to over a hundred farms today (16 August 2017). The organization helps farmers and producers develop delivery points so to minimize competition amongst farmers and equal opportunity to all farmers. The network is actively trying to expand its network while ensuring that each farm has an equal opportunity to reach customers (16 August 2017). Through *Équiterre*'s *Fermier de Famille* website, customers can locate CSA basket drop-off points close to them. Customers can enter their postal code and find the closest drop-off point for them. Customers are then redirected to farm's website, and they can register directly through the farm. One farmer described how *Équiterre* helped him establish his first basket drop off in Montreal, helping to bridge the connection between potential consumers and producers.

We wouldn't have been able to have this drop-off point without *Équiterre*. I just had to ask someone there if they had any future drop-off points that would be really great and would help us double really fast. They said, 'we might have a lead' and I said 'that sounds perfect'. A day after, I had the number of the guy and a week after I was meeting him. He was really into it, but *Équiterre* made the connection possible and made it really great for us (14 September 2017).

This quote shows that it can be difficult for farmers to dedicate time and resources to crafting strong marketing strategies, but that there are key organizations that have facilitated this process. The work of these organizations becomes more important as new businesses emerge in the Montreal market for local and responsible food.

5.3: Livelihood Challenges

While there is increasing demand for local and organic food, there remain numerous economic and environmental challenges for small farms in Quebec. In this section, I describe the primary challenges that study participants identified during my interviews. As previously discussed, finding points of sale and developing a dedicated customer base can be significant challenges for small farms. Beyond marketing, the farmers that participated in this study reported two primary challenges. Many participants explained that weather variability was increasingly a challenge to their livelihood security (13 July 2017; 29 July 2017; 15 August 2017; 19 September 2017). In the past couple of years, farmers experienced unpredictable weather variability and found it difficult to prepare accordingly. 2016 was an extremely dry season and many farmers lost crops to drought. In order to adapt to dry weather conditions, a couple of farms invested in better

irrigation systems for the following season; however, 2017 proved to be a very wet year. Most farmers reported struggling to manage pests and diseases that flourished in wet conditions. One farmer said, “It’s very difficult when you have weather like this...we are growing more weeds than vegetables, but a lot of people are feeling like that this year” (29 July 2017). Similarly, one study participant said that the weather variability made it difficult to plan for the start of the season: “I think the seasons are getting more and more challenging. They are getting more unpredictable and it’s hard to know when spring is going to start.” (15 August 2017).

In addition to weather variability, most new farmers felt that having access to resources was one of their primary challenges. Having adequate farm infrastructure is increasingly becoming a priority for small farms to adapt to weather variability. Farmers reported that a farm insurance for small-scale growers could be helpful in mitigating these challenges, as well as subsidies to help pay for infrastructure. A couple of study participants felt frustrated that they could not easily access grants or loans that could help them invest in farm infrastructure or inputs. One farmer remarked that relative to other provinces, Quebec farmers have access to a fair amount of financial assistance, but large businesses have access to private money that make it hard to compete (13 September 2017). Some new farmers find it difficult to be efficient and compete with large players without specific tools and equipment that they cannot yet afford (20 July 2017; 27 July 2017; 10 August 2017). Access to greater financial assistance would help small farms invest in infrastructure to mediate weather variability and compete in an increasingly competitive market.

5.4: Chapter Conclusion

In this chapter, I began by describing the characteristics of the farms that participated in this study. My findings showed that farms are fairly new and are small in scale (both in land and number of employees), which suggests that they are vulnerable to shocks in the system. I then discussed their marketing strategies in depth, highlighting the challenges and opportunities for small-scale farms in the Montreal market. The lack of financial resources that many small-scale farms experience is particularly important in this study, as it makes it difficult for small-scale farms to invest in equipment and marketing that would improve the uneven playing field that exists in Montreal.

CHAPTER 6: TENSIONS BETWEEN DIFFERENT MODELS

In the previous chapters, I described the characteristics of different farming operations in the Greater Montreal region. In this chapter, I draw on data from my interviews with farmers to answer my fourth and final research question: *Are there any tensions, concerns or rivalries arising between CSA farms, Lufa and the farms that supply Lufa with additional produce?* In this chapter, I use data from my interviews to explain the interactions between Lufa and CSA farms, as well as the farms that supply Lufa with additional produce to supplement its own rooftop production. In my research, I found that numerous tensions exist between these three agricultural players. I begin discussing these tensions in Section 6.1, where I contend that tensions exist between CSA farms and Lufa for three reasons involving Lufa's marketing strategy, which I explain in turn. In Section 6.2, I discuss the disagreements occurring among producers as to whether it is advantageous to sell produce to Lufa. Finally, in Section 6.3, I explain how CSA farms are adapting their marketing strategies to compete in the changing and increasingly crowded market in Montreal.

6.1. Consumer misconceptions about local and organic produce

When Lufa built its first rooftop greenhouse in 2011, many peri-urban and rural farmers were interested in the company's innovative technology but soon felt alarmed by widespread misconceptions surrounding the company's operations. "It spread like wildfire that there were these newcomers who were doing rooftop growing with very innovative technology—all of that is very interesting, but we very quickly became alarmed at what was clearly false representations to the public," explained one study participant (29 July 2017). In the subsequent sections, I discuss the false representations that this study participant describes. First, I use data from my interviews to explain that there is a lack of transparency regarding the vegetables sold by Lufa; specifically, farmers feel that there exists consumer confusion regarding what products are indeed local and organic. Second, I explain that many farmers feel that the company has capitalized on CSA, which stems from a movement spanning multiple decades aimed at increasing livelihood security for small-scale farms.

6.1.1: Organic Certification

In Canada, hydroponic production cannot be certified organic. Lufa has not claimed that its operations are organic; indeed, there would be serious repercussions if it were to falsely market

itself as an organic production. However, the farmers that I interviewed for this study feel that Lufa has benefited from consumer confusion regarding organic standards. “I distinctly remember, Radio Canada doing an interview and asserting that they were organic. Even the media didn’t do its homework in understanding the difference between greenhouse growing and organic growing,” said one study participant (29 July 2017). Study participants suggested that consumers are not aware of the differences between words such as organic, sustainable and ecological, which the company employs strategically in its marketing. One farmer who participated in this study explained, “People think Lufa is organic and local. Lufa gets grouped in with us and doesn’t make it super clear that they aren’t organic. They don’t say that they are organic, but they say [that they are sustainable]. Since the very beginning, they haven’t been very honest with their products” (13 September 2017). Another participant expressed similar frustration saying, “Another thing that was blurring the lines was this aspect of local and ‘almost-organic’. I really dislike the ‘almost-organic’ perception because you’re organic or you’re not. When you’re doing hydroponics, you’re not.” (10 October 2017). On the company’s website, we find statements such as “eat fresh, local and responsible” and “we grow food where people live and grow it more sustainably” (Lufa Farms: online). The terminology in these quotations may confuse potential purchasers about the sustainability of the company’s operations.

Farmers are protective of the organic label due to the time and resources required to obtain certification. Organic certification can be an expansive and demanding process for small-scale farmers. All organic producers must complete one year of pre-certification before obtaining full certification in Canada (EcoCert Canada, n.d.). In Canada, the fee for certification is based on acreage and type of production; the basic fee for less than 10 acres of production is \$400, which does not include the travel fee for the inspector (Pro-Cert Organic Systems Ltd., n.d.). In addition to the costs associated with obtaining organic certification, farmers feel protective of the organic label because it reflects a philosophy. Among many study participants, there is a sense of pride that comes from growing food organically. In hydroponic agriculture, nutrients are fed to plants through a water solvent. In organic agriculture, there is a focus on feeding the soil. “Organic means that your plant has roots in the soil and you feed the soil,” explained one farmer (10 October 2017). Because of the values embedded in organic practices, farmers are upset that Lufa is often mistakenly labeled as an organic operation.

6.1.2: Distribution Network

Beyond confusion surrounding organic certification, the farmers who participated in this study also felt frustrated that Lufa is frequently equated with only selling local food. Indeed, the company brands itself using the slogan, “Fresh, Local and Responsible.” As I explained in Chapter 4, some of the products available through Lufa are imported from other parts of Canada and the United States. Unless consumers learn about the sources of products on the Marketplace (farm descriptions are available when users click on the name of the supplier), they may not be aware of where their products are coming from and may therefore equate most products with being produced in Lufa’s greenhouses. One study participant explained that some subscribers have demonstrated a lack of knowledge of where the products they purchase are being produced. He said,

There’s no lying, Lufa never lies, it’s clear what’s organic and what’s not and what’s local and what’s not, but on the other hand, there are a lot of misconceptions from hearing from clients of Lufa who are not involved in urban agriculture being like ‘yeah, it’s all these local and organic farmers producing this’ and I’m like ‘there are no local organic grapefruits in Quebec, that’s not a thing’ (15 August 2017).

Another farmer expressed, “the fact that they seem like farmers is frustrating” (14 September 2018). The fact that Lufa offers a variety of products further complicates things for producers because it raises the bar for convenience and choice, which directly impacts small-scale farmers who are unable to compete with their own production. One farmer explained:

If people want more choice and other farms are giving more choice, then you have to do that. You have to become as good as everyone else and Lufa may be setting a bar with choice, and then you have to choose to do that if you want to maintain your customer base. It increases the need for performance, which I think is not that sustainable for farmers (15 July 2017).

The farmer points out that if customers are able to choose from more products through Lufa, small-scale farms cannot be as competitive since they cannot compete in terms of choice. One participant explained that when consumers realized that his farm did not offer the same choices as Lufa, the consumers were no longer interested:

When we were trying to get people signed up [for our CSA baskets], four or five said ‘you do Lufa-style’ and we said, ‘no, we don’t resell, we just produce.’ I could tell that Lufa was not totally clear to them and that they weren’t very interested in us when they learned about more of the details of how they have to be there every week, that we just have vegetables. Sometimes we have fruit, but we don’t have bread, or milk or avocados (14 September 2018).

The above quotations demonstrate that farmers worry that the company may alter the expectations of urban consumers and feel that they cannot compete with the convenience that a large company like Lufa is able to provide.

6.2: Conflicting Values

In addition to consumer confusion, many study participants were upset that the company's distribution model looks like CSA. One farmer suggested that the company strategically used the same language: "They have specifically used all the same terminology that used in CSA and that's hard work we have put in to develop that brand and they're using it" (29 July 2017). In both models, customers sign-up ahead of time and received a weekly basket of produce. Despite these similarities, the farmers that I spoke to as part of this research are adamant that many of the core values of CSA are missing from Lufa's model. In my interviews, farmers revealed that they felt that Lufa co-opted the CSA model but did so without maintaining the values embedded in the original model. One participant explained the situation as follows,

As soon as you move outside of the circles, people don't know what CSA is, and Lufa was very quick to capitalize on all of the good will that was associated with Community-Supported Agriculture. That's part of the reason I think, that farmers felt that 'oh my god, this is terrible' and that they are appropriating something that we have spent twenty to twenty-five years creating (29 July 2017).

Given the historical significance of the CSA model, it is frustrating for farmers to see a cooperation benefiting from a movement aimed at creating lasting change in the food system.

Farmers feel protective of this model because it was born out of a movement to help to make farming a more sustainable livelihood and to strengthen the connection between farmer and consumers. To understand why this confusion is so upsetting to local farmers, I share the following quote from one of my interviews:

No one who is getting into farming is doing it to get rich. You get into farming because you are passionate and because you believe in a certain way of life—it's value driven. Defending those values is akin to defending religious beliefs, defending a certain worldview. That view is that agriculture, as it has progressed in the 21st Century, has been really destructive to rural communities, peoples' health, and the environment. The way in which we practiced, and by and large, continue to practice agriculture, has been detrimental. This is a counter movement. It's entirely value driven (15 August 2017).

This quotation describes some of the values that inspire farmers who practice this type of agriculture. One farmer explicitly stated that the values that she shares with other farmers are not embraced by enterprises like Lufa.

I don't think these deeper values I strive for as a CSA farmer, that I share with other CSA farmers, are shared by companies like Lufa, and because of this I personally wouldn't want to sell to a place like Lufa. But again, they have their own values including technical innovation, and making responsible products more accessible to urbanites, and I can't stress enough that I believe there is value in that, even if following their model isn't my personal mission (16 January 2018).

The quotations that I have shared in this section show that the farmers I interviewed feel passionate about their production and distribution model. Consequently, they are upset that a company with access to greater financial capital is mimicking parts of their model.

I think that the CSA model is very powerful for farmers. As a small-scale farmer who chooses to do direct marketing, that's what differentiates you. Your whole thing is getting closer to who you're feeding [...]. The model was based on a lot of hard work and it's really what distinguishes us: being farmers that direct market and know their clients. Your clients directly influence your choices of production. If they are unhappy, you have to change something. You can have a conversation with your customers and change something (15 July 2017).

In this quote, the participant alludes to the values that motivate some farmers to pursue direct marketing strategies. Direct marketing is what distinguishes her business from large farms, where forging relationships between producer and consumer is quite difficult. As a result of this connection, she feels a responsibility to provide healthy and fresh vegetables to her consumers and values their feedback.

In direct marketing and particularly in CSA, a reciprocal relationship exists between farmers and consumers. Such a relationship and understanding between farmer and consumer can only exist when business is conducted at a human-scale, as one study participant explained:

The whole point of CSA is that I want to know where it came from. Meeting the farmers and really knowing is easier when buying from one small farm. I feel like buying from Lufa doesn't necessarily create a better connection between farmers and consumers, that's not to say it doesn't make it easier for consumers to buy ecologically sourced food. I think that's really important that people understand where their food comes from (20 July 2017)

The participant points out that due to the particularities of Lufa's operations, namely its production size and online platform, it does not foster a strong connection between farmers and

consumers. One farmer stressed that Lufa's online presence particularly disrupts the possible connection between farmers and consumers that direct marketing can create. She said,

It's almost the pride and importance of having a model that links farmers to people, and then that model being falsified by Lufa because you aren't linking farmers to people, you are linking a business to people. There are no farmers behind Lufa, there's an IT guy (15 July 2017).

In this quote, the study participant reflects on the impact of technology in changing the important relationship that is built between farmers and consumers in the original model. This interaction is lost in Lufa's model, where consumers do not interact with producers at any point. Whereas there can often be an education function in direct marketing (consumers learn about the reality of agriculture), this educational function is mostly lost when there is no human interaction. While farmers can easily distinguish what differentiates their operations and values from Lufa, it is not so clear for the average consumer.

6.3: Responses of Small-Scale Farmers to Increased Competition

As demonstrated in Chapter 5, the agriculture industry is changing rapidly. In Quebec, many new farms have been established since 2010. In addition to new farms in peri-urban and rural areas, there is increased support for urban agriculture as made evident in the City of Montreal's strategic plan (2012). Support for local and organic agriculture has never been stronger; as such, the market is becoming increasingly crowded. A couple of participants in this study felt that increased competition may be good for small-scale farmers who must adapt their models. One participant explained, "A little bit of competition is food for everybody, especially when you have the same standards and goals" (14 October 2017). He elaborated, "If there is a bit of competition, it makes both parties try to be more efficient and be better at what they do. In the end, the consumer wins because they have better choices." Another participant said, "When Lufa arrived, it was like an earthquake for the [CSA] model. I think it accelerated the fact that traditional CSA farmers had to adapt and change the model" (9 November 2017).

At the individual farm level, some farmers are making adjustments to their marketing model in order to compete in Montreal. For example, many farmers are offering increased choice in their weekly baskets. At basket pick-up locations, I observed that customers were often able to choose between different vegetables and sometimes had the option to purchase additional products that were not included in the basket. One farmer completely switched his strategy, transforming his basket program into a market stall program where customers invest in the farm

ahead of time as they would in CSA but are able to then spend their credit at any point during the season and choose from any products at the farmers' market. He has had great success with this model, completely reaching his capacity well before the beginning of the season. Increasing basket flexibility caters to consumers' diverse tastes and makes the model less constraining.

As a result of the changes in the way food is produced and consumed in cities, small-scale farmers have had to adapt their business models to be more competitive. Organizations and networks that support farming, specifically by helping farmers get their produce to the market, are crucial to the collective success of the farms in the Montreal region. Initially, Lufa had a web presence and online ordering system that small farms could not replicate given the costs of developing and managing such systems. However, when *Équiterre* developed its web tool to allow clients to sign up for baskets online, small farms were immediately able to reach more consumers. In addition to ordering their baskets online, consumers can now order additional produce and organize their scheduling of pick-ups (for example, cancelling or rescheduling baskets due to vacations); this added convenience has started to match the service that Lufa provides (19 September 2017). Farmers do have to pay for this service, but all study participants felt that it was a worthwhile investment.

Another response to increased competition *Les Bio Locaux*, a collective of organic farmers who join forces to sell their produce together all year long. Together, the collective of farmers invests in marketing for summer and winter vegetable baskets. By offering collective winter baskets, farmers are able to retain CSA customers during the winter months when many consumers begin to purchase imported vegetables.

Many farms do baskets during the summer season but stop in November and their customers then have to look for other options to eat local, and many go to Lufa. So that's why the co-op decided to do the winter baskets: so that we could continue selling year-round. We are about twenty farms who sell baskets together in the winter. We are aiming for 2,000 baskets every two weeks (29 July 2017).

By forming a collective, the farmers are also able to offer greater diversity and flexibility to customers. A member of the collective explained that pooling resources also allows farmers to enter the market with less risk: "The point of doing baskets together was to be able to penetrate the market. For a single producer, it can be too big or risky to enter the market. To do it all together, it puts less pressure on individual producers and putting all of our energy and resources together, we can reach more customers" (9 November 2017). Members of the collective are able

to pool their resources and pay part-time employees to figure out the redistribution system and sell produce at farmers' markets. It is important to note that while there is an element of redistribution in this model, all members of *Les Bio Locaux* continue to sell produce directly to consumers. Creating collaborative models has been one of the key strategies for small-scale farmers to respond to change in Montreal's food system. One participant explained: "It's like David and Goliath. Lufa has the opportunity to have access to so much funding. We didn't have access to funding of this amount" (9 November 2017). When farmers pool their resources through collaborative models, they are able to level the playing field to compete with larger corporations.

6.4: Chapter Conclusion

In this chapter, I teased out the tensions that exist between Lufa and CSA farms. Many of these tensions exist because of false representation of Lufa's production, as well as conflating values between the two types of operations. By sharing quotes from my interviews, I showed that rural farmers are upset that the company has supplemented its own production with other products that increase its appeal to consumers. Rural farmers are not yet threatened by production in cities because so far it is quite limited; however, they are threatened by the resale of vegetables. Study participants explained that this is particularly the case then when that resale looks like production. While competition was a factor in the tensions that exist, the primary concern of study participants was that Lufa mimics the CSA model, which is driven by values that the company does not embrace.

CHAPTER 7: DISCUSSION & CONCLUSION

In the previous three chapters, I shared the results of my research from grey literature, in-person observations and semi-structured interviews. In this concluding chapter, I provide a synthesis of my results and reflect on the types of disruptions that commercial-scale urban agriculture has caused for small-scale farmers selling produce in Montreal. I begin in Section 7.1 by providing a synthesis of my results, emphasizing the tensions that exist between Lufa and the farmers who have chosen not to sell produce through the company's distribution network. Then in Section 7.2, I draw on concepts from my conceptual framework to describe the unequal power relations that exist between commercial-scale urban agriculture enterprises and small-scale peri-urban and rural farmers. In this section, I consider the increased role of technology in altering the way that food is produced and consumed within city boundaries and the potential role of rooftop greenhouses in the future.

7.1: The Implications of Lufa's Production and Distribution Model

In this thesis, I have examined the impact of commercial-scale rooftop greenhouses on peri-urban and rural farms who sell their produce in Montreal. To my knowledge, no other study has investigated the impact of rooftop greenhouses beyond of city limits; as such, this thesis raises new and important questions regarding the role of commercial urban agriculture in city food systems. Through my research, I have discovered that Lufa has influenced both the supply and demand of local food, creating both positive and negative disruptions in the food system. Study participants explained that on the one hand, Lufa has used its legitimacy and resources to promote local food to consumers who might otherwise be uniformed of and disconnected from their food system. This finding is in line with results from a study conducted in the United States, in which rural farmers expressed that they benefitted from the increased interest in local food that their competitors helped to create (Ernst et al., 2017). Lufa has also provided a convenient option for rural farmers who are eager to streamline their production by specializing in a couple of products, and then selling their products to the company rather than seeking dispersed marketing outlets.

Despite the positive implications of Lufa's production and distribution model, the results from my interviews also reveal that peri-urban and rural farmers feel that commercial-scale rooftop greenhouses are competitors because they can benefit from the economies of scale. This

allows them to offer increased flexibility to consumers, thus diminishing the competitiveness of small-scale farms. Commercial rooftop greenhouses also have the benefit of being able to produce food year-round in Quebec, which is otherwise quite limited due to the cold winters. Study participants worry that these advantages can create false expectations of what a healthy, natural food system looks like. They argued that by offering increased product diversity and delivery flexibility, Lufa may alter the expectations of urban consumers. It is not realistic for small-scale farmers to offer the variety of products and convenience that Lufa provides, which makes small-scale farmers vulnerable to a loss of consumers.

Despite the negative trade-offs of commercial-scale rooftop greenhouses, small farms have demonstrated their creativity and adaptability in responding to the potential threat. For example, farmers have made changes to their business models and have formed collectives to pool resources. In an increasingly crowded market with competitive corporate players, farmers must be able to harness their business model as the thing that differentiates them from other options, which is complicated when a large company like Lufa begins to mimic the very thing that differentiates them. In this study, I have shown that organizations and networks that help small-scale farmers compete with large, corporate actors are crucial to their success. For example, *Équiterre* has been key in reducing the vulnerability of small-scale farmers who do not want to supply Lufa.

7.2: Lufa as Market-Driven Urban Agriculture

Most urban agriculture initiatives are occurring within the current narrative of the sustainable city, a dialogue that promotes the design of cities with their social, economic and environmental impact in mind (Tornaghi, 2014). While the sustainable city discourse captures a shift away from conventional growth, it does not reflect a more fundamental shift towards a post-growth society (*ibid.*). Lufa is an example of a market-driven project that has coopted grassroots initiatives as a tool for a new form of capital accumulation. The causal interaction examined in this thesis depends to some degree on Lufa's production system appearing to be sustainable, since it is not organic. This may be part misconception on the part of consumers, but it is also due to the fact that the company has substantial financial resources that allow it to invest in strategic marketing. I have demonstrated that consumers often associate Lufa with small-scale organic farmers, but

Lufa is hoping to achieve very different things from the farmers that I interviewed as part of this study, many of who are striving to create a more equitable food system.

There are vastly different amounts of money available to small-scale farms than there is to a private enterprise such as Lufa. Yet, Lufa has placed itself in direct competition with small players by targeting the same customer base and using a similar marketing strategy—namely, a weekly basket program. The farmers that participated in this study were interested by Lufa's innovative technology but were alarmed that the company was using remarkably similar model. Farmers feel protective of this model because it has helped to make farming a more sustainable livelihood by providing farmers with the financial resources required to purchase inputs before the farming season begins. Consumers who purchase weekly baskets from Lufa do not experience a genuine connection with producers; indeed, they may not be aware as to whether their food is produced in the greenhouse or by one of the company's partner farms.

Technology plays an important role in the differences between farming models explored in this study. Lufa is heavily reliant on technology to sustain its operations, as well as its distribution model. Rather than offering a grassroots solution to improving the sustainability of urban food systems, the company offers a technocratic solution that requires substantial investment. While they offer an opportunity for year-round production of food in cold climates, commercial-scale rooftop greenhouses do not necessarily provide consumers with a realistic understanding of a healthy, natural food system nor do they forge a greater connection between producers and consumers. Despite this key difference between the farming models analyzed in this study, a commercial-scale rooftop greenhouse still provides urban consumers with fresh, local food; however, Lufa's distribution model has resulted in numerous tensions with small players. By adopting components of the CSA model and then hybridizing that model by selling products from other producers, Lufa has been able to redirect potential consumers from small farms.

7.3: Thesis Conclusion

Commercial-scale urban agriculture operations present a unique opportunity for education and engagement with urban consumers who may otherwise be disconnected from the food system. Urban agriculture can connect urban residents on the food system, inspiring them to make responsible choices when purchasing from either urban, peri-urban or rural farms. Both types of production and distribution models discussed in this study are far better alternatives than buying

conventional, imported produce. Yet, this study has shown that there exists a rather uneven playing field between commercial-scale rooftop greenhouses and small-scale farms competing for consumers in Montreal. This unevenness is exacerbated by a lack of resources for small-scale farms to communicate their values to potential consumers and the ease by which consumers can be deceived by strong marketing by large, corporate players who coopt those values.

The way food is produced, distributed and consumed in cities will continue to change and many of these changes are likely to be driven by technological innovation. As an innovative commercial-scale operation and a local and sustainable food network, Lufa has created disruptions in the food system that are both positive and negative. A powerful company like Lufa is a shock to a system where some small-scale farmers already felt vulnerable. In turn, farmers have responded by specializing and becoming part of the company's supplier network while others have banded together to increase their competitiveness. With these adaptations and innovations, the whole structure of the CSA model is being transformed to put urban consumers at the forefront.

REFERENCE LIST

- About Brooklyn Grange. (n.d.). Retrieved September 1, 2017, from <https://www.brooklyngrangefarm.com/about-brooklyn-grange-1/>
- About JM Fortier. (2017). Retrieved February 20, 2018, from <http://www.themarketgardener.com/about-jm-fortier>
- Allen, P. and J. Guthman. (2006). From ‘old school’ to ‘farm-to-school’: Neoliberalization from the ground up. *Agriculture and Human Values* 23: 401–415.
- Alkon, A.H. & Agyeman, J. (2011). The food movement as polyculture. In A.H. Akon and J. Agyeman (eds) *Cultivating Food Justice: Race, Class, and Sustainability* (pp. 1-20). Cambridge: MIT Press.
- Alkon, A.H. & Agyeman, J. (2011). (eds) *Cultivating Food Justice: Race, Class, and Sustainability*. Cambridge: MIT Press.
- Alkon, A.H. (2013). The socio-nature of local organic food. *Antipode* 45(3): 663–680.
- À propos. (n.d.). Retrieved February 20, 2018, from <http://www.fermequatretemps.com/>
- Bhatt, V. & Farah, L.M. (2016). *Cultivating Montreal: A Brief History of Citizens and Institutions Integrating Urban Agriculture in the City*. Urban Agriculture & Regional Food Systems 1.
- Biersack, A. & Greenberg, J.B. *Reimagining Political Ecology*. Durham: Duke University Press: 2006.
- Blaikie, P., & Brookfield, H. (1987). *Land degradation and society*. London: Methuen.
- Blomley, N. (2004). Un-real estate: Proprietary space and public gardening. *Antipode* 36: 614–641.
- Bloom, D. E. (2011). 7 Billion and Counting. *Science* 333: 562-569.
- Browne, K. (2005). Snowball sampling: using social networks to research non-heterosexual women. *International Journal of Social Research Methodology*, 8(1), 47-60.
- Camps-Calvet, M., Langemeyer, J., Calvet-Mir, L., & Gomez-Baggethun, E. (2016). Assessment and valuation of ecosystem services provided by urban gardens in Barcelona, Spain: Insights for policy and planning. *Environmental Science and Planning* 62: 14-23.
- Canadian General Standards Board. (2015). *National Standard of Canada: Organic production systems*.

- Cohen, N., Reynolds, K. & Sanghvi, R. (2012). Five Borough Farm: Seeding the Future of Urban Agriculture in New York City. New York: Design Trust for Public Space.
- Classens, Michael. (2015). The nature of urban gardens: toward a political ecology of urban agriculture. *Agriculture and Human Values* 32(2): 229-239.
- Dowling, R. (2016). Power, Subjectivity and Ethics in Qualitative Research. In Hay, I. (ed.) *Qualitative Methods in Geography*. Oxford: Oxford University Press, Ch. 2.
- Duchemin, E., Wegmuller, F., & Legault A.M. (2008). Urban agriculture: multi-dimensional tools for social development in poor neighborhoods. *Field Actions Science Reports* 1: 43-52.
- Dunn, K. (2016). Interviewing. In I. Hay (Ed.) *Qualitative Research Methods in Human Geography*, 4th Edition (pp. 149-188), Oxford: Oxford University Press.
- Elton, S. (2012, October 18). The farm on top of the city. Retrieved January 1, 2018, from <http://www.macleans.ca/society/technology/the-farm-on-top-of-the-city/>
- England, K. V. L. (1994). Getting Personal: Reflexivity, Positionality, and Feminist Research*. *The Professional Geographer*, 46, 80–89.
- Ferguson, P. (2014). The green economy agenda: business as usual or transformative discourse? *Environmental Politics* 24(1): 17-37.
- Food and Agriculture Organization News Room Focus. Increasing Fruit and Vegetable Consumption Becomes a Global Priority. Available online: <http://www.fao.org/english/newsroom/focus/2003/fruitveg1.htm> (accessed on 10 September 2017).
- Freidberg, S. E. (2001). Gardening on the Edge: The Social Conditions of Unsustainability on an African Urban Periphery. *Annals of the Association of American Geographers* 91(2): 245-452.
- Gibson-Graham, J. K. (1994). ‘Stuffed if I know!’: Reflections on post-modern feminist social research. *Gender, Place & Culture*, 1(2), 205-224.
- Goodman, D. & M.K. Goodman. (2009). Alternative food networks. In: Kitchen, R. and Thrift, N. (eds.) *International Encyclopedia of Human Geography*. Elsevier, Oxford, pp. 208-220.
- Guthman, J. (2008). Neoliberalism and the making of food politics in California. *Geoforum* 38: 1171–1183.

- Haberman, D., Gillies, L., Canter, A., Rinner, V., Pancrazi, L., & Martellozzo, F. (2014). The Potential of Urban Agriculture in Montréal: A Quantitative Assessment. *International Journal of Geo-Information* 3: 1101-1117.
- Hamilton, A.J., Burry, K., Joi-Fei Mok, S., Barker, F., Groove, J.R., & Williamson, V.G. (2014). Give peas a chance? Urban agriculture in developing countries. *Agronomy for Sustainable Development* 34(1): 45-73.
- Harvey, D. (1999). *Justice, Nature, and the Geography of Difference*. Oxford: Blackwell.
- Harvey, D. (2001). *Preface*. Spaces of Capital: Towards a Critical Geography. Routledge: Taylor & Francis Group. New York, NY.
- Heynen, N.C. (2002). "The Social Processes Contributing to Urban Environmental Change: Indianapolis' Inner-City Urban Trees, 1962-1993." PhD dissertation, Indiana University.
- Heynen, N. C., Kaika, M., & Swyngedouw, E. (Eds.). (2006). *In the Nature of Cities: Urban political ecology and the politics of urban metabolism*. London: Routledge.
- Heynen, N.C. (2017). Urban Political Ecology. The International Encyclopedia of Geography. 1–9.
- Hodson, M. & Marvin, S. (2009). 'Urban ecological security': A new urban paradigm? *International Journal of Urban and Regional Research* 33: 193-215.
- Holt-Giménez, E., and Y. Wang. (2011). Reform or transform? The pivotal role of food justice in the US food movement. *Race/Ethnicity: Multidisciplinary Global Contexts* 5(1): 83–102.
- Hovorka, A. J. (2006). The No. 1 Ladies' Poultry Farm: A feminist political ecology of urban agriculture in Botswana. *Gender, Place & Culture: A Journal of Feminist Geography* 13(3): 207-225.
- Kiel, R. (2003). Urban Political Ecology. *Urban Geography* 24(8): 723-738.
- Kloppenburg, J., Hendrickson, J. & Stevenson, G.W. (1996). Coming in to the foodshed. *Agriculture and Human Values* 13(3): 33-42.
- Langemeyer, J., Camps-Calvet, M., Calvet-Mir, L., Barthel, S., & Gomez-Baggethun, E. (2018). Stewardship of urban ecosystem services: understanding the value(s) of urban gardeners in Barcelona. *Landscape and Urban Planning* 170: 79-89.
- Longhurst, R. (2003). Semi-Structured Interviews and Focus Groups. In N. Clifford, M. Cope, T. Gillespie, and S. French (Eds.), *Key Methods in Geography* (3rd edition, 143-156). London, UK: Sage Publications Ltd.

- Low, N. & Gleeson, B. (1998). *Justice, Society, and Nature: An Exploration of Political Ecology*. New York: Routledge.
- Lovell, S.T. (2010). Multifunctional Urban Agriculture for Sustainable Land Use Planning in the United States. *Sustainability* 2: 2499-2522.
- Lufa Farms Inc. - A new company in the Cycle-C3E portfolio. (2012, October 05). Retrieved January 1, 2018, from <http://www.cyclecapital.com/lufa-farms-inc-a-new-company-in-the-cycle-c3e-portfolio/>
- Johnston, J., Biro, A., & MacKendrick, N. (2009). Lost in the supermarket: the corporate-organic foodscape and the struggle for food democracy. *Antipode* 41: 509-532.
- Marsden, T., Banks, J. & Bristow, G. (2000). Food supply chain approaches: exploring their role in rural development. *Sociologia Ruralis* 4: 424-38.
- Maye, D. (2011). Moving Alternative Food Networks beyond the Niche. *International Journal of Agriculture & Food* 20(3): 383-389.
- Maxwell, D.G. (1995). Alternative food security strategy: A household analysis of urban agriculture in Kampala. *World Development* 23(10): 1669-1681.
- McCarthy, J. (2002). First World political ecology: lessons from the Wise Use movement. *Environment and Planning A* 34: 1281-1302.
- McClintock, N. & Simpson, M. (2017). Stacking functions: identifying motivational frames guiding urban agriculture organizations and businesses in the United States and Canada. *Agriculture and Human Values* 35(1): 19-39.
- McClintock, N. (2010). Why Farm the City? Theorizing Urban Agriculture through a lens of Metabolic Rift." *Cambridge Journal of Regions, Economy and Society* 3(2):191-207.
- McClintock, N. (2014). Radical, reformist, and garden-variety neoliberal: coming to terms with urban agriculture's contradictions. *Local Environment* 19(2):147-171.
- Meenar, M. R. & Hoover, B. M. (2012) Community food security via urban agriculture: Understanding people, place, economy, and accessibility from a food justice perspective. *Journal of Agriculture, Food Systems, and Community Development* 3(1):143-160.
- Memon, P.A. & Lee-Smith, D. (1993). Urban Agriculture in Kenya. *Canadian Journal of African Studies / Revue Canadienne des Études Africaines* 27(1): 25-42.

- Moore, S.A. (2007). In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism. Nik Heynen, Maria Kaika, and Erik Swyngedouw, eds., *Urban Geography* 28(2): 206-208.
- Murdoch, J., Marsden, T., Banks, J. 2000. Quality, Nature, and Embeddedness: Some Theoretical Considerations in the Context of the Food Sector. *Economic Geography* 76(2): 107-125.
- Nast, H. (1994). Women in the field. *The professional geographer*, 46 (1): 54-66.
- Orsini, F., Kahane, R., Nono-Womdim, R., & Gianquinto, G. (2013). Urban agriculture in the developing world: A review. *Agronomy for Sustainable Development* 33:695–720
- Our Farms. (n.d.). Retrieved September 1, 2017, from <http://gothamgreens.com/our-farms/>
- Our Story. (n.d.). Retrieved November 4, 2017, from <http://corpo.lufa.com/en/our-story.html>.
- Our vision is a city of rooftop farms. (n.d.). Retrieved November 04, 2017, from <http://corpo.lufa.com/en/>
- Peterson, G. (2000). Political ecology and ecological resilience: An integration of human and ecological dynamics. *Ecological Economics* 35: 323-336.
- Population Reference Bureau. (2017). Degree of urbanization (percentage of urban population in total population) by continent in 2017. In *Statista - The Statistics Portal*. Retrieved March 19, 2018, from <https://www.statista.com/statistics/270860/urbanization-by-continent/>.
- Reynolds, K. (2015). Disparity Despite Diversity: Social Injustice in New York City's Urban Agriculture System. *Antipode* 47(1): 240-259.
- Saldivar-tanaka, L. & Krasny, M.E. (2004). Culturing community development, neighborhood open space, and civic agriculture: The case of Latino community gardens in New York City. *Agriculture and Human Values* 21(4): 399-412.
- Scott-Reid, J. (2016, February 24). Q&A With Lufa Farms. Retrieved March 1, 2018, from <https://www.hobbyfarms.com/qa-with-lufa-farms/>
- Serebrin, J. (2017, July 20). An IGA in Montreal is growing its own vegetables on the roof. Retrieved September 20, 2017, from <http://montrealgazette.com/business/local-business/an-iga-in-montreal-is-growing-its-own-vegetables-on-the-roof>
- Smith, N. (1984). *Uneven Development: Nature, Capital and the Production of Space*. Oxford, UK: Blackwell.

- Statistics Canada. (2017, June 27). Farm and Farm Operator Data Farm and Farm Operator Data. Retrieved February 20, 2018, from <https://www.statcan.gc.ca/pub/95-640-x/95-640-x2016001-eng.html>.
- Steps to Certification. (n.d.). Retrieved March 1, 2018, from <http://ecocertcanada.com/content/steps-certification>
- Swynedouw, E. (1999). Modernity and hybridity: Nature, *regeneracionismo*, and the production of the Spanish waterscape, 1890-1930. *Annals of the Association of American Geographers* 89(3): 443-465.
- Swyngedouw, E., & Heynen, N. C. (2003). Urban political ecology, justice and the politics of scale. *Antipode* 35(5): 898-918.
- Swynedouw, E. (2006). Circulations and Metabolisms: (Hybrid) Natures and (Cyborg) Cities. *Science as Culture* 15(2): 105-121.
- Thebo, A.L., Drechsel, P. & Lambin, E.F. Global assessment of urban and peri-urban agriculture: irrigated and rainfed croplands. *Environmental Research Letters* 9.
- Tornaghi, C. (2014). Critical geography of urban agriculture. *Progress in Human Geography* 38(4): 551-567.
- Treleaven, S. (2018, February 12). An Urban Farm in Montreal Works a Lot Like Amazon Prime. Retrieved March 1, 2018, from <https://www.citylab.com/environment/2018/02/is-personalized-next-day-delivery-the-future-of-urban-farming/551981/>
- Valentine, G. (2002). People Like Us: Negotiating sameness and difference in the research process. In P. Moss. (Ed.), *Feminist Geography in Practice: Research and Methods* (116-126). Malden, MA: Blackwell.
- Valentine, G. (2005). Tell me about...: Using interviews as research methodology. In Flowerdew, R. and D. Martin, (Eds.) *Methods in Human Geography: A Guide for Students Doing a Research Project*. Harlow, Longman: 110-127.
- Ville de Montréal. (2012, May). *État De L'agriculture Urbaine à Montréal*.
- What is Organic? (n.d.). Retrieved March 1, 2018, from <https://www.pro-cert.org/en/component/k2/item/20-what-is-organic>
- Woods, T., Ernst, M., & Tropp, D. Community Supported Agriculture – New Models for Changing Markets. U.S. Department of Agriculture, Agricultural Marketing Service, April 2017. Web.

APPENDIX A: Research Ethics Approval



Research Ethics Board Office
James Administration Bldg.
845 Sherbrooke Street West, Rm 325
Montreal, QC H3A 0G4

Tel: (514) 398-6831
Fax: (514) 398-4644
Website: www.mcgill.ca/research/researchers/compliance/human/

Research Ethics Board I Certificate of Ethical Acceptability of Research Involving Humans

REB File #: 19-0617

Project Title: The Relationships Between Urban and Peri-Urban Farm Operations in Montreal

Principal Investigator: Monica Allaby

Department: Geography

Status: Undergraduate Student

Supervisors: Prof. Sarah Turner & Prof. Graham Macdonald

Approval Period: July 12, 2017 to July 11, 2018

The REB-I reviewed and approved this project by delegated review in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and the Tri-Council Policy Statement: Ethical Conduct For Research Involving Humans.

Deanna Collin
Ethics Review Administrator, REB I & II

-
- * Approval is granted only for the research and purposes described.
 - * Modifications to the approved research must be reviewed and approved by the REB before they can be implemented.
 - * A Request for Renewal form must be submitted before the above expiry date. Research cannot be conducted without a current ethics approval. Submit 2-3 weeks ahead of the expiry date.
 - * When a project has been completed or terminated, a Study Closure form must be submitted.
 - * Unanticipated issues that may increase the risk level to participants or that may have other ethical implications must be promptly reported to the REB. Serious adverse events experienced by a participant in conjunction with the research must be reported to the REB without delay.
 - * The REB must be promptly notified of any new information that may affect the welfare or consent of participants.
 - * The REB must be notified of any suspension or cancellation imposed by a funding agency or regulatory body that is related to this study.
 - * The REB must be notified of any findings that may have ethical implications or may affect the decision of the REB.

APPENDIX B: Semi-Structured Interview Guide

Background questions

- Approximately how many kilometers away from Montreal is your farm located?
- How many acres of land are in production at your farming operation(s)?
- What types of produce do you grow?
- Are your farming operations certified organic by any recognized certifier?
- On average, how many people work at your farm throughout the year?
- In what types of locations do you sell your produce (e.g., farmer's markets, wholesale, restaurants) in Montreal or the surrounding region?
- Is farming your primary source of income?
- Do you have a secondary source of income?

Farm challenges

- Throughout the past several years, what have been the primary challenges that you face as a small farm?
- In what ways have you mitigated those challenges?

Relationship to and perspectives of Lufa Farms

- Are you familiar with Lufa Farms, and, if so, how did you first learn about them?
- Have you ever considered supplying Lufa Farms?
- Do you consider Lufa Farms a competitor?
- Do you see large-scale farming operations on the Island of Montreal to be a challenge for to peri-urban farmers and rural livelihood security?
- Are there resources that you perceive Lufa Farms having access to that you do not? If so, could these resources improve the financial viability of *your* farm?
- From the perspective of consumers, what advantages might larger-scale farming operations, such as Lufa Farms, have over your business or similar small-scale farms?
- What advantages does a small-scale farm like your own have over more large-scale operations?

APPENDIX C: Growing new farmers in Quebec

In 2016, there were 271,935 farm operators and 193,492 farms across Canada (Census of Agriculture, 2016). National statistics paint a concerning portrait of the country's farm operators: the average age of farm operators is 55 years old and 80% are intending to retire within the next ten years (*ibid.*). There are 28,900 farms in the province of Quebec, and farm operators were reported as the youngest of any province. The majority of cropland is dedicated to field crops and hay, while vegetables and fruits made up 2.0% and 2.3% of cropland area, respectively. While vegetables and fruit production accounts for a small percentage of Quebec's agriculture industry, 80% of fruit and vegetable farms use direct marketing (they sell their products directly to consumers through outlets such as farm-stands, farmers' markets and farm shares).

Despite concerning national statistics about declining farm employment in Canada more broadly, there is a unique enthusiasm surrounding small-scale organic farming beginning in Southern Quebec. Commercial farming activities have been nearly eliminated in Montreal, with the exception of the permanent agriculture zones in the boroughs of Pierrefonds-Roxboro and Île-Bizard–Sainte-Geneviève, as well as the towns of Senneville and Sainte-Anne-de-Bellevue in the West Island (City of Montreal, 2012; Bhatt and Farah, 2016). However, a wave of new farms has been established in the past five years, particularly in the Montérégie region. This renewed interest in farming can be credited, at least in part, to Jean-Martin Fortier, a Québécois farmer specializing in organic and biologically intensive cropping practices. In 2014, Fortier released an award-winning book called "The Market Gardener." The guide provides horticultural techniques and innovative growing methods with practical information on setting-up a small but profitable farm by designing intensive cropping system based on Fortier's experiences at *Les Jardins de la Grelinette*, a micro-farm in Saint-Armand, Quebec (The Market Gardener, 2017). At *Les Jardins de la Grelinette*, Fortier and his partner Maude-Hélène Desroches cultivate vegetables on only 1.5 acres of permanent beds that reap \$100,000 per acre each year (*ibid.*).

Fortier's influence was obvious during my interviews with farmers. Four of the farmers interviewed in this study apprenticed with him and moved on to create their own farms using some of the same farming practices (20 July 2017a, 20 July 2017b, 19 September 2017, 14 October 2017). Fortier's intensive farming model is attractive to new farmers because it does not require a large investment in land and is thus a much more affordable option for new agriculture

entrants. Fortier is now the Managing Director of *Ferme Quatre-Temps* (Four Seasons Farm), a farm and social enterprise established by a group of philanthropists and growers located on 160 km of land in Hemmingford, Quebec (Ferme Quatre Temps, 2017). *Ferme Quatre-Temps* trains new farmers and aims to demonstrate that ecological farming can be profitably scaled (*ibid.*). One farmer interviewed as part of this study remarked on the reasons behind Fortier's widespread influence in Quebec:

There is a lot of influence by Jean-Martin Fortier and his book and his techniques. There are a lot of new farms in the last two years and small-scale intensive models, instead of more conventional models. So yeah, it's much easier for someone to start a new business when this model exists, and they don't need to invest in a large amount of land (29 August 2017).

Similarly, a young farmer who apprenticed for Fortier and later established his own farm remarked that many of his counterparts are pursuing agriculture ventures because Fortier has forged a new pathway into sustainable agriculture:

Jean-Martin influences a lot of people, maybe not older farmers but the new generation. I was in school when his book came out and it was clearly influential on my thoughts and what kind of production I wanted to do, and my wife too. We shared the book and thought it was really cool. It really motivated us. I can see in our generation of farmers that one out of every three farmers are there because Jean-Martin is there, heading the movement (14 September 2017).

The snapshot of Canada's agriculture presented above demonstrates the dire need for new farmers across the country to become the future of our food system. The quotes from my semi-structured interviews illustrate the optimism in Quebec's regional food system and important actors are recruiting, training and supporting the province's next generation of farmers.