Exploring the Links between Proximity to Markets and Farm Type in Ontario: a Case Study Analysis of the Potential Impacts of Globalization on Farm Sustainability

by

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A thesis
Presented to
The University of Guelph

In partial fulfilment of requirements for the degree of Master of Arts
In Geography

Guelph, Ontario, Canada
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ABSTRACT

Exploring the Links between Proximity to Markets and Farm Type in Ontario: a Case Study Analysis of the Potential Impacts of Globalization on Farm Sustainability

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This study documented how the impacts of globalization are experienced at the individual farm level and explored the potential implications that these experiences may have for on-farm sustainability. I selected 12 farms based on how they were exposed to global markets (determined by the distance from urban markets and whether the farm was oriented towards fresh or processed markets). Using interview and statistical census data, I explored the lived experiences and perceptions of farmers concerning the drivers for, and the nature of ecological, economic and social change amongst vegetable farms in Ontario. Amongst the many individual findings, three dominant themes stand out: (1) how globalization has affected the processing industry (economic sustainability) (2) how globalization affects crop diversity (ecological sustainability) and; (3) how globalization affects farmers’ autonomy (social sustainability). When these themes are viewed together they can be categorized by productivist and post-productivist stages of agriculture. These definitions can help characterize common findings (trends) that will likely influence on-farm management strategies and determine the implications these trends may have on sustainability.
ACKNOWLEDGEMENTS

I would first and foremost like to thank my phenomenal advisor, Dr. Evan Fraser. Thank you for your constant encouragement, support, and for never losing patience with me during my days of muddled thoughts and run-on sentences. Thank you for challenging me and pushing me to do better in all I did. Thank you to Dr. John Smithers for your timely and thoughtful comments on my thesis draft and helping me to produce a more polished thesis, your opinions and contributions were greatly appreciated.

I am indebted to the participants of my interviews for welcoming me onto their farms, for their generosity in sharing their personal experiences an daily routines, and for the many baskets of fresh vegetables at the end of my visits. A special thank you to Leon Leclair for being my ‘go to’ farmer, who endured my constant emails and phone calls for just “one more question” and provided me with many contacts of more willing participants to take part in my study. Leon, I wish your family, your farm and your crops all the best.

I am grateful to many of my student colleagues for providing me with long lasting memories, continuous encouragement, and a constant reminder that if one of us drops out we all drop out and move to Mexico, it’s nice to know we were in this together.

Last but not least, thank you to my wonderful family who provided me with non-stop support and love, celebrated my successes, and have been proud of all of my accomplishments no matter how big or small. I wouldn’t be where I am without my family.

Finally, I will always remember the great times, the frustrating times and often challenging times of my time at Guelph whenever I hear the word “naiveté”.
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CHAPTER 1

INTRODUCTION

The production and consumption of food, agricultural techniques and the way in which we trade commodities has evolved throughout history (Anderson, 2010) creating the modern global food system (Phillips, 2006; Ericksen, 2008). This complex method of importing and exporting, genetic modification and the development of new technologies and machinery (Friedland, 1994; Friedland, 2004) has changed the way people purchase and consume food (Ruel et al., 2010) as well as how farmers manipulate the natural environment (Friedland, 1994; Friedland, 2004). Food systems in the 21st century are fundamentally different due to the restructuring of food distribution and retailing and via a shift in food choices that have increased demand for processed and packaged foods (Ericksen, 2008; Ruel et al., 2010). Globalization, in its many manifestations, has expanded the availability of agricultural products over an immense distance (Pretty et al., 2005) while simultaneously widening the gap between production and consumption both socially and spatially (Duffy et al., 2005). The past two decades have seen an increasing interest amongst academics and policymakers in regards to this global food system and its ecological, economic, and social implications on our natural environment (Smithers & Johnson, 2004; Ericksen, 2008).

The implications of such changes to food systems can be witnessed and analyzed in many forms and at multiple scales. For example, increased trade liberalization has been made possible not only by government regulations and policies but also via the expansion of transportation networks and technological advances. The effects of globalization can also be seen on a more micro scale, such as at the community level, through changes in
the size of farms, a general change in livelihood practices, rural community cohesion and food production. Therefore, some argue that globalization offers a mix of outcomes for agriculture and agrarian livelihoods (Bardhan, 2006; Basu, 2006; Zimmerer, 2006) and it is likely that the impacts of such drivers of change will not be uniform between countries (Anderson, 2010).

It can also be argued that open trading agreements, in conjunction with the expansion of market access, has undermined small farmers globally (Bardhan, 2006; Basu, 2006). This trend has led to a concept that is known as “de-agrarianization” (Rigg, 2006; Zimmerer, 2007). Whether the outcome of a more globalized world has been one of positive or negative consequence, it is apparent that globalization has changed food systems everywhere (Zimmerer, 2006). In Western democracies, policies aimed at promoting globalization take such forms as trade agreements, price supports, taxes, research and development, various forms of compensation, marketing boards, and land use incentives and controls (Yunlong & Smit, 1994).

One key area that economic globalization may affect farms is in terms of environmental sustainability. The productivity of agricultural systems, and, therefore, the availability of foodstuffs, is threatened by a weakened natural resource base not only from the pressures associated with increased trade and market expansion but also as a result of the biophysically damaging farming techniques commonly used in modern agricultural practices (Pierce, 1993), (of course these dimensions are intertwined, in that the former is largely to blame for the latter). This criticism is summarized by Hodge who writes:
“Agriculture has come to draw the inputs which it uses from more distant sources, both spatially and sectorally, to derive an increasing proportion of its energy supplies from non-renewable sources, to depend upon a more narrow genetic base and to have an increasing impact on the environment. This is particularly reflected in its heavy reliance on chemical fertilisers and pesticides, its dependence upon subsidies and price support and its external costs such as threats to other species, environmental pollution, habitat destruction and risk to human health and welfare” (1993, pg. 3).

Although recent trends in global food chains have increased farm productivity and crop yield capacity, some worry these gains are short-term (Reganold et al., 1990; Wheeler, 2008). This is because the farming techniques associated with achieving these short-term gains may ignore long term sustainability and will likely continue to increase farm land degradation if current practices remain predominant in the future (Thrupp, 2000). Similarly, many argue that conventional farming techniques may no longer be a possible solution for continuing to meet high food demands as farmers’ choices for production are becoming increasingly restricted by evolving quotas and environmental regulations (Renting et al., 2003).

Some authors argue that these problems go beyond just environmental issues. For agriculture to be sustainable, a farm must be able to maintain not only a functioning biophysical environment to produce foodstuffs, but also an equitable social structure that is economically viable (Barbier, 1987; Repetto, 1987). The concept of sustainable farming, therefore, stresses the need for agricultural systems that meet environmental (hereafter referred to as ecological), economic and social needs (Yunlong & Smit, 1994;
Collectively, these three pillars create the larger system in which individuals, groups and governments engage in the various components of agriculture such as production, distribution and consumption (Barlowe, 1979; Yunlong & Smit, 1994).

In light of these issues, individual farms, particularly so-called family farms, often struggle to find balance and function in a progressively more globalized system while adhering to a variety of practices and principles associated with sustainability. By examining how globalization manifests in an agricultural setting and identifying the potential implications these forces may have on these three core aspects of sustainability, we can better understand the impact of new trajectories of change in agrarian lifestyles (Zimmerer, 2006).

At present, however, the literature on this topic tends to explore these issues at the level of the food systems or the farm sector. A different approach is to understand how this dynamic plays out in the lived experiences and daily practices of individual producers. The goal of this thesis is to explore the globalization-sustainability dynamic as it finds expression at the level of the farm. The empirical focus of the work is on vegetable farms in Ontario.

1.1 Research Approach & Broad Aims

Globalization has resulted in profound changes in farming and food production. Much of the research on these changes is conducted at the level of the whole farm and food systems, or even at broader regional levels. To date, far less attention is given to how these pressures and processes manifest on the ground in the daily lived experiences
of producers as entrepreneurs and members of communities. This project seeks to explore some of these farm-level impacts. In addition, both for the purposes of its area of interest and as a way of structuring the findings, I speculate that these changes have implications for sustainability, either negative or positive (but perhaps largely the former). My intent is to engage farmers on these questions of sustainability with a view to document their perceptions and experiences. Where possible, I will seek to draw inferences on both sustainability (with reference to selected indicators that will be explored in detail in chapter 2) and the way that certain farm changes may, at least speculatively, be traced back to globalization forces.

However, for the purpose of this research, the general phenomenon of globalization needs a tighter specification. Therefore, in this thesis, I choose to explore the on-farm experience of globalization based on two broad dimensions. First, I explored the way that globalization was experienced by farms oriented at fresh and processed vegetable markets. Second, I explored the way that globalization was experienced by farms that were proximate to or distant from urban markets (the decision to focus on these two dimensions will be explored and justified in chapter 4).

In addition, I decided to focus my research on vegetable production in Ontario. While this reduces the scope of this thesis, it is relevant as Ontario produces roughly 40% of Canada’s vegetables, making it an extremely significant and dominant provider for the country (Statistics Canada, 2006). Ontario contains roughly 52% of Canada’s Class 1 land (based on a land capability classification system that ranges from 1 to 7, with 1 having minimal limitations when associated with the most amenable climates in the Province and 7 having no capability for arable culture or pastures) (OMAFRA, 1965), but
only 6.8% of the province’s total land area is suitable for agriculture (Statistics Canada, 2006).

Finally, Southern Ontario’s climate and quality soils make it one of the most valuable agricultural production locations in all of Canada. Ontario is able to produce crops that are not viable elsewhere in the country based on its range of heat units and abundance of rainfall (Caldwell & Hitts, 2005, OMAFRA, 2012). Figure 1 represents Ontario’s climate zones based on growing degree days or ‘days to maturity’ (OMAFRA, 2012).

Figure 1: Climate zone map of Ontario (Source: The Weather Innovations Incorporated, OMAFRA, 2012).

Most of the provinces’ vegetable production is concentrated in Southern Ontario, as it has the longest growing season and greatest number of frost-free days. Local variations in topography, altitude and other conditions such as proximity to water bodies all influence growing conditions within the climate zones. Table 1 represents the first
field seeding or planting dates for commercial production for semi-frost tender and semi-frost hardy crops for various climate zones in Ontario (OMAFRA, 2012).

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<th>Zone A</th>
<th>Zone C</th>
<th>Zone E</th>
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<tr>
<td>Snap beans, sweet corn, tomatoes</td>
<td>May 1 - 15</td>
<td>May 15 - 25</td>
<td>May 25 - June 5</td>
</tr>
<tr>
<td>Beets, carrots, cauliflower, celery, late potatoes, early sweet corn</td>
<td>April 15 - 25</td>
<td>April 25 - May 10</td>
<td>May 5 - 15</td>
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Table 1: First field seeding or planting dates for commercial production for semi-frost tender and semi-frost hardy crops for climate zones A, B and C (Source: OMAFRA, 2012).

Vegetables in Canada, unlike eggs, dairy, poultry and turkey are not supported by protective government quota systems that guarantee farmers’ fixed market prices. These products are, therefore, more susceptible to the implications of market fluctuations, making vegetables potentially more vulnerable commodities to changes in international trade patterns (Green, 1983). Tomatoes are one of Ontario’s leading processed vegetables with approximately 80% of all harvests produced for processing. Although tomatoes are grown in most provinces of Canada, processed production is concentrated in southwestern Ontario (Statistics Canada, 2006), again reinforcing the relevance of the research location.

Fruits and vegetables in Canada are generally marketed through farmer-run marketing boards (farmers from each electoral district are elected by their peers to sit on the boards as representatives) that negotiate prices and other terms of exchange with processors in which contracts between the growers and processors dictate terms of agreement (OMAFRA, 2012). There is some variance amongst certain marketing systems for particular commodities within the fruit and vegetable sector in Ontario. For example,
tomato contracts are negotiated through the Ontario Vegetable Growers' Marketing Board (OVGMB) that arrange prices for tomatoes growers based on traits such as grade, quality, and other criteria as desired by the two parties. Other prices such as those of tomato transplants, delivery premiums and even non-price terms of exchange can also be negotiated through this marketing board (OPVG, 2012).

Marketing boards in Canada are a key factor in agricultural policy, but their operational practices and impacts on market forces, both direct and indirect vary by sector. Some argue that marketing boards in control of the Canadian food processing industry make it difficult for processors to be price competitive (VanDuren & Martin, 1992). Most studies pertaining to the affects of globalization on a particular sector have focused largely on a macro scale, producing generalizable trends. Only a few have paid closer attention to how globalization is manifesting in more specific locations at the micro scale with commodity specificity (Friedland, 2004).

1.2 Specific Aim and Objectives

The aim of this research is to document how the impacts of globalization are experienced at the individual farm level and to explore the potential implications that these experiences may have for on-farm sustainability. More specifically, this project will focus on vegetable producers in southern Ontario, and explore farmers’ perceptions of the lived-experience of globalization of farms that are categorized as falling along two key dimensions: (1) those that produce their products for fresh markets versus processed markets; and (2) those that are physically close to or remote from urban markets (a full rational of why these two dimensions were chosen is provided in chapter 4).
These aims will be met by the completion of 3 related objectives in order to examine how globalization can lead to unsustainable food systems.

Objective 1: to synthesize the extant literature on agricultural globalization and sustainability to analyze how market focus and location may affect the way that globalization has an impact on on-farm sustainability;

Objective 2: explore how farmers understand the ecological, economic and social dimensions of sustainability on different types of farms using an in-depth case study approach;

Objective 3: undertake qualitative interviews with a sample of farmers in order to gain a better understanding of how farmers operating on different types of farms perceive the affect of globalization on farm management.

Overall, I will use these data on farm experiences and reveal how trends uncovered in the field interviews reflect or refute themes in the literature on the hypothetical affects of globalization on farm sustainability.

1.3 Thesis Structure

This thesis proceeds as follows: chapter two will provide a literature review of both past and current academic work from the broader fields of geography, agricultural studies and sustainability as these topics relate to the potential effect of economic globalization on sustainable agriculture. This will provide a brief historical perspective of agricultural change and innovation and how globalization is affecting farmers’ management strategies and everyday operational practices. In addition, chapter 2 will discuss ecological, economic and social sustainability.

Chapter 3 will lay out the methodological approach used for this project as well as the context and study location. I will discuss the research framework and how I will be
assessing sustainability. Finally, I will briefly make note of the inherent limitations of the chosen research approach/methods and will justify the selection of such methods.

Chapter 4 describes and justifies the choice of focusing on the two key elements used to structure this enquiry: type of market (processed or fresh) and proximity to cities. This chapter explores the academic literature to establish the basic research design and fulfills this thesis’ first objective. Finally, this chapter concludes with general overview of the type of farmers explored in this research by providing demographic, economic and community background information.

The purpose of chapter 5 is to present the qualitative and quantitative data collected during the research that pertains to ecological sustainability. First, qualitative data extracted from interviews will provide insight into how farmers perceive globalization presents opportunities to become more ecologically sustainable for both specific farming operations but also for community as a whole. Next, this chapter provides further evidence of the implications of globalization on ecological aspects of sustainability. Finally, the chapter wraps up with a brief conclusion of the ecological findings as a whole.

Chapter 6 and 7 will unfold in a similar manner but will analyze the economic (chapter six) and social (chapter 7) data.

Chapter 8 will provide a discussion of the findings, present the contributions of this research to the broader field of geography and finally, the chapter will wrap up with some conclusive thoughts of the project as a whole.
CHAPTER 2

LITERATURE REVIEW: SCOPING AGRICULTURAL SUSTAINABILITY

This chapter proceeds by first exploring the literature pertaining to the possible effects of global trading patterns on ecological sustainability. Then, I will focus on the literature dealing with economic sustainability before turning my attention to the literature on globalization and social sustainability.

2.1 Ecological Sustainability

Throughout history, the way in which we have come to produce food has evolved into a modern, high yielding system characterized by the massive addition of artificial inputs to crop systems. The Green Revolution led to the advancement of crop production and high yield plant varieties that were, and continue to be, greatly dependent upon synthetic fertilizers and pesticides, raising many concerns over energy implications, especially for N fertilizer (Altieri, 1999) and is characterized by largely homogenous crop systems (Swift et al., 2004). This revolution changed how farmers produced food and resulted in a smaller number of farmers being able to meet the food needs for most of the world’s population. Nevertheless, this transition brought many undesired ecological consequences. We have created a farming system that is characteristically based on genetically uniform monocultures/very simple crop rotations (Altieri, 1999), pesticide dependency (Dumanski et al. 1986; Lal et al. 1988; Bohlool et al., 1992; Smit & Smithers, 1993; Altieri, 1999; Tilman et al., 2002), serious problems with nutrient runoff (Saull, 1990; Wilson, 2000; Tilman et al., 2002; Ingram et al., 2008), and an over reliance
on irrigation (Tilman et al., 2002). As a result, the natural environment has begun to experience negative consequences in response to poorly managed soils and excessive input use (Wilson, 2000; Tilman et al., 2002; Ingram et al., 2008). There is increasing evidence that suggests agricultural inputs are major contributors to groundwater and soil contamination (Brklacich et al., 1991; Wilson, 2000; Tilman et al., 2002; Brodt et al., 2011). Finally, this evidence shows that modern farming practices contribute to the decline in water quality (Brklacich et al., 1991; Wilson, 2000).

Environmental degradation is also evident through the increased occurrence of eutrophication from unmanaged input runoff on nearby streams and water bodies (Saull, 1990; Wilson, 2000; Tilman et al., 2002; Ingram et al., 2008). The improper management of synthetic inputs and chemical additives harms farming operations, surrounding areas and supporting ecosystems. The outcome of poor input management fosters systems that are increasingly regarded as unsustainable (Dumanski et al. 1986; Lal et al., 1988; Bohlool et al., 1992; Smit & Smithers, 1993; Altieri, 1999), and contribute to a reduction in overall biodiversity (Ericksen, 2008; Ingram et al., 2008).

In addition, crop systems have become reliant on purchased inputs, requiring increasing amounts of inputs in order to maintain high productivity as the ecosystem is degraded (Dumanski et al. 1986; Lal et al. 1988; Bohlool et al., 1992; Smit & Smithers, 1993; Altieri, 1999; Tilman et al., 2002). The excessive use of purchased chemical inputs tends to mask the negative consequences of unsustainable farming practices and gives the false illusion of fertile and productive soils (Smit & Smithers, 1993; Wilson, 2000). This downward cycle creates highly unsustainable and fragile agricultural systems that may
increase the chances of crops becoming more susceptible to pest outbreaks, diseases or even crop failure (Bohlool et al., 1992; Altieri, 1999; Wilson, 2000).

In addition to what a farmer is putting on their field, there are many choices surrounding how they are manipulating the soil. Soil health and organic matter play an important role in agricultural production however, some tillage practices threaten to deplete soil quality and the essential soil nutrients needed to produce foodstuffs (Six et al., 2000). The way in which a farmer manipulates the soil to plant and harvest their commodities has various affects and outcomes on the natural environment depending on the practice. Many of the issues around soil tillage, organic matter, and sustainable practices are highly debated. Some argue that conventional tillage leaves soil vulnerable to erosion, increases agricultural runoff, and increase the need for inputs (Huggins & Reganold, 2008). Many believe that these conventional practices may be necessary to feed the worlds increasing population, while others say it is possible to employ more conservation type tillage methods in addition to making more efficient use of natural resources that are needed to produce food (Hobbs, 2007).

Certain practices and plough depths/tillage frequency likely influence soil organic matter (SOM), with no-till and conservation type practices having the potential to increase SOM (Lal et al., 1999). In Canada, no till practices have gradually increased in popularity amongst farmers (rising from 29.7 % to 46.4% from 2001-2006), replacing the deeper, wider furrows associated with conventional tillage (Statistics Canada, 2006). The environmental benefits of no-till practice range from improvement in overall soil texture, maintaince of soil biodiversity, less soil compaction due to few trips over the field, improved soil moisture retention and penetration and also provides a buffer against soil
erosion (Statistics Canada, 2006). This type of production requires minimal soil disturbance created by shallow and narrow soil incisions during seeding (Uri, 2000), as opposed to the often deep and traditional tillage practices associated with conventional tillage. However, no-till does not necessary translate into environmentally sound farming, and the pros and cons between energy use, greenhouse gas emissions and organic matter are continually debated between tillage practices.

These trends associated with agricultural advancement, technology innovation, and the subsequent potential degrading environmentally degrading outcomes associated with these practices fly in the face of almost everything we know about how ecosystems work. In 1859, Charles Darwin posed the concept that ecological stability is a result of species richness, meaning that an area is more stable when occupied by a larger number of species (Figure 2). Biological diversity is essential in agricultural systems. Natural diversity is considered as the underlying foundation of all ecosystems, making it a vital component. Diversity can provide many valuable services (Harlan, 1975; Peterson et al., 1998; Wandel & Smit 2000; Tilman et al., 2002) mostly of biological nature. These services may include, for example, the recycling of nutrients, hydrological regulation and the detoxification of chemicals, all of which play vital roles that undermine productive food systems (Harlan, 1975; Wandel & Smit 2000). Agrobiodiversity (agricultural biodiversity) can be increased through certain management strategies and operational practices used by farmers (Swift & Anderson, 1993; Tilman et al., 2002). However, as noted in the paragraphs above, modern farming practices have resulted in the wholesale loss of biodiversity from our fields.
Figure 2: A representation of the Darwin/MacArthur model: increasing species richness increases the stability of ecological function (Source: Peterson et al., 1998).

The various components of biodiversity can be classified depending on their role and outcome in agricultural ecosystems. Figure 3 represents the various components of biodiversity as well as their functions and enhancements strategies. These strategies are ones that can be adopted by farmers to increase positive feedbacks within ecosystems. Biota components can be classified in a number of categories and have numerous outcomes and functionalities on farms. Productive biota can be chosen by farmers and integrated into farming systems to diversify agro-ecosystems. For example, productive biotas are components such as animals, crops and trees. Resource biotas are organisms that contribute to the overall productivity of a farm, which may be through methods such as pollination or decomposition. Lastly, there is a type of biota that farmers try to reduce through certain management practices, these are known as destructive biota. Destructive biotas are components such as weeds, pests and pathogens and are generally considered harmful or disruptive ecosystems (Swift & Anderson, 1993; Beare et al., 1997).
Biodiversity can be measured based on species diversity and richness. Species diversity refers to the relative incidence of different species in a given area while species richness is the number of species in a given community (Keylock, 2005). A common index to measure species diversity is the Shannon index, $\sum Pi \ln Pi$, where Pi is the proportion of the ith species in an ecosystem and $\ln Pi$ is the log of that proportion (Gering et al., 2003; Keylock, 2005). More generally, ecologists often argue that biodiversity can be categorized into three components; alpha diversity, beta diversity and gamma diversity. The first, alpha diversity refers to the richness of taxa within a particular location or community. This measure defines how fairly species are sharing and dividing the available ecological resources. Beta diversity is the taxonomic differentiation of flora and fauna between communities or specific sites and measures the amount/rate of turnover in species composition along specific environmental gradients. This reflects the wider degree of habitat specialization or selection. Lastly, gamma diversity refers to the differentiation amongst taxa between regions and is used to measure the degree of
endemicity in biota and represents a combination of alpha and beta diversity (Sepkoski, 1988; Gering & Crist, 2002; Tuonmisto, 2010).

Modern day agriculture, to a large extent, has exploited and ignored the complementarities and overall benefits that results from various combinations of cropland, agroforestry, polycultures and even livestock mixtures (Altieri, 1999). This is because conventional farms are more specialized (Bignal & McCracken, 1996; Altieri, 1999). This increase in the uniformity of crop species, and the subsequent mono-cropping of agricultural systems, can be viewed as a response to globalization, as many farmers have shifted towards higher-value crops or cash-crops and specialized operations. In addition, there is a high investment associated with specialized farming operations and as such, it may be difficult for a farmer to shift to other systems. This has largely been done in order to gain higher economic returns in a long-term period of declining commodity prices that has reversed only recently. Cash-crops are predominantly grown for export purposes as these products provide higher economic returns and are seen as more financially feasible options. These trends along with new hybrid plant species have replaced multiple varieties of crops with a decreased diversity of species (Thrupp, 2000). It is through such practices and management schemes that agricultural systems are becoming less diversified, resulting in a reduced amount of overall agrobiodiversity (Wandel & Smit 2000; Clough et al., 2007). The expansion and maintenance of agrobiodiversity can be achieved in many forms, for instance through crop diversification (Wandel & Smit, 2000) and the implementation of planned biodiversity measures such as intercropping, windbreaks and the inclusion of agroforestry (Altieri, 1999). There is increasing evidence that suggests landscape heterogeneity is a key component in
promoting biodiversity\textsuperscript{1} and resiliency within agricultural landscapes (Clough et al., 2007; Norton et al., 2009; Gabriel, 2010).

There are many negative ecological factors associated with specialized crop production. A movement towards more specialized agro-ecosystems is at least in part due to economic globalization that favours large economies of scale, lower cost per unit of production, high input, high volume farming. An agricultural systems’ coping range, or the range in which they are able to adequately adapt to extraneous pressures such as socio-economic, political and biophysical factors can be narrowed when biodiversity is reduced (Pierce, 1993; Jones, 2001; Dessai et al., 2004; Smit & Wandel, 2006). Agro-ecosystems deprived of these basic functions lack the ability to self regulate and maintain productive functionality (Pierce 1993; Altieri & Nicholls 1994; Altieri 1999; Thrupp 2000). Decreasing agrobiodiversity, as a result of modern day agricultural systems, can alter many natural crop functions and species interactions (Tscharntke et al., 2005). High-intensity land-use may disrupt natural pest control (Östman et al. 2001; Symondson et al. 2002), resistance to invasive plant species (Levine et al., 2004; Zavaleta & Hulvey, 2004), and crop pollination (Kremen et al., 2004; Klein et al. 2003a,b; Ricketts et al., 2004). For example, bees (and other animals) pollinate roughly 66\% of the world’s 1,500 crop species (Roubik, 1995). However many conventional farms use insecticides and herbicides that are moderately to highly toxic for bees (such as Ambush Insecticide) (Kremen et al., 2004). Insecticide and toxic substance poisoning (from field inputs) has

\textsuperscript{1} It should be noted, however, that the relationship between species diversity and ecosystem function (as representing a positive correlation) is criticised and debate amongst scholars, particularly in terms of experimental methodology (Huston, 1997; Wardle, 1999), conclusions (Grime 1998, Wardle et al. 2000) and also what actually qualifies as an ‘effect’ on diversity (Fridley, 2003).
contributed to the continual decline in bee populations since the 1950’s (Nabhan & Buchmann, 1997).

Farms that are more diversified and genetically rich in an abundance of crop varieties and species will likely be better able to withstand ecological disturbances than simple, genetically poor, monocultures (Peterson et al., 1998). It should be noted that resilience to stress or extraneous pressures is not uniform for all farm types and will depend on a multitude of varying factors such as climate, soil type, and the socioeconomic and political structure of the location in which the operation is embedded (Brklacich, 1991; Brklacich et al., 1991). By focusing on multiple crops and species of hybrids, as opposed to a single crop with reduced variety, agricultural systems are more resilient and consequently less vulnerable to negative impacts because of their expanded range of species and biodiversity (Peterson et al., 1998; Thrupp, 2000). Therefore, it can be assumed that agrobiodiversity, the relationship between the biological diversity of crops, domesticated livestock and the landscapes in which they take place, contributes to the resilience of a crop system and creates a more environmentally sustainable landscape (Thrupp, 2000; Zimmerer, 2007).

2.2 Economic Sustainability

The literature on the economic implications of globalization for farming is similarly complex and diverse. This is because the institutions and trade regulators associated with agricultural production and farming also plays an important role in the economic sustainability of farm systems. Again, it is likely that the impacts of globalization on economic sustainability will vary from country to country (Marsden et
al., 1996) and even between farm types. Based on the last Census of Agriculture (2006), 2.2% of Canada’s total population was considered ‘farm population’, based on the percent of individuals in the agriculture sector. This number seems relatively small given that the country’s agricultural industry has $248.3 billion in farm capital and $42.2 billion in total gross farm receipts (Statistics Canada, 2006).

The current costs of operating a farm associated with machinery, labour, fertilizers and other inputs along with the increasing cost of renting land are continually widening the gap between farmers’ costs and returns, especially for smaller, unincorporated farms. According to the farm input price index (FIPI), fertilizer and fuel prices have increased roughly 35%, with pesticide prices rising as much as 19% since 2000 (Statistics Canada, 2006). Ontario’s farm business operating expenses for the calendar year prior in terms of purchases of herbicides, insecticides, fungicides, etc, saw an increase from $257,206,528 in 2000 to $283,021,264 in 2005 (Statistics Canada, 2006). Farm business operating expenses in Ontario for the calendar year prior to the census for all fuel expenses (diesel, gasoline, oil, wood, natural gas, propane, etc.), between 2000 and 2005 also rose from $417,469,144 to $582,869,778 while the country as a whole witnessed a similar increase during these years from $1,908,825,580 to $2,511,676,444 (Statistics Canada, 2006).

Recent price volatility of fossil fuels (Rosset & Altieri, 1997; Woodhouse, 2010), and the increasing costs of mechanized farming methods that are often associated with large-scale farming operations have increased the economic pressure faced by producers (Weis, 2010). Canada’s total farm business operating expenses for the calendar year prior (not including depreciation or capital cost allowance) to 2005 totalled $36,436,363,959, a
value that saw an increase from prices in 2000 which equalled $33,213,077,917. Ontario’s total farm business operating expenses (in 2005) amounted to $8,843,882,426 (Statistics Canada, 2006). Economic pressures can also be felt on smaller, more labour-dependent farms (Weis, 2010), as the increasing cost of hired help and minimum wage continue to rise (Statistics Canada, 2006). Wages and salaries paid to family members in Ontario increased between 2000 and 2005 from $403,352,392 to $430,830,749 while wages and salaries paid to all other persons between the same time span also witnessed an increase from $714,825,300 to $838,981,395 (Statistics Canada, 2006). Labour costs vary between farm types and sizes and differ depending on whether farmers are using predominantly family labour compared to capitalist farms that generally rely on hired labour (Woodhouse, 2010).

With the increasing economic pressure faced by farmers in response to the ever-increasing cost of operating a farm, growers may face a more challenging future in trying to keep their farms economically viable and financially stable. Due to the rising cost associated with producing food (in terms of the rising cost of inputs and fuels), coupled with relatively volatile market prices (especially for fresh market oriented vegetables) and increasing market competition due to a surplus of imported cheap food (Weis, 2010), farmers may not be able to produce economically viable quantities of foodstuffs.

Figure 4 demonstrates the relationship between food and energy prices, as it would seem appropriate that as energy prices and the cost of food production increases, so too would food prices. A positive correlation is evident in terms of rising oil prices and the subsequent rise of food prices (as demonstrated by the FAO food price index) between 2007-2008 which, as illustrated by the graph followed three years of rising
energy prices (represented by Reuters-CRB energy index prices) (Woodhouse, 2010). In addition, agricultural prices (in the developing world) to date have seen a gradual decline since the high peaks in 2008 (Ghosh, 2010), illustrating different trends than shown throughout the developed world. Food prices can impact food security and consumer consumption patterns (Ruel et al., 2010). With the ever increasing availability of cheap, highly processed foods, food prices can have multiple socio-economic impacts for consumers.

Figure 4: The relationship between food and energy prices from 1990-2008 (Source: Woodhouse, 2010).

Agricultural markets and trade are regulated through various government support programs and subsidies that help stabilize prices and reduce market volatility (Bradshaw, 2004). The removal of such protective measures and subsidies in conjunction with other forms of agricultural deregulation can increase price variability (Smith, 1997). With the example of grain prices, figure 5 provides a heuristic representation of the magnitude and frequency of price variability pre and post the introduction of trade liberalization and
deregulation. The figure demonstrates an increase in price fluctuation as well as increasing the occurrence of such variability post trade liberalization, deregulation and the general decline in state support supplied to agricultural producers (Bradshaw, 2004). It has been suggested that subsidy removal and an unstable agricultural market may lead farmers to diversify their operations in order to try and keep their farms economically profitable (Potter & Goodwin, 1998; Barbieri & Mahoney, 2009).

![Figure 5: The dual implications of deregulation within and beyond the agricultural sector (Source: Bradshaw, 2004).](image)

One conclusion from this work is that economic diversification may help smooth out some of this volatility and hence is becoming popular with many farm operators. On-farm diversification can be achieved through many methods (Ollenburg & Buckley, 2007). Crops themselves can be diversified by expanding the variety of particular species or by incorporating new number species. Diversifying what a farm has to offer besides food commodities is another way to potentially increase the outlets from which economic revenue can be generated, however cost and risk may also rise in response (Ollenburg &
Such activities could include incorporating farm tourism and entertainment (Ilbery et al. 1988; Ollenburg & Buckley, 2007), offering educational seminars and workshops to the community or other farmers, or expanding marketing outlets in hopes of increasing sales. The latter could be achieved by incorporating a variety of outlets in which sales can take place such as U-pick, farm-stands, or CSAs. Certain diversification strategies such as farm tourism can also foster and nurture positive social foundations irrespective of economic income. By allowing farmers to share their heritage, knowledge and experiences shaped by rural lifestyles and their farming operations, positive social interactions and relationships can be formed (Canoves et al., 2004).

Figure 6 represents various development pathways and farm diversification strategies. Meert et al., (2005) describe economic sustainability as “…not primarily dependent on this choice. Instead, it is determined by the personal involvement of the farmer and the ownership structure of fixed assets, particularly land” (pg. 84). The authors argue that farms should be open to external financial sources (Meert et al., 2005), which can come in many forms as illustrated by the multiple pathways illustrated in this figure.
Redeveloping pathways of expansion and diversification for farming operations can be classified based on three main pathways developed by Bowler (1992). The first development pathway (I) includes maintaining the full-time agricultural enterprise that is still predominantly food-production focused. Pathway 2 (II) involves diversifying the farm to include non-agricultural activities (which in turn diversifies income). Finally, the third (III) pathway described by Bowler includes marginalizing the farm as a profitable enterprise. Ilbery (1992, 2001) expanded these various development pathways by including 3 main diversification pathways (options 2, 3 and 4, labelled agricultural diversification, structural diversification and income diversification). There is an evident progression from pathways 1 to 6 that require declining amounts of capital. Agricultural diversification (2) can be achieved by including new activities that are still within the agricultural production field, for example by introducing new crops or livestock on the
farm. Structural diversification (3) includes strategies such as including new forms of sales and marketing, this may include introducing new measures for instance on-farm processing or opening a farm gate sales operation. Finally, income diversification (3) includes off-farm employment and non-agricultural activities (Ilbery, 1992, 2001; Meert et al., 2005).

The increasing cost of food production due to high input and fuel costs has the potential to undermine the ability for farmers to invest in environmentally sustainable practices that may help protect soil, water and other supporting resources if these increased costs cause farmers to achieve less economic return. However, we must recognize that farmers are generally seeking to reduce their costs per unit input and sometimes economies of scale are effective in achieving this (Tavernier & Tolomeo, 2004). Farm diversification can be used as an alternative strategy to help farmers adapt to uncertainty in a rapidly changing climate (Barbieri & Mahoney, 2009) with growing evidence to support diversification as a means of increasing economic income (Ilbery, 1999; Bradshaw, 2004; Meert et al., 2005; Barbieri & Mahoney, 2009). Without adequate economic rewards and returns for agricultural producers, it is and will likely continue to be difficult for farms to remain in the food production industry. Therefore, a farm cannot be considered sustainable if it is not economically self-sustaining and profitable (Brklacich et al., 1991). In addition, a farmer must also take into consideration and weigh environmental degradation (via farming practices, synthetic inputs, etc) against economic benefits and income (Glendining et al., 2009). Farming operations, when analyzed through the broader spectrum of sustainability are highly interconnected and influential
on one another in terms of the ecological, social and economic implications of the decision making processes.

The increasing flow of commodities and information occurs when economies become progressively more globalized and as a result, influences market exchange and the broader structures of food systems. These flows, trading networks and subsequent policies associated with food commodities may provide both positive and negative outcomes. These outcomes will likely not only have an impact on the natural environment, but also on the economic foundation of such environments and structures that support the food sector. In addition, agricultural and trade policies should aim to ensure that globalization, environmental quality (Gallagher, 2009) and economic conditions are mutually beneficial and reinforcing. For example, trade liberalization and more open market trading of food commodities has the potential to bring economic benefits that could be used to protect the natural environment (Gallagher, 2009) and help create more sustainable farming production techniques and operating practices. Becoming economically sustainable may, therefore, be able to influence ecological sustainability and potentially the social sustainability of food systems given the proper resources and dissemination of knowledge and supportive strategies.

2.3 Social Sustainability

Agriculture and globalization can also be analyzed in a more sociological context and are often studied as pertaining to a certain ‘way of life’ that looks beyond the biophysical processes and economic performance and focuses on a social system or community lifestyle in which a farming operation is embedded (Smit & Brklacich, 1989).
In addition to this ‘way of life’ people often talk about the ‘quality’ of food, which can hold many different meanings to different people. To some, quality may mean healthy, while to others a sense of quality may mean that the product was ethically produced or grown in a sustainable manner. Some associate quality with certain social aspects that are linked more to the farmers themselves, with people associated quality with a certain agrarian lifestyle, trust, and reciprocal relationships between producers and consumers (Petrini, 2007). It is possible that globalization is reshaping agricultural landscapes and interactions both ecologically and economically (as discussed above) as well as fostering new social norms and foundations. Although food has many social functions and meanings, the social dimensions of agricultural sustainability have been relatively neglected in comparison to attention given to the ecological and economic sustainability of agriculture. It can be argued that social sustainability is the hardest to implement and consequently the easiest to ignore (Psarikidou & Szerszynski, 2012). Social sustainability can be broadly categorized using two dimensions, one of substantive and one of procedural nature. The social goals of sustainability and development are concepts such as social cohesion, health and overall equity. The means by which these certain goals can be met comes from applying concepts such as participation, empowerment and accountability (Agyeman & Evans, 2004; Boström, 2010). Social sustainability should not be thought of as a separate issue distinct from ecological and economic sustainability but rather in recognition that they are interconnected and highly influential of one another (Psarikidou & Szerszynski, 2012).

Globalization, industrialization and the increasing mobilization of commodity systems have weakened forms of social interaction and support amongst farmers and
community members, (Smithers & Johnson, 2004; Feagan, 2007) redefining the way that food moves from farm to table (Ericksen, 2008). The primacy of farming as the basis of the rural economy in today’s modern market is no longer assured (Smithers & Johnson, 2004). Social embeddedness and consumer loyalty are fundamental in developing and maintaining thriving rural cultures, and are essential ingredients for sustainable agriculture (Brklacich et al., 1991, Milestad et al., 2010). However, embeddedness and loyalty have begun to vanish as commodity chains have grown both geographically and in terms of complexity. Elsewhere, it has been suggested that sustaining agricultural systems in developed countries will require a restructuring of social and cultural values as well as through the development of rural communities that are based upon decentralized and open decision-making systems, equal opportunities, and community responsibility, support and cohesiveness (Smit & Brklacich, 1989; Brklacich et al., 1991).

Furthermore, global shifts in power and production within food systems including increasing farm consolidation has been linked to the deterioration of rural community livelihoods (Smithers & Johnson, 2004). This trend of putting more power in the hands of less people through consolidation is increasingly evident in food manufacturing, marketing (Brodt, 2011) and in farm input suppliers (Ericksen, 2008; Brodt, 2011). This consolidation reduces farmers’ power to negotiate prices for inputs and crops, potentially resulting in reduced profit margins (Brodt, 2011). The increasing influence of agri-business, government and financial institutions has reduced the dependence upon local communities as providers of agricultural services, products, and the means by which commodities are and exchanged (Wallace, 1992; Smithers & Johnson, 2004). Contemporary society and the ever-changing Western industrialized food markets are
continuing to change consumer and producer behaviors (Wierenga, et al., 1997; Ericksen, 2008), lifestyles and attitudes towards food. As the agrifood sector expands and becomes more internationally integrated, food options are also expanding and farmer competition in the market place increases (Wierenga, et al., 1997). Consumers now have more options in terms of commodities and market choices. Such developments and restructuring have created a decline in the marketing and purchasing of local products (Smithers & Johnson, 2004).

To preserve more sustainable agricultural systems in the developed world, it is argued we need to improve the prosperity of rural cultures and communities so that they become socially equitable and economically viable (Milbrath, 1984). Recent changes towards farm intensification and expansion have altered the relationship between farming and rural communities (Smithers & Johnson, 2004). Social sustainability in agriculture has been increasingly examined in terms of the demise or endurance of the family farm, providing an indicator in which to measure a generally intangible concept (Smit & Smithers, 1993). Much of the focus on this subject pertains to the increase of larger, specialized and capital-intense enterprises (Wierenga et al., 1997) that are increasingly linked with agribusiness and government through various agricultural policies and programs (Smithers & Johnson, 2004).

Although local and global food systems are often analyzed as in opposition to one another, as if they are distinct in nature, some common misperceptions often oversimplify the reality of the complexity of the two food systems. Highly globalized food systems are often typified by the neo-classical economics paradigm (Lyson & Green, 1999) in comparison to local food systems which generally rely on the theory of civil society
(Milestad et al., 2010). These systems generally described consumer diets as globalized (Lyson & Green, 1999) versus local and in season diets (Milestad et al., 2010).

Furthermore, global food systems are generally composed of larger-scale operations, potentially corporate in nature, that are characterized by lower diversity operations (Lyson & Green, 1999) as opposed to local food systems that are generally constructed of smaller, family owned and operated diversified operations that bring economic returns back to the individual growers and communities (Milestad et al., 2010) by reducing the nodes between producer and consumer (Feagan, 2007; Milestad et al., 2010). Table 2 compares many of the common features of ‘modern’ (highly globalized) and traditional (local and alternative) food systems.

<table>
<thead>
<tr>
<th>Food system feature</th>
<th>“Traditional” food systems</th>
<th>“Modern” food systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal employment in food sector</td>
<td>In food production</td>
<td>In food processing, packaging and retail</td>
</tr>
<tr>
<td>Supply chain</td>
<td>Short, local</td>
<td>Long with many food miles and nodes</td>
</tr>
<tr>
<td>Food production system</td>
<td>Diverse, varied productivity</td>
<td>Few crops dominate, intensive, high inputs</td>
</tr>
<tr>
<td>Typical farm</td>
<td>Family-based, small to moderate</td>
<td>Industrial, large</td>
</tr>
<tr>
<td>Typical food consumed</td>
<td>Basic staples</td>
<td>Processed food with a brand name; more animal products</td>
</tr>
<tr>
<td>Purchased food bought from</td>
<td>Small, local shop or market</td>
<td>Large supermarket chain</td>
</tr>
<tr>
<td>Nutritional concern</td>
<td>Under-nutrition</td>
<td>Chronic dietary diseases</td>
</tr>
<tr>
<td>Main source of national food shocks</td>
<td>Poor rains; production shocks</td>
<td>International price and trade problems</td>
</tr>
<tr>
<td>Main source of household food shocks</td>
<td>Poor rains; production shocks</td>
<td>Income shocks leading to food poverty</td>
</tr>
<tr>
<td>Major environmental concerns</td>
<td>Soil degradation, land clearing</td>
<td>Nutrient loading, chemical runoff, water demand, greenhouse gas emissions</td>
</tr>
<tr>
<td>Institutional scale</td>
<td>Local to national</td>
<td>National to global</td>
</tr>
</tbody>
</table>

Table 2: Comparing some features of ‘traditional’ and ‘modern’ food systems (Source: adapted from Maxwell & Slater, 2003).

It is often a sense of quality and interaction between producer and consumer that separates these two systems (Lyson & Green, 1999, Ilbery & Kneafsey, 2000; Ilbery & Maye, 2005). This is not to say that one can fully equate quality with local production as is commonly believed (Winter, 2003). It is the general notion that local food systems are often associated with greater levels of social embeddedness, trust and support in conjunction with a deeper and more direct relationship between producer and consumer (Ilbery & Kneafsey, 2000; Goodman, 2003; Ilbery & Maye, 2005; Kirwan, 2006).
Many believe that market relocalization of food systems has the ability to restore positive links between producers and consumers, bringing with it many ecological, economic and social benefits. This type of system allows farmers to be more involved in local markets and interact at a more direct level with local community members (Smithers et al., 2008; Milestad et al., 2010). Furthermore, respatialization, resocialization and reconnection describe similar alternative agrifood paradigms that have the potential to counteract unsustainable outcomes associated with mainstream, modern day food systems (Renting et al., 2003; Sonnino & Marsden, 2006) by focusing on a return to more socially equitable concepts. By associating the farm with an image of ‘quality’, shorter or alternative networks can, for example, ‘relocalize’ food by linking it back more directly to the farm itself, as well as capturing the identity of the natural rural landscapes and available rural resources from which the food was derived (Renting et al., 2003). In opposition to bulk commodity distribution that is generally associated with conventional food systems, alternative and shorter chain food networks arguably redistribute value through their food chains by means of trust, communication and reciprocity. These ‘new’ food networks can also lead to greater levels of market governance (Whatmore et al., 2003).

Alternative food networks such as CSAs, the ‘Slow Food’ movement, Fair Trade networks or ‘U-pick’ set ups all offer varying degrees of social interaction, equity, moral responsibility, and varying levels of trust and quality. For example, ‘Slow Food’ aims to reconnect and provide consumers with quality, seasonal food that is locally and regionally produced (Murdoch & Miele, 2004). Fair Trade food networks seek to provide producers with equitable and fair wages for their products (Sonnino et al., 2003) while
consumers receive quality products and a piece of mind knowing that producers and workers are receiving fair value for their commodities. In addition, niche and specialty markets can also generate economic growth and profit return for rural communities if producers can find unique commodities and markets that fill the needs of consumer demands (Renting et al., 2003). These forms of alternative food networks, of which only a small selection have been described, strive to detach themselves from the conventional notion of a global disconnect between producer and consumer. Furthermore, they try to return to ‘quality’ in order to revitalize rural economies, a term that has received much attention amongst scholars when debating relocalization (Weatherell et al., 2003; Hinrichs, 2003; Holloway & Kneafsey, 2000). Globalized food networks have also altered the broader concept and definitions of food security that has come to incorporate local food production and distribution capacity in its description. Anderson and Cook (2000) explain;

“A key component of these newer definitions of food security is attention to building local capacity to produce and distribute food and control food supplies... and to keep decision making power within the community rather than losing it through dependence on external sources of food... localized food production can meet many of the diverse community needs more effectively than globalized food systems because it can give priority to community and environmental integrity before corporate profit making... while reinforcing social identity and cohesion” (pg. 237; bold words added by Feagan, 2007).

By looking beyond the global systems scale to the smaller, local community level, food systems begin to focus on more decentralized, long-term and environmentally aware
practices that ensure collective as opposed to individual needs (Anderson & Cook, 1999).

Stewardship of both natural and human resources is important in agricultural systems. Social sustainability, in the form of human resources, includes things such as socially equitable and responsible working conditions for farm labourers, recognizing and supporting rural community needs and ensuring food production is safe and healthy for consumers. Systems, both natural and human in nature, survive over extended periods of time because they are resilient, adaptive, and have a high level of diversity (Brodt et al., 2011).
2.4 Summary and Conclusion to Chapter 2

When the literature on ecological, social and economic impacts of globalization are considered together, one major theme stands out. Namely, that some scholars conceptualize two key stages in agricultural development within developed economies. These stages are known as “productivist” and “post-productivist” agriculture and these two terms describe radically different farming practices and management styles (Burton & Wilson, 2006; Bjørkhaug & Richards, 2008).

First, let us consider productivist agriculture, which came to dominate between the early 1950s to the mid-1980s, and refers to a style of farming that focuses on achieving high commodity output. For example, if a farmer embraces a more productivist approach then that farm would also be part of the more competitive and internationally competitive markets (such as farmers in the processing industry). It is also likely that such a farmer would be more specialized, highly concentrated, have a high crop output (Ilbery & Bowler, 1998). As a result, field inputs will likely be synthetic and applied in high quantities in order to control pests and fetch the highest yields. Soil management on productivist farms typically only revolve around simple strategies such as regular crop rotations as opposed to incorporating measures that promote biodiversity and are usually linked to more diversified operations such as intercropping and strip cropping. Inputs and field management strategies will ultimately play a role in and contribute to overall biodiversity (Swift & Anderson, 1993; Tilman et al., 2002), as more diversified, less pesticide dependent farms, they tend to foster greater biodiversity and resiliency (Dessai et al., 2003; Smit & Wandel, 2006). As previously noted, specialized, biodiversity poor agro-ecosystems is at least in part due to economic globalization that favours larger
economies of scale, low costs per unit production, high amounts of inputs and high volume farming.

Second, let us consider the post-productivist stage. This style of farming became more common in the 1980s and was a reaction to the problems of productivist farming. This followed what Ilber and Bowler (1998) describe as “progressive reversal of these trends that dominated the preceding productivist era”. Post-productivist farms focus on reduced farm output and viewing agriculture within the broader context of the rural economy and countryside. This style of farming has been characterized by extensification, sustainable initiatives that foster and preserve wildlife and biodiversity, conservation practices, and farming regimes that are multifunctional (Burton & Wilson, 2006).

This chapter has provided a brief overview of the broad scope of agricultural sustainability, specifically the ecological, economic and social impacts of globalization on such. When these themes are viewed together they can be categorized by productivist and post-productivist stages. These definitions help characterize common trends and management strategies that I will continue to refer back to throughout this thesis.
CHAPTER 3
METHODOLOGY

3.1 Methodological Approach

This study aims to analyze farmers’ management strategies, operational practices and the perception of opportunities and constraints related to agricultural systems under real-world conditions. Some of these choices extend even to quality of life considerations. Evidence and individual experiences of globalization are reflected in market participation and spatial location for this research. My methodological approach entails undertaking an intensive, idiographic analysis of farms operating in 3 different farming types, with 4 interviews being conducted in each farm category (resulting in a sample size of 12). The distinct need for case studies arises out of the desire to understand complex social phenomena as driven by environmental and economic factors in the case of this research. Although quantitative statistical data can provide important and useful evidence of agricultural change, it represents only the surface manifestations of the agrifood industry restructuring (Khagram et al., 2010). By adopting a more in-depth approach, I will be able to analyze how contextual conditions influence decision making. By corroborating interview and survey data with information from other sources, such as the Agricultural Census, this study will be undertaken using a mixed methodological approach.

In-depth research required the selection of 12 case studies that were chosen based on specific characteristics that reflect broader farm classifications (these classifications will be explained in detail in chapter four). In addition, this relatively small sample size
addressed the need for more detailed ethnographic studies that could compare farms that shared specific farm characteristics.

3.2 Context and Study Location

The potential for varying outcomes within and between locations in response to the many characteristics and paths of globalization make the examination of specific locales a necessary component. Such an approach should bring light to common interconnections along the gradient of scales that can range from extremely local to the fully global. A locale-specific approach, as previously noted, is vital to the spatial framing for undertaking a case-study methodological approach. This sense of scale becomes important when analyzing the processes of globalization within an agricultural context and often “reflect local framing and practices contained within societies and scientific networks...with important differences and insights at the local level” (Forsyth, 2003, pg. 171).

As previously noted in Chapter 1, the vegetable industry in Ontario will be the focus of this research. Not only is Ontario a prominent provider of vegetables for the entire country; taking a commodity specific approach in this area will provide a detailed analysis of farm sustainability in one of the most important provinces for vegetable production.

3.3 Data Collection Methods

The research project was based on a specific profile of the type of farmer needing to be interviewed. This purposive approach selected participants that exemplified local
knowledge pertaining to the specific types of farms in certain locations. Interviewees were also selected based on a known willingness to engage in conversation in order to illustrate trends. Therefore, sampling was not random as the project was based on finding exemplars that fit specific farm categories and qualities. Finally, this approach was adopted due to pragmatic reasons: there is no public access database providing contact information for processing farmers in the study area hence this purportive approach was taken in order to find the first interviewee from which others were recommended using a snowball sampling method. This process began with an internet search of farmers producing tomatoes for the processing industry in the Chatham-Kent area (this region was chosen due its importance as Ontario’s largest producer of field tomatoes (Statistics Canada, 2006)). This search lead to an online community newspaper titled ‘The Chatham-Kent Daily News’ that provided an article on a tomato grower in the area who had recently added a new irrigation and tile drainage system to his farming operation. From here, a yellow pages search was used in order to find the contact information of the farmer mentioned in the news article. A telephone number was found and the farmer was contacted and explained the research procedure, as per ethical guidelines. This participant’s willingness to engage in the research project started the interview process. This farmer became an important key holder to a list of other tomato producing farmers in the region, which is where the snowball sampling procedure began.

The interviews comprise the majority of the data for this research, while the decadal national census and other supplementary data provide further insights into the affects of globalization on the ground. As this research involves human participants, all methods comply with conditions described in the ethical conduct for research involving
humans and received ethics clearance by the University of Guelph research ethics board. The interviews ranged from approximately 1 to 3 hours and were semi-structured as illustrated in the questionnaire guideline presented in Appendix A. All interviews were conducted at the interviewees’ farms at their convenience.

A case study method was an appropriate choice of approach for this type of research. These types of detailed studies are useful for providing documentation regarding specific relationships in distinct areas as well as for assessing the potential impacts of globalization on a wide range of ecological, social and economic indicators. In-depth interviews provided information on each of the specific farm type study-sites and shed light on constraints and opportunities experienced on a daily basis. This technique provides valuable information and insight into the affects of globalization on sustainability on the ground level (Geertz, 1973; Fraser, 2006).

In addition, case study designs allow for comparative data analysis between each of the distinct farm types as characterized by the research aim and framework. Farms were matched on similar background characteristics as a means to control extraneous factors that may influence the relationship between farming type and the outcomes of sustainability or community well-being. Guided by the conceptual framework, the results and analysis are divided into 3 distinct sections: (1) ecological findings; (2) economic findings and; (3) social findings.

### 3.4 Assessing Sustainability

Ecological sustainability is interpreted relative to key indicators of on-farm management and operational practices. In the case of this research, it is assumed (based
on academic literature, see chapter 2) that farmers with greater diversification are considered more resilient. I will explore the relationships between farms with different exposure to globalization, as they will likely have different levels of diversity. This is important because the literature tells us that diverse farms are better for numerous ecological and resiliency related reasons as.

Another ecological dimension used to determine sustainability was farmers’ choices of field inputs. What types of inputs are being used on each farm (for example synthetic versus natural) and how these inputs are managed were topics discussed with farmers in this category. Although farm inputs may influence overall biodiversity (as previously discussed in chapter 2), these issues are not always related. Those farms that use less (or no) synthetic inputs will be deemed as more sustainable based on the known negative repercussions of improperly managed synthetic inputs and the degrading environmental consequences due to the over application of such inputs.

Another relationship that will be explored is whether farms that produce vegetables for different markets (fresh or processed) use different inputs and quantities based on the pressures and demands of the markets they are a part of. For example, tomato growers producing for the processing industry are a part of fixed quota contracts and are constantly striving to fetch and maintain high yields. They are therefore more likely to use more (in terms of types and quantity) inputs than fresh market oriented farmers who do not have to supply their various markets with specific yields and quotas. As previously discussed, the use and improper management of synthetic inputs can produce many negative ecological consequences (for example, eutrophication and ground water contamination). Energy use efficiency, greenhouse gas emissions, soil organic matter and
water quality are other important indicators of farm sustainability, however due to the scope of this research they will not be assessed.

The economic sustainability of farms can be analyzed numerous ways using financial indicators such as farm profitability, net income and even less tangible indicators such as personal opinions pertaining to perceived levels of financial success. For this research, farmers were asked to identify their average total of gross farm receipts from the previous year as well as to share their opinions on how financially successful and profitable they believe their farms are (as it should be noted that high receipts may still result in net negative income depending on operating expenses, therefore high receipts does not always result in profitability). For the topic of economic sustainability as influenced by globalization, I will explore the relationship between farm location and economic sustainability. In particular, farms with more access to consumers and markets (as well as access to other resources such as human labour, off-farm jobs etc.) will likely be more economically sustainable based on factors such as being able to diversify commodities based on consumer demands (which are likely between the rural/urban) and being able to diversify income based on off-farm job opportunities.

As previously noted in section 2.3, social sustainability is a relatively intangible concept in comparison to ecological and economic factors. The social sustainability of farming operations and the communities in which they are embedded will be determined based on various analyses of producer/consumer linkages and reciprocal community support. These data were collected during the interview process from farmers who were asked in open-end type questions whether their community provides them with the necessary tools and inputs needed for their farm (such as places to buy inputs, farming
equipment etc.). In addition, farmers talked about their personal community involvement (for example in sports and recreation, clubs, comities etc.) in order to analyze how they feel they contribute to their community and if their community supports them in return. These indicators will be analyzed in order to establish a level of social sustainability.

Farms with more mutual support, close producer and consumer relations and linkages and access to the necessary inputs and tools from within their community will be considered more socially sustainable. Within this topic of social sustainability, I will explore the relationship between farms with different exposure to globalization, as they will likely have different levels of reciprocal support and producer/consumer relationships. These relationships are important because the literature tells us that communities with more rural services and community support may be more likely to foster vibrant and functioning agricultural systems as opposed to communities without these services. These conditions, in turn, help create more socially sustainable farms and farming communities.

In addition, creating strong relationships and foundations between producers and consumers contributes a different level of trust, reciprocity and an overall sense of quality that may not be associated will all farming operations (as categorized by the farm types previously created).

Table 3 summarizes the proposed relationships for ecological, economic and social sustainability.

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<th>Ecological Sustainability</th>
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<td>• farms with different exposure to globalization will have varying levels of diversity</td>
<td>• farms with more access to consumers and markets will be more economically sustainable (as well as other markets such as</td>
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vegetables for different markets (fresh or processed) will use different inputs and quantities (based on market demands and pressures) | human labour) based on factors such as being able to diversify incomes based on off-farm job opportunities | relationships

Table 3: summary of the proposed relationships for ecological, economic and social sustainability.

3.5 Limitations to the Research Approach

As with all research approaches limitations are inevitable and best practices for data collection are debatable. The inherent limitation of case-studies is that detailed conclusions are produced about the impacts of industrialized farms in specific site communities at the expense of producing less detailed findings but over a greater number of research sites. Case-studies also vary as to how well the analyst is able to partition out extraneous factors that influence the causal relationships of importance. However, a case-study approach is useful for providing specific documentation about particular relationships over time as well as for evaluating potential impacts on a wide range of socioeconomic and ecological indicators (Lobao, 2000). In addition, the intangible concept and various definitions of globalization are debatable. It is likely that people will interpret the concept and outcomes in inconsistent and individualistic ways. Various definitions of sustainability are also debatable and inconsistent, and therefore create a similar type of limitation for social research, resulting in potential inconsistencies when defining terms and conditions.

Furthermore, it can be challenging to merge, compare, and form relationships and outcomes of scientific, quantitative data (such as statistical data and figures collected from Statistics Canada) with qualitative, social science data that is generally descriptive.
in nature (Tywan et al., 2011). When predicting the sustainability of farms in the near future, researchers must keep in mind the vary extent of ecological and socio-economic uncertainty (Ravera et al., 2011). Changes in ecological, social and economic foundations within a given location and inequities amongst them has the potential to increase vulnerability (Ohlsson 2000), which may influence the way that globalization, in its many manifestations, provides opportunities or constraints for farmers.
CHAPTER 4

RESEARCH DESIGN

As noted above, the first objective of this research was to establish a pragmatic classification tool, in effect an analytic framework that would allow me to explore some of the differential effects of globalization on Ontario vegetable farms. The goal was to create a framework that would equip me to relate the data I collected from farmers to the themes in the literature on the effect of globalization on sustainability. I began this process by picking up on the conclusion that the effects of globalization will vary depending on the farm context (Fraser, 2006). This conclusion, and the literature reviewed in chapter 2, drew me to two key variables that stand out as likely being important in determining the effect of globalization within the context of vegetable production in Ontario. These are: (1) the extent to which the farmer produced for processed or fresh markets; and (2) the extent to which farmers have access to urban markets. This chapter proceeds by exploring and justifying the choice of these two dimensions. Then, I conclude by showing how these dimensions fit together to create the research framework used in this thesis.

4.1 Market Orientation: Processed versus Fresh Markets

One of the ways in that the literature suggests globalization is influencing farm structures is through changes in the processing industry (Pritchard & Burch, 2003; Fraser, 2006). The processing industry is significant because processors provide a very important market for farmers, and hence determine what types of crops farmers are selecting to
grow. Furthermore, globalization has caused significant changes in the processing industry. Processing factories have proven much more mobile than farms in seeking areas where they can either source cheap year round production in volume or to be close to very large urban centres (Kneen, 1993; Tisdell, 2003). Studies have suggested that increased international trade has led to a relative decline in the vegetable processing industry in Canada, changing the way in which local farmers’ have access to large-scale markets (Fraser, 2006). Therefore, it is likely that the effect of increased international trade at the farm level in Ontario will vary between farms that are oriented to produce crops for fresh markets versus farming operations that grow crops for processing.

Hence, for the purpose of this study, farms were selected based on whether they produced crops for the processing industry or for fresh markets. As Ontario’s most important processed crop is tomatoes, tomato farms were chosen to represent the processed vegetable sector. This was because it was deemed likely that tomato farmers would have perspectives on how changes in their industry translate into changes in farm management and their insights would allow me to link these factors through to a broader discussion on sustainability.

Processing tomatoes is a commodity that will likely be able to reveal insights into the global restructuring of the agrifood system, as the worlds’ processing tomato industries are becoming increasingly influenced by international production flows (Pritchard & Burch, 2003). The tomato has considerable presence on all inhabited continents and has been an internationalized commodity for over four hundred years, making its longstanding relationship with trade one of past and critical relevance in the world of food chains. The processing tomato has had a low incidence of international
trade to date (Pritchard & Burch, 2003), unlike other commodities such as sugar and wheat which have been characterized by immense and historically rich global trade flows (Morgan, 1980; Mintz, 1985). Commodity specificity will offer valuable insight into an ever expanding and complex food system by focusing on a crop that can trace its trade routes back for centuries, providing supportive evidence that can reveal how these trade flows have shifted and evolved.

In terms of the fresh crop, these commodities ranged based on farmer preference, with fresh market farmers generally growing common vegetables such as carrots, lettuce, peppers, broccoli, cucumbers etc. Farms oriented towards producing their commodities for fresh markets (categorized as “fresh farms” for the framework) will likely experience globalization differently than those that produce for processing due to the contrary nature of the sectors themselves. There are 11 tomato processing plants located in Ontario. This means that contract tomato farmers have a much smaller marketing opportunity compared to farmers producing their vegetables for fresh markets. The opportunities for fresh market oriented farmers come in many forms such as farmers’ markets, farm stands, CSA, U-pick, off farm retail (such as wholesalers, distributors, cooperatives), restaurants etc. The prospects offer many more outlets or the option of partaking in multiple markets when producing for fresh markets versus processed markets. Therefore, lettuce and tomato farmers are my sample, as I believe that they are likely to be exemplars of these issues.

4.2 Proximity to Markets: Rural versus Urban

A second dimension that stands out in the literature as being very important in terms of mediating the effects of globalization on farm level sustainability is farmers’
access to consumers and market opportunities. In particular, the literature suggests that access to urban markets is especially important because with increasing free trade and the expansion of global markets, consumers now have access to an abundance of market outlets and commodities from around the world that has created highly globalized and extended food chains (Higgins & Jussaume, 1998; Würtenberger et al., 2006). But there is a tension: because urban affluent consumers are also those most likely to chose local and fresh products hence farmers with good proximity to urban markets may have a different experience of globalization than farmers who do not enjoy such access (Hinrichs, 2000).

More specifically, the increasing trade of commodities and abundance of imports and food choices has shifted the way people consume and purchase food (Wierenga et al., 1997). Spatial indicators, such as farm location, demonstrate that proximity to urban areas may contribute to the overall success of a farming operation in certain commodity groups. This poses the question of whether proximity to urban centres favours certain farm types over others. This trend may have to do with the perishability of products such as vegetables, meaning that producers who are providing to fresh markets may choose to be as close to a large population of consumers as possible. Similarly, large and more intensive operations that require large parcels of land and a greater amount of farming equipment may be better suited to lesser populated areas. These areas are more rural and have larger parcels of land and less traffic in which to move equipment and large shipments (Statistics Canada, 2006). Both rural and urban areas offer a mix of opportunities and constraints and will likely as a result experience globalization differently. These concepts illustrate the obvious overlap between farm type (in terms of
producing for processing or fresh markets) and access to markets, as certain areas may favour certain types of farms.

To be able to explore the way that farmers experienced globalization in urban proximate and more rural settings, I considered Ontario’s Greater Golden Horseshoe (hereby referred to as the GGH) that is Canada’s largest urban area (Figure 7). The GGH is the second fastest growing area in all of North America as well as the most densely populated (Caldwell et al., 2003; Caldwell & Hitts, 2005; Ministry of Public Infrastructure, 2006). With a population of roughly 8.1 million people, approximately one-quarter of all Canadians and two thirds of all Ontario’s residents reside in the GGH. It is expected that an additional 3.7 million people will live in this area by the year 2031, increasing the total population to nearly 11.5 million (Ministry of Public Infrastructure, 2006). The GGH extends over more than 100 municipalities, of which 16 have a population greater than 100,000 (Statistics Canada, 2006). For the purpose of sampling, I considered farmers working in close proximity to consumers and having greater access to an abundance of market opportunities will be chosen from locations within Ontario’s Greater Golden Horseshoe (labelled “urban farms” due to the urban-proximate location). Farmers with less immediate access to consumers (labelled “rural farms”) will be chosen based on locations from outside of Ontario’s greater Golden Horseshoe.
4.3 Research Framework based on Farm Classification Scheme

Overall, I draw from the literature the notion that the effect of globalization on vegetable farming, and on farm sustainability more generally, will be different if the farmer; (1) produces for processing markets or for fresh markets and; (2) has access to urban markets or is based in a more rural setting. To select farms for my interviews, I then decided to select farming regions in Ontario that represented both urban/rural and processed/fresh dimensions. Given these features overlap to a certain degree, when I applied these criteria to Ontario, this approach gave me three different “types” of farms. Rural/processing farms (that I refer to as my first farm type or type one farm) focus on tomato production and are located in SW Ontario. Second are farms that are close to
cities and produce fresh crops (e.g. horticultural producers close to Toronto). Third are the fresh crop producers that are in more rural environments. (The fourth possible type of farm would have been a farm that produced crops for the tomato processing industry and was close to the city. But as I could not find any farms that were representative of this combination of traits I was not able to explore this type of farm. Please see appendix B for more details). I have heuristically displayed these different kinds of farms in figure 8 and describe the three I will be using in greater detail below.

Figure 8: Sampling Framework based on rural/urban and fresh/processed dimensions. Farm classifications (X axis label: type of market farmer produces for (Fresh/Processed); Y axis: extent to which farmer has access to consumers (Rural/Urban).

**Farm type 1: Rural/Processing**

Given I am interested in exploring how proximity to markets and whether the farm produces fresh or processed crops influences the effect of globalization, I needed to find farms that were both rural and processing oriented. This resulted in the first type of farm I explored: tomato farms producing their commodities for the processing industry. These farms are located in areas that generally have less access to consumers and are based on locations chosen from outside of Ontario’s Greater Golden Horseshoe (denoting them their ‘rural’ status) (figure 9).
All of the interviews for farmers in this category were conducted in the Census Division (CD) of Chatham-Kent. This area has the highest concentration of field tomatoes grown for processing in all of Ontario. Chatham-Kent has a population of 108,589 and approximately 553,766 acres of farm land, 10,909 of which are dedicated to tomatoes. Tomatoes are the 4th most common crop in Chatham (in terms of acreage) just below soybeans, corn and winter wheat. Vegetable farming is the second most common type of farming in Chatham-Kent behind oilseed and grain farming (Statistics Canada, 2006).

Figure 9: Approximate study site locations (represented in red) of farms in farm type 1 (rural/processing) (Source: adapted from Statistics Canada, 2006).

Farm type 2: Urban/Fresh

The second type of farm that was of interest to this research consists of farms located in urban proximate areas that are producing vegetables for fresh markets. Farmers working in close proximity to consumers were chosen from locations within Ontario’s GGH (denoting their ‘urban’ status). Within Ontario’s GGH there is roughly 1 million acres of
farmland that is under production. Although the vast majority of cropland is dedicated to
tender fruit and grape production, field vegetables contribute to the over 200 agricultural commodities that are grown within the GGHs’ boundary (GTAAAC, 2012). The interviews took place within 4 different Census Divisions (CDs) (Figure 10) including; York, Peel, Niagara and Halton. Between the 4 CDs, there is a total of 158,249 hectares of land devoted to crop production. Niagara has both the largest number of farm operators and most land devoted to crops (in terms of acreage) in comparison to the other site locations for farm type 2 and the CDs in which they are located (Statistics Canada, 2006).

![Figure 10: Approximate study site locations (represented in blue) of farms in farm type 2 (urban/fresh) (Source: adapted from OMAFRA, 2006).](image)

**Farm type 3: Rural/Fresh**

The third type of farm that was useful for this research are those who are located in more rural areas yet still produce fresh horticultural products. These are farms that are
operating in rural areas (outside of the GGH) and that are producing vegetables for fresh markets.

Similar to the second type of farm (urban/fresh), all of the interviews were conducted in different Census Divisions including; Oxford, Middlesex, Haldimand Norfolk (in the Census Consolidated Subdivision-CCS- of Norfolk, as Haldimand is located inside of Ontario’s Greater Golden Horseshoe), and lastly, Lambton (Figure 11). These rural areas are often what come to mind when thinking about food production and farming in Ontario.

Figure 11: Approximate study site locations (represented in green) of farms in farm type 3 (rural/fresh) (Source: adapted from Statistics Canada, 2006).
CHAPTER 5
FINDINGS: ECOLOGICAL INDICATORS OF SUSTAINABILITY

The purpose of this chapter is to present how farmers perceive the effects of globalization on farm ecology based on whether they are producing for fresh (lettuce) or processed (tomato) markets and whether they are based in rural or urban-proximate areas. First, farmers’ perceptions of globalization will be explored in order to reveal their thoughts and opinions as to the constraints and potential opportunities presented by increased trade flows on ecological sustainability. Subsequently, ecological evidence collected from each farm is presented in order to delve further into the topic of globalization by analyzing how the various farm types are responding and are affected differently. In addition, throughout the text, I will relate the data I collected from individual farms back to the broader issue of the effect of globalization on farm-sustainability, thus developing the possible links between the three types of farm, the farmer perceptions, and the themes in the broader literature on globalization.

5.1 Perceptions of the Impact of Globalization on Ecological Sustainability

To explore the possible ways that globalization may be affecting ecological sustainability, farmers were asked a series of open ended questions. Each farmer was then asked the reasoning behind their opinions and if they thought whether the trends they perceive were specific to their own situation or likely to be common amongst all farms across the province or even Canada. In answering these questions, farmers identified
numerous foreseeable trends. In particular, 2 broad themes emerged; (1) opinions regarding farm specialization and the subsequent affect of specialization on biodiversity and (2) the organic/GMO debate and further perceptions revolving around pesticides and input use.

With regards to farm specialization, all the farmers surveyed noted that there had been an expansion of specialized farming operations that had lower crop diversity. Respondents discussed their reasoning behind this trend. For instance, one farmer, an urban-proximate farmer producing for fresh markets noted a growing trend of family farms becoming affiliated with larger corporations:

“I think farms are gonna be more dedicated or specialized farming because, well because some big corporation comes in and supports these big farms and we begin to lose the little or less protected farms."

Half of the fresh market focused farmers (rural-situated) shared this belief with the above statement. For instance, one respondent explained;

“With the large farms you’re gonna see a lot more specialized farms, you know here I grow a variety but I bet you’ll just see big farms that grow one or two things, I mean I know they have that now but there’ll probably be more."

Similarly, another farmer (who also operates a fresh market farm in rural Ontario) expanded on the above concept of farm specialization and linked his logic to the broader notions of economic globalization. He added;

“I think that all these specialized farms will be the same. You won’t get your guys going back to growing 3 different things if they have special equipment for what they do now. It’s too expensive to have a little bit of everything anymore.”
In addition, he noted that once a farm becomes specialized, it is highly unlikely that it would revert back or convert to a more diversified operation. As previously discussed, specialized operations focus on a reduced number or singular type of commodity, thus reducing the overall biodiversity and general resiliency of the farm. Only fresh market focused farmers (which fall into the categories of the 2\textsuperscript{nd} and third type of farms) mentioned the unlikelihood of farms ‘de-specializing’, which will likely continue to change the way that farms re-structure and operate in the future. Reasons for this unlikely transition back to more diversified farms from specialized ones was noted by farmers for a few reasons. First, specialized farms use different planting and harvesting machinery than farms that produce multiple commodities. For example, tomato pickers are harvesting machines that are specific to farms specializing in tomatoes. Farmers stated that it would be improbable for a farmer to buy new equipment necessary to diversify their farms if they already have “sunk costs” or equity wrapped up in machinery that is specific to their farm (also known as asset fixity). In addition, some farmers noted that there would be a learning curve associated with diversifying, growing new crops, and learning the specific planting, harvesting and input requirements for each.

A second area farmers discussed was whether a farmer chose to produce organic or genetically modified crops. But here, there was a significant amount of diversity in the opinions expressed during the interviews. For example, a rural/processing farmer suggested that globalization, in his opinion, would probably increase the use of genetically modified organisms (GMOs). He saw GMOs as being more economically competitive, which is becoming increasingly necessary for farmers to stay in business thanks to new pressures and uncertainty in the global market place. In addition, he also
mentioned that this increase in GMO use could ultimately be good for the environment in part due to advancements that have resulted in fewer pesticides and herbicides being needed to produce GMOs and hybrids. He explained;

“I can see people going to more GMO’s, both for herbicide reduction and pesticide reduction because if we can get, in order to get our yields per acre we need to figure out how to do it will less pesticides and herbicides. Um so we need to look at more GMOs to make that work.”

Many of the farmers interviewed had opinions about the rise of organic produce, noting that one way farmers can respond to various pressures of globalization is through embracing organic practices as a way of differentiating their products from imported goods. However, the effect organic agriculture has on the biophysical environment is debated. For instance, one farmer blamed organic practices for a series of environmental problems. “It’s not long term sustainable agriculture.”

This farmer also spoke in great lengths, and was the only farmer to do so, of organic agriculture for the purpose of sustainability as being simply a trend to meet a consumer fad and an unlikely solution to the environmental degradation problems associated with conventional agriculture. He noted that people should recognize that organic farming does not solve all issues of sustainability and that operating an organic farm can have its own negative implications for the natural environment. This discussion began by the farmer reiterating a previous conversation between him and members of the ministry of natural resources. During an interview, he was asked his opinion on why there has been an increase in soil erosion from both wind and water in the general Chatham-Kent area. A blunt and confident answer stated that organic agriculture was the primary
reason. “It was like I said something against the Pope, their mouths dropped open and they were like what?”

To validate this controversial statement, this tomato producer used the example of farm inputs to describe one of the ways in which being an organic farm does not necessarily translate into more sustainable practices.

“Organic farming doesn’t rely on herbicides so you have to rely on tillage to do all our weed control to get everything turned under. Every time you till it you reduce your organic matter, you expose your soil to erosion and in the long term it’s going to hurt the ground.”

Although organic operations avoid the modern-day conventional farming practice of using chemical additives, organic farms can create their own environment problems such as through the reliance on tillage over pest control inputs, herbicides and fungicides. Organic farms; “use a lot more fossil fuel than if you’re no tilling and it’s not long term sustainable for the environment.” He added that history could be repeating itself in the next 50 years if the global demand for organic food rises, then pesticide could be replaced by more tillage as a method of weed suppressant and disease control. The outcome of such a transition could have negative implications for farming systems (e.g. resulting in increased soil erosion and compaction), which the same farmer (a rurally located tomato grower producing for processing) illustrated by comparing the situation to a popular historical event, the ‘dust bowl’ situation as witnessed in the American west during the 1930’s.

“And that’s exactly what happened [in the 1930’s] because at that time it was before the herbicides were replaced so everyone was organic farming and
there were a lot of ploughing, a lot of tillage, cultivation to grow the crops and then what happened then, they had a drought, it was more than one year, it was a couple years of droughts and the crops didn’t grow and there was nothing left on the soil and once it started blowing it’s gone. So that’s a real danger, so we need to, as much as people say oh organic is the way to go we need to balance it.

Hence, the discussion on organic farming raises an important dimension about a potential effect of globalization on agriculture: if the rising demand for organic food continues, then there may be a rise in mechanical weed control and associated problems of soil erosion however, these issues around conventional versus no-till or conservation practices (generally associated with organic agricultural) and the implications these have for farm sustainability are highly debated (as discussed in section 2.1) (Allen & Kovach, 2000; Milestad & Darnhofer, 2003).

Figure 12 summarizes concerns over organic practices as noted by the interviewees. Responses are organized by farm type and represent why some farmers choose to continue operating their farm using conventional methods as well as various responses opposing organic agricultural methods.
Figure 12: Concerns over organic practices as noted by farmers.

When these positions are considered in light of how globalization has had a possible impact on farming, it seems likely that globalization may be having two effects: (1) it may lead to an increase in competition thus creating pressure to reduce costs in order for a farmer to compete in the market place; (2) increasing competition may create pressure for farmers to add more value and target niche markets (for example, sustainable/organic markets). Comments made by farmers identifying with the 1st type of farm (rural/processing) and the 3rd type of farm (rural/fresh) both raised the issue of organic agriculture as having production costs that are too high, ultimately implying that those types of operations are not economically viable in their opinions. This suggests that they have adopted the higher volume/lower value strategies associated with the productivist style of agriculture described in chapter 2. However, the data presented above suggests urban-proximate farmers that are fresh market focused (the 2nd type of farm) are more split on the issue, with more farmers being favourably inclined towards organic agricultural practices. Therefore, it seems plausible to speculate that farmers from
the 1st (rural/processing) and 3rd (rural/fresh) type of farms are more likely to adopt management practices more commonly associated with productivist agriculture, in that they seem to have adopted high-volume/lower cost per unit approaches to their farming operations. Finally, my findings suggests that the second type of farmers (urban-proximate/fresh) seem more inclined to implement lower volume/higher cost per unit approaches (those identifying with a more post-productivist approach). Therefore, it may be that having access to markets is a crucial factor in mediating how globalization affects on-farm ecological sustainability.

5.2 Evidence of Ecological Differences amongst Each Farm Type

Based on the way farmers perceived that globalization effects ecology, I then proceeded to explore how farm management differs on these three farm types. In particular, farmers from all farm types were asked to describe their farm management practices. Data collected in this section falls into three broad categories, the first two of which are the same presented in the previous section: crop diversity and input use. The topic of crop yields did not emerge in the interviews when farmers were sharing their perceptions of ecological sustainability but, as we shall see, is still tightly linked with the idea of globalization. This section proceeds by describing how farm management is different on each of the three farm types according to the following categories: (1) yields obtained; (2) inputs used and; (3) crop diversity. Then, following this, I will reflect on how economic globalization may have influenced these differences.
5.2.1 The Importance of Yields: Maximizations versus Optimization

Of all the farmers, it was the tomato processors who seemed more concerned with the yields they obtain. For instance, one respondent put it this way: “There’s always a demand for higher yields too the bar is high, you can’t afford to miss anything or have anything happen, you do what you need to get high yields.”

Farmers from this type of operation also documented how yields had increased on their type of farm over the past generation (OPVG, 2012) through a combination of technological innovation, the introduction of integrated pest management systems and newly developed GMOs. For instance, one of the tomato growers I interviewed still produces tomatoes on the same plots of land that his father and grandfather farmed before him.

“Yields have increased. Back in the day, granddad got about 15-18 tons which was considered good, it’s between 40-50 tons per acre now a days. [There are] better varieties now, better management and weed control with new insecticides and fungicides, herbicides etc., ethylene the ripening agent has helped meet demands at certain times.”

The preoccupation with yields stood out amongst tomato farmers but was not shared by the other farmers. A fresh market vegetable grower expanded on this point and said that he operates his farm based on crop suitability as opposed to basing his success on high yields.

“[I have] no idea if my yields have increased really, [I’m] not concerned about yields. We have sufficient land so it’s not an issue. We don’t wholesale so we’re not concerned with yields we just want things to perform well.”
An urban-proximate fresh market farmer spoke of his struggles with increasing his yields in his relative diverse farm. “It’s hard to control one element, [there are] very specific needs for each vegetable that would make the yields increase.” It seems, therefore, that crop diversity may make it difficult for farmers to focus their energies on boosting yields because not all vegetables require the same management strategies and inputs to increase yields, meaning that the techniques used to increase lettuce yields may not necessarily be the same for carrots and corn.

Similar to the 2nd type of farm (urban/fresh), fresh market farmers located in rural Ontario, did not cite aiming for higher yields as a main goal or central component of their farming operation. Instead, knowledge of crop management was a bigger focus, as well as acknowledging that nature plays an integral role in how crops perform. One fresh market grower from rural Ontario stated that, “nature has more to do with it than anything.” There are certain aspects of a farm that can be controlled and manipulated however the weather is not one of them.

The pressure placed on tomato growers is likely a manifestation of global competition where all four farmers interviewed viewed the economic importance of reaching maximum yields, and generally disregard (or at least did not specify) the ecological implications associated with the measures taken to achieve high yields. As a result, these farmers tend to use higher costs to achieve this. This management strategy/decision making is consistent with the high-volume/lower cost per unit strategy to adapt to globalization and is also consistent with the literature that voices concerns that globalization will put a down-ward pressure on environmental standards (Kimbrell, 2002). By contrast, the fact that the other farmers here were not as preoccupied with
yield, and seemed more sensitive to other agro-ecological factors (such as crop rotation) provides further evidence that the effects of globalization are not uniform and are mediated by factors like access to markets and type of product.

5.2.2 Input use on the Different Types of Farms

This leads to the second issue that all farmers discussed which was the quantity and types of inputs that were used on the different farms. In particular, farmers from all 3 farm classifications discussed inputs used for pest control and here farmers were clear that pest control comes in many forms. Some vegetable growers rely on chemical inputs and artificial additives to control pests, weeds and outbreaks while others take a more natural approach with organic inputs and tillage practices. During the interviews, farmers were asked a variety of questions about the types of inputs they used on their fields, and whether they had increased the types or quantities since the time they began farming.

Opinions on whether the quantities of inputs used had increased were split. Some farmers stated they now use fewer inputs than their parents and grandparents. In addition, farmers spoke of management strategies, new forms of integrated pest management systems and soil testing as methods that have allowed vegetable growers to apply inputs more sparingly than in the past. These statements implied that vegetable growers today have better (in terms of more technologically advanced) monitoring systems and operational methods than in the past. On the contrary, some farmers admit to continually increasing their inputs as a form of pest control. A tomato grower producing for processing illustrated the pressures of contract farming and the reasoning behind excessive input use that is typically associated with this industry.
“The tomato processing plant program and quotas work off productivity incentives which causes growers to constantly fetch higher yields. This leads to more intensive farming so we increase the quantities of inputs to try and get more yield per acre.”

Tomato farmers (producing for processing) used quantities of inputs that vastly exceeded the amounts used by fresh market farmers (both urban-proximate and rural-situated). This finding potentially reveals that the market that each vegetable grower is embedded in may play a role in the types and quantities of inputs used. Market influences may add more pressure for farmers who produce for processing and are on fixed contracts where they must supply a certain quantity of produce based on pre-determined contracts. It can be speculated that perhaps farmers that produce for the processing industry are more likely to use greater quantities of inputs to reach and maintain their high yields and meet their contract quantities. Urban-proximate farmers producing vegetables for fresh markets tell a different story in terms of inputs than what we see occurring on the processing oriented farms. As a result, it seems possible that there may be a relationship between market orientation and input quantities used. Urban-proximate fresh market farmers raised other issues of importance such as species varieties and choosing crops that are suitable for their specific location and climate over focusing on yield baring properties. These vegetable growers are embedded in markets without fixed contracts and therefore do not have to produce certain quantities of commodities. This allows farmers to choose crops based on overall performance (for example, crops that farmers feel are suitable to specific climates and locations, crops that grow well beside other species through inter-cropping or strip cropping, crops that farmers have had success producing
in the past, or growing commodities that may not have the highest yields but produce
excellent quality vegetables) as opposed to worrying about achieving the highest yields.
Here we see that there is considerable overlap between yields and inputs used, however
the distinction between the two is how farmers perceive the importance of yields, versus
how they achieve such (inputs).

In addition to inputs used to achieve high yields, pest control inputs and methods
used by each farmer varies. Tomato growers (rural/processing) relied predominantly on
chemical synthetic inputs as a pest control method. Farmers stated the reasoning behind
this was generally due to the pressures associated with new diseases and the subsequent
pressures from contractors. The number of different synthetic inputs used ranged between
farms from 12 different varieties all the way up to 40 different types (Table 4). This table
reveals that of the 12 vegetable growers, those producing for the processing industry used
the greatest amount of inputs to control pests in comparison to the remaining fresh market
farmers. As previously noted, this finding suggests that the market type itself (fresh or
processed) may play a role in influencing the types and quantities of inputs used
(depending on the associated pressures to fetch high yields).

<table>
<thead>
<tr>
<th>Farm</th>
<th># of pest control inputs</th>
<th>synthetic or natural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural/Processing</td>
<td>40</td>
<td>synthetic</td>
</tr>
<tr>
<td>Rural/Processing</td>
<td>12</td>
<td>synthetic</td>
</tr>
<tr>
<td>Rural/Processing</td>
<td>25</td>
<td>synthetic</td>
</tr>
<tr>
<td>Rural/Processing</td>
<td>30</td>
<td>synthetic</td>
</tr>
<tr>
<td>Urban/Fresh</td>
<td>1</td>
<td>synthetic</td>
</tr>
<tr>
<td>Urban/Fresh</td>
<td>1</td>
<td>natural</td>
</tr>
<tr>
<td>Urban/Fresh</td>
<td>1</td>
<td>natural</td>
</tr>
<tr>
<td>Urban/Fresh</td>
<td>15</td>
<td>both</td>
</tr>
<tr>
<td>Rural/Fresh</td>
<td>9</td>
<td>both</td>
</tr>
<tr>
<td>Rural/Fresh</td>
<td>4</td>
<td>both</td>
</tr>
<tr>
<td>Rural/Fresh</td>
<td>0</td>
<td>/</td>
</tr>
<tr>
<td>Rural/Fresh</td>
<td>3</td>
<td>synthetic</td>
</tr>
</tbody>
</table>

Table 4: Number of pest control inputs and types (sorted by type of farm).
Pest management strategies, in the form of inputs for urban/fresh farmers tell a different story than for rural/processing farmers. The fertilizers, pesticides, herbicides and fungicides used by respondents were a mix of natural, synthetic and organic inputs. Quantities were substantially lower compared to the quantity of inputs used by farmers that produced tomatoes for the processing industry. Of the 4 fresh market vegetable growers that are urban-proximate, 3 relied on only a single type of input to control pests and in addition, adopted other methods (such as tillage practices and natural predators) instead. Similar to responses pertaining to increasing yields, different commodities require different inputs in order to control pest outbreaks, with some requiring more attention, nutrients or monitoring than others.

Not all farmers use fewer types of pest control inputs than growers producing for processing. One urban-proximate, fresh market oriented farmer stated that he uses roughly 15 different types of inputs, a mixture of both natural and synthetic types. Each farm provides a unique case of varying pressures that are problematic to their specific crops with soil type and texture and location specific weather conditions also playing a role and based on the small sample size, it is not possible to generate definitive results on this (or any indicators). However, these results reveal patterns that may be linkable back to the differential effects of market focus and location. An urban proximate fresh market farmer shared his reasoning behind having to increase certain herbicides and fungicides on his fields.

“Weeds and bugs are really problematic. The greenhouses nearby cause problems, they never experience the winter freeze. They get diseases or blights
and all of that comes out of the fans and it's in the air right during the growing season and then we have to spray. We haven’t increased the amount of fertilizers but other inputs yes; weeds get use to certain herbicides and fungicides.”

Farmers classified as fitting into the category of the 3rd type of farm (rural/fresh) used the smallest number of inputs for their crops. One farmer from identifying with this type of farm was the only interviewee to mention using a natural type of predator to fend off pests on her tomato plants. Respondents used a mix of natural and synthetic inputs, with the maximum number of different inputs being 9 types, representing a drastic difference from rural/processing farms and relatively similar results as farmers from urban/fresh farmers in terms of types and quantities of inputs used in their crop production. There were no rural-situated fresh market respondents that stated they were applying more inputs to their fields than in the past since they began farming. All had managed to either reduce or maintain the same amount. A vegetable grower identifying with the characteristics from the 3rd farm type (rural/fresh) expressed her opinion on the changing nature of input addition for modern day farming.

“[The amount of inputs we use] changes year to year, products change, programs change. In the 50’s and 60’s they were using very dangerous means of control, where as today, a lot of what we use on the fields is probably...well...a lot safer than botox.”

Arguably, rural-situated fresh market farmers are further outside of the competitive market place and are economically marginalized in comparison to urban-proximate farmers and those producing for the processing industry. It is possible that rural-situated fresh market farmers have, therefore, adopted stricter environmental
standards in an effort to really distinguish their products and maybe go to the greatest lengths to distinguish their products (by providing quality, healthy products that they can proudly sell to their regular customers). Therefore, it is possible that a key trend emerges from these data: presumably, the worse the market conditions are, the more pressure is placed on farmers who have adopted a low-volume/higher cost per unit strategy to become more sustainable as a way of generating some sort of market for themselves. By contrast, farmers who have adopted a high volume/lower cost per unit “productivist” strategy are more likely to simply use all available methods to reduce risks and costs per unit product. As a result, these farmers may give less thought to the impact these strategies may have on the environment if ultimately they are maintaining or increasing their economic viability.

5.2.3 Crop Diversity

When analyzing ecological indicators of sustainability, documenting the amount of species diversity (including the number of different crops and different varieties of species within each crop type) can offer interesting insights into biodiversity levels along the rural-urban continuum and amongst market types. Although this indicator may seem problematic in the case of farms classified as producing for processing (signifying their specialization due to their commodity specificity), there is an opportunity to check for the presence of other crops as part of an integrated farm system (resulting in greater crop diversity). In addition, it is possible to determine whether there is at least a modicum attempt to add crop diversity on these types of farms. The number of different crops and species varieties ranged substantially from farm to farm, with some noticeable trends
becoming apparent between farm types. Table 5 represents the number of different crops and number of species on each farm, as organized by farm type. Farmers were asked how many different types of crop types they had (for example: lettuce, tomatoes, broccoli, carrots = 4 types of crops), from here, farmers were asked how many different varieties of species of each type of crop they had (for example: 4 varieties of lettuce, 8 varieties of tomatoes, 3 varieties of broccoli, 6 varieties of carrots = 21 species for 4 crop varieties).
<table>
<thead>
<tr>
<th>Farm</th>
<th># of Crops</th>
<th># of Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural/Processing</td>
<td>2*</td>
<td>15</td>
</tr>
<tr>
<td>Rural/Processing</td>
<td>1*</td>
<td>8</td>
</tr>
<tr>
<td>Rural/Processing</td>
<td>1*</td>
<td>10</td>
</tr>
<tr>
<td>Rural/Processing</td>
<td>1*</td>
<td>5</td>
</tr>
<tr>
<td>Urban/Fresh</td>
<td>13</td>
<td>89</td>
</tr>
<tr>
<td>Urban/Fresh</td>
<td>32</td>
<td>195</td>
</tr>
<tr>
<td>Urban/Fresh</td>
<td>38</td>
<td>190</td>
</tr>
<tr>
<td>Urban/Fresh</td>
<td>26</td>
<td>180</td>
</tr>
<tr>
<td>Rural/Fresh</td>
<td>6</td>
<td>38</td>
</tr>
<tr>
<td>Rural/Fresh</td>
<td>10</td>
<td>89</td>
</tr>
<tr>
<td>Rural/Fresh</td>
<td>20</td>
<td>42</td>
</tr>
<tr>
<td>Rural/Fresh</td>
<td>6</td>
<td>22</td>
</tr>
</tbody>
</table>

Table 5: Number of crops and species varieties on each farm (*including cash crops)*.

It is evident that rural/processing growers had the least amount of diversity, both in terms of the number of species and variety within each type. Since these growers are producing tomatoes for processing, it is, therefore, potentially the market itself in which these farmers are geared toward that essentially dictates the overall level of species diversity on these types of operations. For example, these farmers operate on fixed contracts where they supply a pre-determined volume of tomatoes to the processor on set dates (for example, daily or weekly). In addition, these farmers are told what varieties of tomatoes they must grow, and given a restricted number of options to choose from. From here, farmers choose the tomatoes that they think will grow the best based on their soil type and location specific climate. Therefore, it may be that this type of industry within

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2 Each of the farmers interviewed that are producing for processing also grew cash crops in addition to tomatoes. Cash crops sometimes include (depending on the year) corn, wheat, barley and soybeans. While incorporating cash crops into a farming operation, a farmer is ultimately adding to the agro-ecosystem. However, this addition of (generally only a few) crops is in no way a comparable level of crop diversity as farmers who have dozens of crops and crop varieties.
the vegetable sector dictates a predictable level of farm biodiversity. Tomato farmers producing for processing operate specialized farms and generally only focus on one, or two types of different crops (commonly tomatoes and cash crops). These farmers could in fact diversify their operations and incorporate multiple crops but generally choose not to because of their business model.

Fresh market farmers located in urban-proximate areas represent the growers with the greatest level of species diversity. It is perhaps the situational dimension of location that has influenced this pattern, as these farms are operating in (or in close proximity to) urban areas (inside of Ontario’s Greater Golden Horseshoe). It can be argued that the diversity of customers (that likely have a larger degree of ethnic and cultural backgrounds) allows producers to grow and offer a wider selection of commodities. Therefore, it may be possible that farmers in urban areas are better able to increase their biodiversity based on consumer demands.

For farmers feeding into the highly competitive global market place of tomato processing, the fight to lower costs per unit product means that many of those farmers tend to embrace scale, inputs and volume. This is likely a different concept for farmers that are located in regions without processors but instead have access to markets that are embracing a lower volume/higher value per unit production approach to a farmer that is more diversified. These farmers are generally seeking to add value on their farms by adopting such measures as capturing local niche markets. In addition, the high value/low volume approach is more clearly linked to fresh market focused farms (these points will be elaborated on at length in the following section). In comparison, farmers producing for processing exude the common characteristics of following a productivist approach,
characterized by specialized farming, high farm output, high concentration, low
diversification (Ilbery & Bowler, 1998) and a focus on quantity over quality (Evans et al.,
2002).

5.3 Discussion

The summary table below (Table 6) represents the overarching thoughts and key
points as collected and organized by type of farm as classified under the category of
ecological data.

<table>
<thead>
<tr>
<th></th>
<th><strong>rural/processing</strong></th>
<th><strong>urban/fresh</strong></th>
<th><strong>rural/fresh</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Does the farm use organic or</td>
<td>all farms interviewed</td>
<td>1/4 of the farms</td>
<td>1/2 of the farms</td>
</tr>
<tr>
<td>conventional practices</td>
<td>are conventional</td>
<td>are organic</td>
<td>are organic</td>
</tr>
<tr>
<td></td>
<td>operations</td>
<td>operations</td>
<td>operations</td>
</tr>
<tr>
<td>Perceptions of organic</td>
<td>organic agriculture</td>
<td>“organic is being</td>
<td>“[not everyone]</td>
</tr>
<tr>
<td>management</td>
<td>“risky, expensive and</td>
<td>taken over by the</td>
<td>wants to pay more</td>
</tr>
<tr>
<td></td>
<td>too much work”</td>
<td>big guys too”</td>
<td>[for organic food]”</td>
</tr>
<tr>
<td></td>
<td>more tillage=more soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceptions of yields</td>
<td>focus is on increasing</td>
<td>focus is on selecting</td>
<td>focus is on selecting</td>
</tr>
<tr>
<td></td>
<td>crop yields</td>
<td>good performing</td>
<td>good performing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>crops (over high</td>
<td>crops (over high</td>
</tr>
<tr>
<td></td>
<td></td>
<td>yield bearing)</td>
<td>yield bearing)</td>
</tr>
<tr>
<td>Input use</td>
<td>synthetic inputs</td>
<td>mix of synthetic and natural inputs</td>
<td>mix of synthetic and natural inputs</td>
</tr>
<tr>
<td>Crop diversity</td>
<td>lowest crop diversity</td>
<td>greatest crop</td>
<td>middle amount of</td>
</tr>
<tr>
<td></td>
<td>(based on # of different crops and varieties of each)</td>
<td>diversity (based on # of different crops and varieties of each)</td>
<td>crop diversity (ranked above farm type 1)</td>
</tr>
<tr>
<td>Conservation tillage</td>
<td>no use of strip cropping or intercropping</td>
<td>greatest use of strip cropping</td>
<td>greatest use of intercropping</td>
</tr>
</tbody>
</table>

Table 6: Summary table of the overarching thoughts and key points as collected and organized by type of farm as classified under the category of ecological data.

Results presented here represent the variability between input use, crop diversity,
and other conservation practices, the key areas that will likely affect ecological
dimensions of farm sustainability in some way or another by means of the many manifestations of globalization. Building on the thoughts presented in chapter 2 (scoping agricultural sustainability), the productivist and post-productivist terminology\(^3\) will be used to describe common strategies as adopted by the various farmers (and to subsequently provide linkages between the 3 types of farms presented and these strategies).

Farmers classified as identifying with the rural/processing farm category have generally adopted more productivist strategies. For urban-situated farmers with a fresh market focus, the response seems to have been to focus on a wider range of crops, therefore expanding crop diversity. The 3\(^{rd}\) type of farm, rural located and fresh market focused seemingly follows a similar approach as the urban/fresh farms. Many of these farmers have adopted strategies that encourage more crop diversification than what we find from rural/processed growers. From these definitions of productivist versus post-productivist phases, I speculate that based on the common farming strategies adopted by fresh market oriented growers, they are generally consistent with a post-productivist approach.

It is likely that globalization has influenced how global markets can transform farms that are more embedded in global markets (such as rural/processing farms), versus post-productivist categorized operations (such as urban/fresh and rural/fresh farms). The varying degree of common characteristics such as specialization versus diversification, high output versus lower output, concentration versus dispersion etc. (Ilbery & Bowler,

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\(^3\) Common characteristics of productivist agriculture: high commodity output, specialized operations, highly concentrated.
Common characteristics of post-productivist agriculture: reduced farm output, more diversified operations, shift towards more sustainable practices (Ilbery & Bowler, 1998).
may influence what types (and in what quantities) farmers are applying inputs to their fields.

How farmers perceived the importance (and in some cases necessity) to achieve and maintain high yields varied between farms that identify with productivist or post-productivist characteristics. Furthermore, depending on a farms’ goals (for example to be specialized and have high commodity output—such rural/processing farms), the way a farmer chooses to manage their operation in terms of input use and pest control methods may be influenced by farm type, market orientation, and the degree that the farm is a part of global markets. Economic globalization tends to foster and provide incentives for certain farm types over others (generally those that are specialized, large-scale, and have a high commodity output).

Overall, therefore, these findings lead me to highlight a few key patterns that may reflect on the broader situation of globalization; it is likely that globalization is influencing the quality of the environment on farms producing for processing in a number of ways. First, for farmers who rely on producing crops for processing, it seems plausible that the competitive nature of this market puts pressures on environmental standards and favours a style of farming that result in higher input use and less crop diversity. For example, some of the tomato farmers I interviewed noted, “the risk is too high” to rely on organic inputs or to not use synthetic fertilizers and pesticides. This perception was supported by their management practices: these growers used the most amounts of synthetic inputs, and relied heavily on chemical additives in order to reach maximum yields (to meet contract quotas). Furthermore, no natural or organic inputs were used by the tomato growers, only chemical additives. Moreover, based on the overall on-farm
crop diversity of each of the types of farms, fresh market oriented farmers interviewed had the greatest overall crop diversity. Within the fresh market focus, farmers located in urban-proximate areas displayed the highest level of the two.

These findings lead me to make a second broad speculation on the impact of globalization on environmental sustainability for farmers who produce fresh crops. Namely, I believe that as a result of being a part of a less global market (in comparison to the processing industry), these farm types are typically not as pressured to aim for higher yields (or at least do not make this a priority). As a result, ecological sustainability may potentially be more easily achieved by being able to diversify production (in comparison to a productivist type of operation that encourages specialization), and focus less on high commodity output (Ilbery & Bowler, 1998). This may be particularly true for farms operating some distance from urban markets as creating a “sustainable” product is one way that they can differentiate their products and charge a premium. Farmers closer to urban centres may simply be able to market based on freshness and locality and not feel the same pressure to market themselves as sustainable.

It should be noted that I am not assuming that the differences observed are necessarily and absolutely caused as a result of globalization, as is the case for each of the subsequent sections. However, based on the process I have observed, this has led me to speculate that globalization has (at least in some part) had these influences, and has likely contributed to the above patterns.
CHAPTER 6

FINDINGS: ECONOMIC INDICATORS OF SUSTAINABILITY

The purpose of this chapter is to provide findings based on how farmers perceive globalization as having a possible impact on economic sustainability. First, farmers’ perceptions of globalization’s effects on economic sustainability will be explored. Next, evidence is presented from the three types of farms that show how economic sustainability differs between them based on the perception of the farmers. Lastly, and throughout the text, this chapter will situate the main findings within the broader context of the literature.

6.1 Perceptions of the Impacts of Globalization on the Economic Aspects of Sustainability

During the open ended question period, farmers offered an array of both potential on farm and community level impacts of globalization. In particular, 2 broad themes emerged in terms of the ways that globalization may have affected on-farm economic sustainability: (1) changing input prices and (2) the changing nature of the processing industry.

The first key issue seemed to be of paramount importance to all the farmers who were interviewed and farmers from all three groups argued that increasing fuel prices will also make it harder for smaller operations to compete and maintain financially viable operations. This sentiment was supported by two rural-situated tomato growers producing for processing. One such farmer illustrated this point;
“As fuel prices go up I can see more and more people going away from conventional tilling and getting into more conservation tillage. Fossil fuels are getting really pricey and will continue to get pricey so I can see us doing more um, looking at ways to conserve energy on the farm, to conserve fuel.”

He proceeded to discuss the ways in which fuel could be conserved but stressed that such practices are not a sure fix since they too may have negative environmental repercussions. Farmers taking fewer trips over their fields due to high fuel prices were used as an example. “We’ll be relying on more chemical weed control than conventional weed control we’ll do a lot less tillage.” (Although this practice may offer a more economically feasible option for farmers, there may be both positive and negative ecological consequences: as noted in the last chapter, reduced tillage may help soil erosion whereas increased chemical use may harm the environment).

A fresh market oriented farmer in urban Ontario also offered a potentially positive outcome of high fuel prices that may, in fact, result in consumers re-thinking their food choices, contributing to a larger trend of re-localization.

“I think that with fuel prices being so high and rising that it’s gonna make imports expensive and they’ll struggle to compete and that’ll be better for us. I think imports are really insulting. We grow such great things and yet we import, I don’t get it.”

Several producers, whether involved in the processing sector, called attention to the central role of processors as actors. Tomato producers identifying with the 1st type of farm are embedded in the processing industry, yet only half of the farmers from this category mentioned consolidation of the processing industry as a foreseeable issue in
their region. Farmers, from a mix of all farm types noted certain processing plants had closed in their community. Some expanded on the hardships this had brought for many of their neighbours, yet only 2 farmers out of all of the respondents mentioned this to be a likely and continuing trend in the near future.

A rural tomato grower who produces for the processing industry, expanded further on this topic from a seemingly neutral standpoint as he voiced his opinion on the reduction of the processing industry in Ontario. “I don’t think it’s either a good thing or bad thing, it’s just the reality of it.” He continued:

“I dunno, we’ve been struggling to expand this [tomato processing] industry in Ontario for the last you know, since I’ve been around actually and it just doesn’t seem to happen. As for processing plants, I think that that compression will continue too. Like in the area there’s probably 80% of the processing tomatoes are grown in Ontario, maybe it’s a little higher than that but they are processed but I think we have 8 processors now left and I don’t see there being 8 ten years from now there’ll maybe be, come down to 5 or 6 I’d say. A lot are gone all together and gone to another country. The companies are moving to Mexico too, because of cheap labour, a lot of it is to do with labour. It’s not because we can’t grow the stuff it’s just about being cost effective and efficient.”

This quotation illustrates the complexity of the processing industry and highlights a mix of social and economic implications of the declining number of processing facilities available to farmers.

In comparison, a tomato grower provided insight into this trend by voicing a different opinion on the matter. He stressed that the reduction or complete elimination of
Ontario’s processing industry should not be an accepted reality and that measures need to be taken to ensure that all processing is not lost to outsourcing. He noted that this trend would have negative consequences for the communities in which these operations are embedded, as well as the market as a whole. “My theory is that if we’re not careful, in 20 years from now all processing will be gone.”

Ontario currently has 21 operating vegetable processing plants, 10 of which process tomatoes (OPVG, 2011). Half of the respondents from farm type 1 (rural/processing) noted that further consolidation of the processing industry will likely occur in the near future, with the potential for all processing to be outsourced and become completely eliminated in Canada. The remaining respondents were not concerned with this trend nor did they mention any potential implications that a further decline in Ontario’s processing industry may have for them as producers for this specialized industry.

Unsurprisingly, changes in the processing industry were not mentioned by urban/fresh farmers. However, half of the rural/fresh growers viewed this trend from a different perspective. These farmers spoke of the reduction of jobs when many of Ontario’s processing plants closed. Each of the respondents in this category spoke of the plants’ relocation to the United States, one vegetable grower gave his opinion on why the companies have left Ontario. It is likely that the market type itself for fresh market oriented growers’ resulted in low response rates and concerns pertaining to this issue. In addition, a few farmers voiced their opinions on the effects of job losses on their community due to the consolidation of the processing industry. For example, a rural/fresh market vegetable grower explained how even though she is not involved in processing
(since she supplies to fresh markets) the closing of the processing industry (and factories) in her town has affected the local community by extension.

“We’ve lost about 1/3 of the processing and manufacturing in the county in the last 5 years. [That paired with the fact that] there’s a low rate of high school completion [in the area], top 3 lowest in Ontario, makes it hard on the community [to find work], it’s been hard on people, on neighbours.”

In addition, another farmer commented that, “there’s no manufacturing sector around here anymore, no longer any $30 an hour jobs available, I guess they’d have to commute somewhere else to find that.”

Figure 13 provides a summary of key perceptions that farmers noted as being traceable back to forces associated with globalization that will likely have some impact on economic sustainability.

![Figure 13: Summary of key perceptions as influenced by globalization noted by type of farm as relating to economic sustainability.](image-url)
It is worth noting that the tomato growers mentioned perceptions of the effect of globalization on economic indicators more than any other farm type and it seems plausible to speculate that this may be because this is the group of farmers most closely embedded in global food chains. In addition, farmers from both rural/processing and urban/fresh farms mentioned that the increase in fuel prices and inputs may provide some positive repercussions for farmers. Another farmer saw the increasing cost of fuel prices and inputs as potentially contributing to the relocalization of food, since imports may become more expensive to bring in. The fresh market farmers in rural areas interviewed perceived the effect of globalization on economic issues to be less than growers from rural/processing and urban/fresh farms, as determined by the number of impacts mentioned. Although the common perception is that small farms (such as many fresh market focused operations) will not be able to compete with larger farms, at least some of the smaller producers interviewed are adopting the post productive model that in fact favours smaller operations.

6.2 Evidence of the impacts of globalization on the economic aspects of sustainability

Based on the way farmers perceived that globalization affects economic sustainability, I then proceeded to explore how farm management differed on these various types of farms. From this, four main issues stand out as key for farmers’ decision-making processes: (1) supply, demand, and market volatility; (2) changes in farm profitability and the need for off farm employment and; (3) unfair government standards and regulations and other barriers.
6.2.1 Supply, Demand and Market Volatility

When describing farming operations, practices and decision making processes on the farm, some farmers stated that growing vegetables provided them with good economic returns. Tomato growers located in rural Ontario operate under a fixed contract income, in which the prices they receive for their crop can moderately increase or decrease in response to market prices and negotiations. However, not all growers in this category stated that growing tomatoes guaranteed a good return. Instead, it was the combination of vegetables and a high value cash crop such as corn that provided good returns for the participating farmers in this category (all of the rural farmers producing for processing in this category exhibited this combo). It was evident that economic conditions and the topic of viable returns was a central theme for farmers in this category, and with all respondents, whether they believe that vegetables provide good economic returns or not. A tomato farmer from rural Ontario spoke of the importance of incorporating cash crops within a specialized farm like his own.

“Tomatoes are the higher value crop but you need both, tomatoes and cash crops. Profitability would be the biggest reason I’m in vegetables…cash crops are kind of an integral part of any farm I would say.”

For the case of farmers producing vegetables for fresh as opposed to processed markets, the topic of good economic returns seemed to be less of a pressing issue. Perhaps this is because these farmers are pursuing profitability in a different way (and potentially with better margins). In this type of farm, only half of the respondents mentioned that profitability was a main reason for choosing to grow vegetables. A rurally situated fresh market vegetable grower explained;
“Produce, fresh market produce, and selling directly to consumers, that’s where the highest prices are so I try to capture all of that otherwise the middle man gets some of the income.”

A fellow fresh market oriented farmer, however situated in urban Ontario shared a similar opinion to the above statement; “if you can’t grow it profitably then don’t grow it.” Incomes, and the means by which produce is sold and distributed, varies between farm types. Farmers noted that increased market competition brought on by the easy access to an abundance of cheap, imported food (as a result of globalization via trade liberalization) has made it harder to stand by the above quote, as growing profitably is becoming more difficult. Market prices in response to global supply and demand play an integral role in the contract prices awarded to tomato growers. The dollar flux and exchange rate are also determinants of such market values and can ultimately dictate end revenue for tomato growers producing for processing. One such farmer from this category demonstrated the general trend of tomato prices.

“Tomato prices tend to follow corn and [soy] bean prices, if those 2 commodities were high then tomatoes would be lower and vice versa. It keeps things fairly constant.”

For tomato processing farmers, it can be very difficult to expand their margins in a market with controlled and pre-determined prices; “you just can’t grow more and make more money, our marketing board is regulated.” (Here it is important to note that the Ontario Processing Vegetable Growers (OPVG) negotiates prices, terms and contracts of sale with individual companies for 14 different vegetable that are grown for processing
post harvest (including tomatoes). Processors contract with individual farmers and pay
them directly for their commodities (OPVG, 2012).

A contract tomato grower pointed out how there is potentially a higher level of
uncertainty associated with fresh markets; “other markets [like fresh markets] are more
volatile.” Similarly, a fellow tomato grower explained how market prices between
processing markets and fresh markets vary.

“Processing is pretty controlled, fresh veggies is a wider market. Marketing
board negotiates a processing rate for the winter time unlike fresh veggies that
you don’t sell in the winter those prices vary more year to year. Prices for
processing [tomatoes] are fairly stable.”

Farmer’s in fresh markets face a different challenge when it comes to market
demand, as prices can fluctuate more rapidly. A rural/fresh vegetable grower conveyed
what he believed is a big struggle associated with fresh markets. “I can’t control the
market prices and it just gets harder and harder to compete. The market can’t bear it,
everyone sells so cheap.” Here we must acknowledge that perhaps in contrast to this
statement, it is the farmers themselves that cannot bear the current markets (as opposed to
the markets not being able to handle the current prices). Even though market volatility is
more common within fresh focused markets, only half of the respondents in these groups
spoke about market demands and fluctuating prices as being an economic barrier. A fresh
market oriented farmer located in an urban-proximate location shared his story about
price variability within his type of market.

“Some items increase in price because there is not enough of them in the market
that year. Prices can increase if you have the right varieties and original kinds.
try to pick the vegetable types that no one has around you for competitive advantage.”

One fresh market focused farmer located in an urban-proximate area explained a means by which he adapts to market volatility and uncertainty. Through greater crop diversity and growing unique or uncommon vegetables, this grower takes an ecological approach to stabilizing his economic conditions, illustrating that ecological and economic indicators are often interrelated. For example, this farmer stated.

“I grow at least 4 types of all my vegetables, it offsets any issues with seed quality, germination, bad weather, it provides a hedge against potential problem. This way, you also have lots of different vegetables, but you can only grow lots if you’re going to sell them.”

Farmers noted that increased market competition brought on by the easy access to an abundance of cheap, imported food (as a result of globalization via trade liberalization) has made it harder to stand by the above quote, as growing profitably is becoming more difficult. Market prices in response to global supply and demand play an integral role in the contract prices awarded to tomato growers. The dollar flux and exchange rate are also determinants of such market values.

6.2.2 Changes in Farm Profitability and the Need for Off Farm Employment

One of the key ways that globalization has affected the economic sustainability of farms is by driving down commodity prices and, hence, on-farm incomes, thus forcing many farmers to obtain off farm jobs in order to maintain economically viable and
productive operations. Stubbornly high input costs further compound this situation. The concept of economic diversification, by means of acquiring an off-farm job, was noted as a strategy that many farmers adopted by half of all respondents. More specifically, most respondents noted that a larger income helped minimize economic risk, especially in a time with increasing market volatility and the ever-increasing cost of farm inputs and fuel. Half of the farmers in each of the 3 types of farms have off farm jobs in addition to working full time on their farms.⁴ A tomato farmer producing for processing shared his opinion on why he believes many farmers in today’s economy take off-farm jobs;

“The bottom line is when you have 3 families, that being my parents, my brother and my family trying to make a living off of one farm you either have to get an off farm job or expand into different things...and that’s kind of how we got into the machining business and started a few fresh market products.”

The above-quoted farmer expanded his operation by selling farming equipment in addition to growing tomatoes for the processing industry. This farm would be considered conventional and large-scale. Smaller operations and other farm types offer a different perspective on the matter. An urban-proximate fresh market farmer noted that, “unless [the farm is] generational [and has been passed down], most farmers today need an off-farm job.”

In addition, farmers were asked whether the community that each of their farms is located in provides adequate opportunities in the non-agricultural related work force. Most respondents answered that there were jobs available, however, opinions on the matter varied. Views from processed tomato growers were split, with only half of the

⁴ Interviewees were asked if they had taken a job off of the farm (spouses and additional family members were not asked or included in the trends presented about off farm work).
respondents commenting on this issue. One grower stated that “if you are willing to work there’s always opportunities.” Another farmer operating the same type of farm (rural/processing), located roughly 20km from the previous respondent shared a different opinion on the matter. Since the vegetable processing industry in the area of the tomato farmers interviewed provided many jobs for the local community, this farmer believes that it would be very difficult to find a job now that those plants have closed. He noted that there are fewer opportunities in the area than roughly 10 years ago. For this farmer, it was difficult to separate non-agricultural work opportunities available since given the nature of the area in which his farm is located, predominantly agriculturally oriented and focused; most jobs are in fact related to agriculture in some way.

All respondents identifying with the urban/fresh type of farm noted their proximity to urban centres as providing access to abundant non-agricultural work opportunities. No respondents within the fresh vegetable market oriented and urban located category felt that their community members (as defined by their surrounding/proximate settlement community) would have a hard time finding work or that there was a lack of jobs available to them. One rural/fresh farmer explained how her community had taken a big hit when 2 processing plants and an automobile manufacturing plant had closed. She added; “There aren’t a lot of opportunities around here. It’s really sad, the Canadian work force is over priced and under efficient.”

One of the farmers I interviewed was a recent an immigrant to Canada who farmed close to the city, producing for fresh markets. He started his own farm operation, bringing with him traditional knowledge and experience acquired from his parents and grandparents in the Middle East where they still reside. Although the family farm back in
his home country had been passed down through the generations, this farmer began his own farm in a highly urbanized region where he thought he could provide a better livelihood for his family. He spoke of the importance of taking an off-farm job, as he had a family to support and felt that his farm alone was not enough to provide a stable income. This farmer talked about the large overhead costs of starting up his operation. A fellow urban fresh market farmer also began his own operation within the past 5 years and shared the notion that “starting a farm is expensive”, therefore an off-farm job is a necessity.

In addition to taking an off farm job, the above noted urban farmer diversified his crops and varieties in order to offset unforeseeable issues that he found arose from time to time. These were issues such as with seed quality, germination and unpredictable bad weather. Using diversification as a hedge to buffer potential problems was simply another way to stabilize and ensure an income. He added;

“You can’t always project what you’re going to make in a year on crops, for example this year we won’t make a lot it was such a wet spring, so you need a backup and a steady income.”

6.2.3 Government Standards and Regulations, Changes in Input Use and other Barriers

Expanding operations and ensuring viable economic returns and incomes is not always easy, as farmers noted certain barriers that hindered economic growth. Tomato growers producing for processing unanimously agreed that one of the biggest economic
barriers they face is a lack of support and subsidies from the government. Similarly, an urban located, fresh market farmer stated, “the government has no support over here.”

However, this perception is only partly true. The government regulates many if not most aspects of the Canadian food sector. In particular, vegetable growers in Canada have strictly regulated requirements and health and safety standards that are put into place in order to ensure that consumers have access to safe food. But not all vegetable growers worldwide are obliged to adhere to the same standards and this represents another possible way in which the effects of economic globalization trickle down to affect on-farm economic sustainability. In particular, the issue of different jurisdictions having different standards is an issue for farmers in Canada as it creates an unequal situation since imports produced under more lax regulations are allowed into the country. Most farmers believed that this means their commodities are at a disadvantage, since they have a more limited range of chemical inputs to choose from for their crop production. “They control what you're allowed to spray, everything that we do on the soil and how we are treating our vegetables, everything has to be government regulated”, as pointed out by a rural/fresh vegetable growers.

This issue was also noted by one farmer who produced for the tomato processing industry. He explained that, as a tomato grower and Canadian producer, the chemicals available to him in terms of options were less than other countries. “The United States has a lot more chemicals available to them. That's one barrier.” It is also the policies enforced by the government that create a barrier for growers. The inequity of standard regulations for products grown within Canada and those that are imported into the
country raises not only economic concern but also health concerns, identifying another overlapping concept that is economic and social in nature. He explained:

*I mean it’s great that our government mandates that we do that to be safe but our government is not making the imports do that. It’s a double standard…well you see our food is a bit more expensive, it costs more to grow but it’s safer, there’s more value to it. We need some help, we’re gonna need some funding to help us do this but I’d like to show that if they grow safer food there’d be a reduction in health care costs. So maybe Mr. Prime Minister like hey, if I showed you this then people would spend a few dollars more on their food from Canada and from Canadian farmers because it’s safer and we’ll create more jobs and we’ll…we’ll have more value added to our country and the health care system, well it’s down a billion dollars so it’s a win, win but not everyone gets this.*

Therefore, globalization has meant that farmers are now competing for markets against farmers from other areas with different input legislations. The rural processed farms are those who compete most directly with foreign producers and seem to be the most vulnerable to this possible effect and the subsequent unfairness associated with input standard variability due to the fact that they are so dependent on inputs in order to achieve high yields. In comparison, fresh market vegetable growers seemed less affected by input regulations, unless they begin supplying to a specific market that dictates otherwise (for example, a farmer may have to use specific inputs and avoid the use of others if they are supplying to local stores or restaurants that have specific needs- ie. supply a restaurant with a few types of organic produce-this would regulate/eliminate the
use of synthetic chemicals on those commodities). Figure 14 summarizes key barriers to economic expansion as noted by each of the 3 types of farms.

<table>
<thead>
<tr>
<th>Fresh</th>
<th>Processed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>3. the global market and increasing market competition has changed the way that people purchase food&quot;</td>
</tr>
<tr>
<td></td>
<td>&quot;I can't control the market prices and it gets harder and harder to compete&quot;</td>
</tr>
<tr>
<td></td>
<td>&quot;fresh market produce...that's where the highest prices are&quot;</td>
</tr>
<tr>
<td>Urban</td>
<td>2. &quot;the government is allowing China to come in and trade over our markets&quot;</td>
</tr>
<tr>
<td></td>
<td>&quot;food is cheap [as a result of increased trade] it's hard to compete&quot;</td>
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<tr>
<td></td>
<td>&quot;unless the farm is generational, most farmers today need an off-farm job&quot;</td>
</tr>
</tbody>
</table>

Figure 14: Key barriers to economic sustainability.

### 6.3 Discussion of the Implications of Globalization on Economic Sustainability

When I considered what I had learned from both the open ended perceptions questions described in section 6.1 and the questions that were more focused on the economic impacts of globalization in section 6.2 two key areas stand out as being affected by globalization: (1) changes in the processing industry have meant that Canadian farmers face a tougher more competitive market place and; (2) different environmental standards that put Canadian farmers at a disadvantage.

The first key area that stands out from the data collected as significant are changes in the processing industry due to global economic restructuring that have influenced
many aspects of the vegetable industry. This point was summarized by one of the interviewees who said: “Free trade came in, Campbell’s food moved to the States because it was cheaper for them to grow in the states rather than Canada.” This perception is supported by the literature that shows the food processing industry in Ontario has undergone a few significant waves of consolidation. First, in the 1950’s, after the war the food industry consolidated (Blay-Palmer & Donald, 2006). By the 1980’s, and in association with the first Canada US free trade agreement, further processing concentration and restructuring took place, as influenced by economies of scale (by reducing the cost of production) and opportunities to increase efficiency and subsequently, to increase profits (Blay-Palmer & Donald, 2006). Blay-Palmer and Donald suggest that free trade has lead to increased consolidation in the processing industry. The consolidation of the processing industry has resulted in a reduced number of tomato processors in Ontario. The issue of fewer processors is likely driving the perceptions reported to me by the tomato growers I interviewed. Here it is worth noting, however, that the majority of tomato contracts in Ontario have been passed down to farmers from generation to generation. At the same time, the processing tomato industries in the province are consolidating and this means they provide larger contracts to fewer tomato growers (as pointed out by many tomato growers interviewed). This raises a few issues; fewer processing plants means more power in the hands of fewer industry owners, there will subsequently be less jobs for community members when processing plants close, and new farmers will likely have an increasingly difficult time trying to get into tomato production (for the purpose of processing) due to the fairly exclusive nature of contract farming.
The second key issue raised by the interviewees is that in Canada, pesticides are more tightly regulated than in other regions and this hurts the competitiveness of our producers. According to the literature, however, this issue is more complex than farmers seem to let on. In Canada, pesticides are regulated under the Pest Control Products Act (PCPA) that enforces that pesticides used must be registered before they can be used in the country. In order for a pesticide to be deemed as acceptable to use, it must first be reviewed “to make sure that it has value and there are no health [or] environmental concerns related to its use” (Health Canada, 2011). For a health or environmental risk to be considered acceptable there needs to be “reasonable certainty that no harm to human health, future generations or the environment will result from exposure to or use of the pesticide, based on its conditions or proposed conditions of registration” (Health Canada, 2011). Pesticides currently in use in Canada are re-evaluated every 15 years in order to make sure they still meet safety standards. Each pesticide is denoted a Maximum Residue Limit (MRL) which dictates the expected amount of residue that is likely to remain in or on the food at the time of harvest.

“MRLs ensure that exposure to the pesticide residue presents no concerns for human health. Each MRL is set for a specific pesticide and food type combination, taking into consideration Canada’s unique climate, geography, topography and water systems. MRLs apply to food types that include, but are not limited to, fruits, vegetables, meat, dairy products, grains and some processed foods. The MRLs set by Health Canada are assessed using modern scientific methodology and are consistent with those of other major Organisation for
As noted in the above quote, standard MRL levels are only consistent with participating Organization for Economic Co-operation and Development (OECD) countries, meaning that not all countries abide by the same standards. However, Canada, the US, and Mexico are all part of the OECD, so the same rules apply to both of Canada’s major trading partners. Although farmers stated that input regulations are unfair, the OECD contradicts these opinions by stating that in fact, these countries do abide by the same standards. This raises the question of whether farmers are complaining about a situation that in reality is not there. Pesticides really are relatively balanced across most of Canada’s leading horticultural competitors. However, countries that are not part of the OECD would not have to follow the same standards, and may therefore demonstrate this type of advantage that many farmers noted as being unfair (which is likely less of an issue than farmers perceive it to be).

Based on the overall analysis of multiple indicators of economic sustainability, a few points can be made. Tomato farmers producing for processing seem to be the most economically sustainable based in comparison to the fresh market type of farms; as these tomato growers are embedded in (arguably) a more stable and predictable market than fresh market oriented farmers based on fixed contracts. This finding is supported in the literature, which identifies that these types of conventional operations are better for the economy and also for maximizing profit (Reisner, 2003). Fresh market oriented farmers (both urban-proximate and rural-situated) ranked comparably equally to one another in terms of economic sustainability.
CHAPTER 7

FINDINGS: SOCIAL INDICATORS OF SUSTAINABILITY

The purpose of this chapter is to present the findings on the potential impacts of globalization on the social sustainability of farms. This chapter will begin by discussing insights into their perceptions of likely impacts of a globalizing food system on social conditions both at the farm and community level. Next, evidence is presented in order to explore how globalization may have affected issues of social sustainability more deeply by analyzing how each farm is being affected differently. Lastly, this chapter will summarize and discuss the findings, situating the observations within the broader literature.

7.1 Perceptions of the Impacts of Globalization on Social Sustainability

Farming not only shapes ecological landscapes, but also encapsulates the socio-economic foundations of these systems that are becoming increasingly affected by the same global dynamics as impact the natural environment. Farmers noted many perceptions of the impacts of globalization on social aspects of farming operations in the vegetable sector in Ontario. Themes emerged when analyzing how farmers perceive globalization to be affecting their farms (and by extension, their communities). These themes revolved around farm consolidation and depopulation within the farm sector and less vibrant and prospering farming communities.

The most commonly mentioned perception, which was noted by 7 of the 12 respondents, was that they expect there to be a decrease in the total number of farms in
Ontario. This was referred to regularly by the tomato farmers. For example, a tomato grower producing for processing said: “Well there’ll be less farmers, period.” Another tomato grower from the same type of farm (rural/processing) explained why he believes that there will be fewer farms in Ontario’s future stating that fewer producers are needed as a result of new technologies, inputs and hybrids that contribute to increasing yields. Ultimately, fewer farmers will be able to produce the same amount of food than in the past. He added that even without an increase in the volume of tomatoes a grower can produce, the decline may still take place.

“I don’t think we need, I think last count we still had 140 growers, growing all the tomatoes in Ontario and I don’t think we need 140 growers, we probably need 100 growers so I mean let’s just say that the volume or growth of tomatoes in Ontario doesn’t go up I would say, probably in the next 10 years you’ll probably see fewer growers, it’s almost a given.”

Many of these sentiments were shared by farmers from the remaining farmers, with half of the urban/fresh growers stating that they agreed with this likely trend.

Similarly, 5 of the 12 respondents said that they expect farms in the future to be larger in size and more corporate in nature. The aforementioned statement was more frequently cited by tomato farmers producing for processing than any other group. A farmer from this category illustrated this concept:

“I think in general, farms over time are going to be bigger because well, less and less people are getting in to it and it’s getting so expensive, the only way to get in to it is either A) mom and dad or family had it or B) you have lots of money and say hey I wanna farm, that doesn’t happen 99% of the time. You either buy it or
take it over from your parents or grandparents. I just think farms will be bigger there’s no question.”

One urban situated fresh market focused farmer aptly conveyed the uncertainty of such a trend and ultimately asked how smaller farming operations will survive.

“So if that’s the case what farmer is going to be able to compete with the guy making the big bucks? Some big corporation comes in and [creates more] big farms and we begin to lose the little or less protected farms.”

Similarly, a rural farmer who produced fresh vegetables indicated related fears and explained; “It’s not what I want to see, but I think what we’re gunna see is a lot more big farmers.” A fresh market oriented farmer in urban Ontario voiced this sentiment on the matter, but attributes a different underlying factor. “Unless government comes in there won’t be small farms, that’s the biggest change coming here.” Many of the aforementioned barriers to economic growth prove to have more than just economic impacts on farming operations, as lack of government support was noted as a common barrier to economic growth and is also presented here as affecting social indicators of sustainability.

In addition, half of the respondents identifying with the rural/fresh type of farm agreed that the above trend is likely to continue in the near future. One vegetable grower worriedly added; “You know, I hope and I really mean this, I hope that there’s still a place in the future for small farms and farmers like me, but I just don’t know…”

Similarly, half of the urban-proximate situated fresh vegetable producers agreed that the above trend is likely to continue in the near future. One such farmer noted that in
order to protect smaller scale, family operated farms in the future both producers and consumers should perhaps look to the past for guidance.

“I don’t know how there can be [hope for small farms] unless everyone all at once has this big change of heart and we go back to how our parents lived. You know you buy your bread from the baker down the street and then head to the farm who sells you the milk and maybe a few veggies here and there and you move on to the next neighbour who has the rest of the stuff you need.

This topic was explored a bit further by another fresh market farmer from rural Ontario who offered his opinion on a potential strategy that may provide a buffer towards this trend. He stated the decline in family farms could potentially be reduced by focusing on the environmental aspects of operating a farm, and working on building less vulnerable and more socially supportive communities.

“[Farming is] hard on the land and you’re not putting much back in to it so in 20, 30 years if you can set up a strong, local community that supports small scale, intensive agriculture, which is this [type of farm here], it has to be mixed with livestock I guess, you need that fertility component, that will help in the future.”

Reverting food and farming systems back to a focus on local producers and supporting farmers in ones’ community is a proposed solution shared by the fresh market oriented farmers. This collective belief may be a result of the type of markets these two types of farm are oriented towards, as both farm types produce their vegetables for fresh markets, which may have stronger links to the community and hence a greater sense of social sustainability than farmers who simply produce a commodity.
Another notable trend mentioned by half of the fresh market oriented growers was the increasing rate of urbanization and subsequent loss of agricultural land to development. It is highly debatable whether urbanization is a direct cause of globalization, yet this perception seemed to be one of concern for many growers, making it noteworthy in this research. Perhaps the linkage may be one of greater distance with less of a definitive correlation. Increasing urbanization of the countryside may be liked to both urban expansion and the phenomenon of counter-urbanization (the migration of urbanites to the countryside) which could result in changes in the traditional social norms often associated with agrarian lifestyles.

An urban/fresh farmer shared his thoughts on the sprawling city limits.

“I think there’s gonna be [some] farmers left here but we’re right near Toronto that’s sprawling so probably not right in this spot I don’t think we’ll see a lot of farms.”

A fellow urban vegetable grower believes that it is only due to the heritage of his farm that his land has not been rezoned as developable land and has maintained its agricultural status (although it borders subdivisions, an electrical plant and a car dealership).

“The people who know about the heritage of this chunk of land and area and they came up, cause this was the area of the first farms in the county in the 1800’s. The barn you saw over there is a hand built barn in the 1840’s. All the lumber was milled over here, all the nails were built, made right over on this farm, that’s what it was used for in the old days. That’s the only reason they preserved this land for conservation otherwise this would have been a beautiful concrete cold top, tar roads, subdivisions with the fancy home and cars and the bad health.”
He then looked around at the ever encroaching subdivisions and posed the question;

“Think about it, what do those big buildings and big houses and fancy places and the swimming pools and tennis courts and expensive cars give you if you cannot eat? That is the thing which is lost on us, on city folks.”

Rural located fresh market respondents also raised similar concern about the decreasing rural population and expansion of urban areas. “I think that the rural population is gonna decrease. We’ve seen that cities have sprawled out in to the countryside and it’s phenomenal the amount of land loss and, it’s gobbled up.” Another farmer from the same farm type added in a somewhat defeatist tone; “who knows...maybe all of this will just be subdivisions before long.”

How farmers feel that the social structures of their communities are changing can provide traceable patterns to how globalization may be manifesting on farms and ultimately influencing social sustainability. Thus far, many of the social concerns raised by farmers are noted as affecting mainly rural areas. This is likely to do with the general preconceptions of agrarian livelihoods, which are often associated with country landscapes (even though statistics have shown us that there are many urban farms in Ontario, with numbers increasing annually). Here, we encounter something quite interesting, in that one potential effect of globalization may be a loss of agrarian communities as larger farms come to dominate. However, this may just be part of a larger set of social processes that are also driven by urban sprawl, ultimately implying that this may not be simply a point of social transition. It is the traditional farming lifestyle and agricultural heritage associated with rural communities that is represented by
supportive consumers and neighbours, a sense of reciprocal trust and respect created between producers and consumers based on face-to-face interactions and transactions and an overall ‘way of life’ that is threatened by the many manifests of globalization. Trends such as farm consolidation (which is reducing the overall number of farms), extended food chains that are creating great distance between producers and consumers (resulting in a loss of relationship between farmers and buyers, and, therefore, a lack of trust and associated quality), and easy access for consumers to an abundance of non-local, imported food (as introduced through increasing trade liberalization and highly globalized markets) will all likely contribute to the decay of social farm sustainability.

One farmer, of all the interviewees contradicted all other respondents, and proposed that vegetable farming in the future would look similar to current day operations. This urban located farmer explained. “I think it’ll look the same. I think they’re still be family farms. I don’t think vegetable farming will change.” Whether this outlook is naive or simply optimistic about farm level resiliency against the many pressures that may be traceable back to the broader picture of globalization on farming livelihoods and socially sustainable communities, this farmer saw little change in Ontario’s farming future for the vegetable sector.

7.2 Evidence of the Impacts of Globalization on the Social Aspects of Sustainability

Based on the way farmers perceived that globalization affects social sustainability, I proceeded to explore how farm management differed on the fresh/processed and urban-proximate/rural farms. Of the multiple social related topics explored, three issues were noted as highly influential for farmers’ decision making
processes: (1) the changing nature of producer/consumer relations and reciprocal community support; (2) the changing nature of agrarian lifestyles and; 3) autonomy of on-farm decision making.

7.2.1 The Changing Nature of Producer/Consumer Relations and Reciprocal Community Support

The type of market that a farmer is a part of may dictate the level of support from fellow community members, as it would be expected that those farmers that produce their crops for processing will likely have less contact with their consumers and community members than those farmers that produce their crops for fresh markets. Farmers markets and farm stands allow customers to interact directly with the farmers, creating a more intimate relationship, authenticity and locality that may not be found in contemporary society at the grocery stores. The concept of social sustainability within a community as well as all socially measured variables in this study represents a less tangible concept than environmental or even economic sustainability. The importance of thriving and supportive communities offers an abundance of important social structures that shape modern alternative food systems.

Tomato growers producing for processing represent a different market than those vegetable growers that are fresh market focused. Their community support comes in the form of contract renewal from their local processing plants. However, this does not mean that the tomato farmers are disconnected from their communities. For instance, a rural/processing tomato grower stated that he is greatly supported by his local community members during his farm events, and also as a member of counsel. He elaborated;
“They come to my events, they tell me good things on my facebook page, umm ya well I mean if they weren’t supporting me I’d hear about that too and I haven’t heard no negative yet. As a counselor I think, I’m a new counselor first of all, I’ve only been there 6 months. I think they realize where I come from. I’m fairly successful, they know what I do. So ya, I’m supported, I don’t really know how you measure that though.”

Urban-situated fresh market farmers ranged in opinions on whether they felt their community supported them or not. No respondents spoke of an overwhelming sense of positive support, one grower added; “I think we’re more supported than we were let’s say 5 years ago. I think that that ‘Good things Grow in Ontario’ campaign has really helped.” Urban proximity may play a role in the general consensus of moderate community support for these farmers, as a sense of rural community and support may be lost in the fact that the larger population resides in urban areas where the gap between producers and consumers is continually growing.

A stronger sense of community support is evident within the rural/fresh farms, as growers shared stories of the increasing support and the dedication of loyal regular clientele. A vegetable grower operating a farm with a market stand and ‘pick your own’ option said; “A sense of community is good. I try to give my customers, especially my regulars and those that really support me what they want.” A fellow rurally located, fresh market oriented farmer shared his hopes of a future where community support is of the utmost importance and foundation of a socially sustainable and equitable place.
“I hope that this area can continue or increase or set up a strong, local community that supports small scale, intensive agriculture. It has to be mixed too with livestock I guess, you need that fertility component, but support is key.”

Figure 15 displays in general, if farmers feel they are or are not supported by their community (this question was open-ended and open to farmer’s interpretation of what constitutes as ‘support’).

<table>
<thead>
<tr>
<th>Fresh</th>
<th>Processed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-3/4 feel supported by their community</td>
</tr>
<tr>
<td></td>
<td>-“I have regulars and stuff and people come year after year”</td>
</tr>
<tr>
<td></td>
<td>-“every year our clientele increases”</td>
</tr>
<tr>
<td></td>
<td>-“we’re very supported, yes”</td>
</tr>
<tr>
<td></td>
<td>-“buying stuff from peoples farms can be a big price barrier for some people”</td>
</tr>
<tr>
<td>Urban</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>-3/4 feel supported by their community</td>
</tr>
<tr>
<td></td>
<td>-“the ‘good things grow in Ontario’ campaign helped”</td>
</tr>
<tr>
<td></td>
<td>-“yes, they’re coming around slowly”</td>
</tr>
<tr>
<td></td>
<td>-“I have, 2, 3, 4, well 5 neighbours that could potentially walk here and only 1 sort of regularly comes”</td>
</tr>
<tr>
<td></td>
<td>-2/4 feel supported by their community</td>
</tr>
<tr>
<td></td>
<td>-“they come to my events on the farm” (Christmas events, hay rides etc.)</td>
</tr>
<tr>
<td></td>
<td>-“I think the perception is out there [to support your local farmer], but in reality, the average consumer will buy what’s cheapest”</td>
</tr>
</tbody>
</table>

Figure 15: Community support, do farmers feel they are supported by their community.

Communities also offer support by means of providing adequate outlets in which to sell the necessary inputs needed by farmers in the area. All of the farmers identifying with the 1<sup>st</sup> type of farm (rural/processing) were able to buy their inputs right from within their community. As for farmers identifying with the 2<sup>nd</sup> type of farm category (urban/fresh), all but one bought their necessary inputs from local suppliers. One of the farmers in this category chose not to buy from his local community, as he believed
supplies from a nearby town were more economically affordable. A rural/fresh farmer painted a different perspective on community supplies. Half of the farmers in this category did not obtain their supplies from the local community, as there were no suppliers in which to purchase from. Of the farms that had access to local suppliers, one discussed her reasoning for choosing between two companies.

“We try to only buy from Wood Co, it's family run, they’re nicer, smaller. We try to avoid Cargills if possible, it’s a huge business, wants to control what you use, the service isn’t very good, not as good as the local guys.”

This quote illustrates the general notion of local, family run, smaller scale suppliers providing better services than larger companies.

The way that globalization may impact community relationships will probably vary between the 3 type of farms. It is possible to speculate that the farmers from the 3rd type of farm (fresh/rural) will have to work hardest at creating good community relations. In turn, they will likely benefit the most from these relationships because they have strong communities to support their style of farming. Farmers located in urban areas will potentially have a lesser sense of community, given the higher population density, abundance of available markets for consumers, and the general lack of neighbourly support and reciprocal relationships that are often associated with urban communities. In addition, tomato growers producing for processing that were interviewed have less (to no) interactions with their consumers given the nature of the processing food chain and therefore tend to focus more on the importance of the lifestyle associated with the country and agrarian traditions, as discussed in the next section.
7.2.2 The Persistent Nature of Agrarian Lifestyles

Quite often, farming is seen as a vocation and a lifestyle that is passed down through the generations, portraying with it an image of heritage and family values. Significantly, even for tomato growers producing for processing—who are arguably the most exposed to globalization, their decision to farm was noted by all as not just a job choice but rather a lifestyle choice imbedded in their current and historical family identity. All four rural/processing farmers inherited their farms, the traditional farming knowledge and in most cases, even established business linkages from their parents and grandparents. A farmer jokingly said; “I was born in the field, probably in the sugar beets.” A fellow tomato grower, and father of 7, hopes to pass the farm down to one of his children, handing down what would become a fourth generation farm,

“I’ve always lived right in this area. I grew up farming. My dad farmed here, my granddad farmed here. He bought land during the depression when everyone was selling.”

This sense of connection ran across all of farms interviewed for this thesis: One such farmer stated; “I’ve been planting vegetables with my dad and mom since I could walk, possibly even before, but as long as I can remember.”

Farming offers a certain quality of life not fully understood by all. Whether the farm is situated in rural Ontario or a more urban location, working the land and providing sustenance and essential life commodities for others carves out a unique lifestyle. Half of rural/processing farmers noted the importance of raising their families in a rural area and spoke of the positive quality of life that the countryside can help shape. A tomato grower identifying with this type of farm spoke of his brief experience working in a factory, a
Monday to Friday job that made him quickly associated distaste for non-agricultural work in the city.

“I worked in the factory and got in trouble with the union because I worked too hard. I think that’s why people hire us but I mean I don’t know any different here on the farm. It must just be the quality of life.”

If economic globalization drives a wave of farm-consolidation then this may threaten important agrarian lifestyle elements that are often associated with rural tradition. In addition to the hard working agrarian lifestyle choice that many farmers noted as being the foundation of their farming operations, a tomato grower producing for processing in rural Ontario noted the importance of creating a farm that would become his sanctuary. He added small farm animals to his land for his children and own relaxation. Although the farmer’s children are unable to take over the family farm due to developmental handicaps, he created a farm that was not only about producing the highest yields and being the most profitable but also about allowing him and his sons to experience the farming lifestyle together. This farmer spoke about farming as pertaining to a certain way of life and noted the importance of a strong sense of community, reciprocal support, trust and reciprocity (all indicators that underlie social sustainability).

It is possible that the changing nature of food systems may have an impact on these important social aspects of farming. For example, through the expansion of food chains and consequential loss of face to face producer/consumer relations-which often provides consumers with a sense of trust and quality for the commodities they are purchasing, as food becomes traceable back to a face, a known and trusted farmer.
The connection between quality of life and farming is somewhat lost amongst the urban-proximate fresh market focused farmers interviewed, with only one farmer agreeing that farming provided such a life. One such farmer spoke of his early years on the farm with fond recollection. He and his family would come to the farm in similar fashion that others have a cottage. It was the appeal of the rural lifestyle and working in the field that drew his family into farming and sparked his passion to continue growing vegetables. Similarly, only 1 rural/fresh farmer spoke of the quality of life component of farming, a concept that is potentially taken for granted by these rural producers.

Many critics of globalization argue that it may drive farm consolidation and ultimately be linked to reduced profit margins. Furthermore, critics argue that this pattern could influence the social sustainability of farms through a decline in rural communities (Smithers & Johnson, 2004). However, the evidence presented here suggests that the farmers commitment to agrarian ways of life remain intact and that even the tomato farmers, who are most directly embedded in global agri-food chains, remain committed to farming as a way of life rather than just seeing it as a way of making a living.

### 7.2.3 Autonomy of on-Farm Decision Making

During the interviews, farmers were asked how in control they felt over the decisions they made in their operation. This is an important element in the literature on the possible social effect of globalization, because some worry that a farmers’ ability to make their own decision may be lost to the ‘middle man’ or to those that control the markets that farmers supply to (Starr & Adams, 2003). The question was prompted by a list of decision that farmers would need to make such as what vegetables and varieties
they choose to grow, in what quantities, the inputs that are used on the fields, why they choose these methods and what times of the year do they decide to harvest for example. The answers that I received contradicted the worry that globalization would take control away from farmers and no interviewees indicated that they were losing control (or that corporate control/industry was taking over this decision making process). However, answers to other questions in the interview, revealed that the situation may not be as clear cut.

Half of the rural/processing farmers stated that they neither agree nor disagree that they have complete control over the decision making process on their farm while the other half stated that they had complete control (some even mentioned that it was a topic they had not really thought about). A tomato grower identifying with this type of farm voiced his reasoning for neither agreeing nor disagreeing, demonstrating that power in his type of industry is not one sided.

“It’s a combination of control. The company says how many tons you can grow on how many acres. They say what days you can deliver and how much. If you get more tomatoes than your quota you can’t just bring them in, you can only take in so much, you also can’t take them other places because you’re on a contract so they go to waste. The companies tell you what varieties to plant. From there you have to take control and arrange your ethylene sprays, which take from 7-14 days to work, so you have to predict how much to spray, when to spray it so you have enough, but not too much to send to the processors.”

Half of the rural/processing respondents felt as though they have complete control over the decision making on their farm, although this is potentially in vain. A tomato
grower stated that he decides what inputs to use on his field, but when asked if he had any restrictions as dictated by the processor he contradicted himself and responded; “We are told what inputs we can’t use. Sun-Brite has a contract with Campbell’s and they don’t want certain inputs in their products so for some tomatoes we can’t use certain inputs.” It seems possible, therefore, that some farmers may have a false sense of autonomy when talking about the decision making on their farm.

Similarly, a rural-situated tomato grower producing for processing answered that between him and his brother, they shared the power and decision making on their farm. However, when asked whether they could choose what types of varieties of tomatoes to grow in their fields, he stated; “Heinz gives a list of varieties and I can pick from there, all the growers get to pick from a few.” Again, an inflated sense of independence and control seems to be apparent.

All urban/fresh respondent excluding 1, strongly agreed that they have complete control over the decision making process on their farm. There was a general consensus amongst these farmers that they choose what they wanted to grow and by using whatever inputs they decided. Customer recommendations were noted as playing a role in deciding what varieties of vegetables to grow. A grower in this farm type expanded on this topic.

“I can grow what I want. I listen to the buyers and try to please them but ultimately it’s my decision In terms of inputs I can use what I want, I get recommendations or learn about new things from conferences or meetings but I still get to decide.”

Moreover, the true sense of complete control over decision making processes on the farm were shared by rural/fresh farmers, with all farmers strongly agreeing that they
have complete control over the matter. Similar to many of the urban/fresh vegetable
growers, some of the decisions about vegetable varieties are based on consumer
recommendations. “We grow what we want and we tell the markets what we have” said a
fresh market oriented farmer in rural Ontario. (The implications of these issues pertaining
to autonomy and ownership will be explored in more detail in the broader discussion
presented in chapter 8).

Based on how farmers felt they had control over their farming operations, it seems
in this case that the 8 producers growing for fresh markets may have the opportunity to be
more entrepreneurial and freer to seek new markets and new products than the growers
who are locked into long-term contracts (like tomato growers producing for processing).
For those farmers who experience the pressures of the processing sector, it is possible
that the situational dimension of market focus have contributed to a slight loss of
autonomy whereas farmers who opted for the high-value niche post-productivist model in
comparison have an easier time gain (or maintaining) autonomy.

7.3 Discussion of the Impacts of Globalization on Social Sustainability

When considering the data presented in sections 7.1 and 7.2 together,
overarching themes stand out were; (1) the persistence of agrarian values and; (2) the
disconnect between real and perceived power to decide farm practices.

The agrarian values that so often personify rural communities seem surprisingly
persistent, thus suggesting that critics of globalization who argue that farming will
become corporate may potentially be overstating the case. The changing nature of food
systems and an ever changing global economy has brought many unpredictable outcomes
for farmers. Although trends such as farm-consolidation and decreasing rural populations have the potential to threaten the fundamental agrarian lifestyle elements and values that characterize traditional farming operations, these key components may be more resilient and persistent than we have come to believe. Many farms have proven to be resilient against major changes in agricultural advancement and economic uncertainty (Darnhofer, 2010). Adaptive strategies and mitigation techniques ensued by farmers (such as diversification measures) are just one way in which farmers are choosing to stay in the farming game, with many choosing to be responsive and pro-active against global economic uncertainty (known as transformative resiliency) (Walker et al., 2004). With an increase in farmers taking off-farm jobs (Statistics Canada, 2006), this strategy has proven to be an adaptive measure that farmers are taking to buffer against increasingly volatile market prices in order to maintain a viable economic income while still holding on to their farming operations (Darnhofer, 2010). It is this entrepreneurial spirit that has allowed farmers to maintain their traditional agrarian ways while at the same time acknowledging that they have to adapt their operations in response to market and economic uncertainty (Vesala and Vesala, 2010).

Farm resiliency is also evident in the numbers of farms that have been passed down from one generation to the next (Darnhofer, 2010). Family run farms often tend to have a stronger sense of ‘place’ than corporate operations. In addition, family farms are thought of as having more commitment to the local community (which has many positive benefits and can contribute to social sustainability, as previously discussed) (DeLind and Bingen, 2008), with the community members themselves offering an important component of resiliency (for example through reciprocal support and even labour in peak
harvest time). “With increasing economic pressure, it is easier for smaller farms to survive if they cooperate with one another” (Darnhofer, 2010, pg.219). Social cohesion and community support is often strengthened through the engagement of community institutions and may ultimately contribute to this overall persistence of the traditional agrarian life (Darnhofer, 2010).

Secondly, the obvious disconnect noted between perceived and real power to decide farm practices revealed some interesting insight into farm autonomy and subsequently farm type. Again, I am speculating that market focus may influence this disconnect. For example, being a part of a contract growing industry (as is the case for tomato farmers in farm type 1), it is often said that although contracts can help reduce risk (for example by providing relatively stable income and insurance type measures in light of crop failures) the farmer in turn loses autonomy, as the decision making is largely shifted to the producers hand (Gillespie & Eidman, 1998). The greatest sense of false autonomy was witnessed by tomato farmers from farm type 1, a finding that aligns with the above notion. In addition, contracted tomato growers may have less managerial and entrepreneurial ability in comparison to non-contracted farmers, further decreasing their sense of autonomy (Key & McBride, 2003). As previously noted, tomato growers were given restricted choices on what varieties they can grow, what inputs to use and when they can harvest their crops. However, these few decisions allow farmers to feel in control of their operations (for example, they are given a list of tomato varieties and can choose from there which types they would like to grow). These actions may help create this false sense of autonomy, when in reality the majority of the decisions are being made by the processors.
This sense of false autonomy and disconnect between the perception and reality of ownership and decision making was less of a key component for non-contracted, fresh market oriented farms. A more pure sense of autonomy was shown by these farmers along with the general notion of free-will and decision making strategies. This autonomy seemed to be based on decision making strategies that were either traditional for the farm (for example, “this is how we’ve always done things”) or based on what the farmers believed to be the best decisions (such as choosing to produce vegetables that were the most popular or performed the best based on the farms specific location) as opposed to the more restrictive conditions as faced by contract farmers.

The basis of social sustainability proves a hard factor in which to analyze farms within, as certain circumstances foster more supportive interactions and conditions. However, it is evident that each individual farm tells a unique story and illustrates various components that contribute to social sustainability in one way or another.
CHAPTER 8

KEY FINDINGS, CONTRIBUTIONS AND CONCLUSIONS

8.1 Overview

The aim of this study has been to document how the impacts of globalization are experienced at the individual farm level and to trace the potential implications these experiences may have for sustainability. The approach involved examining the lived experiences and perceptions of farmers concerning the drivers for, and the nature of ecological, economic and social change amongst a small selection of vegetable farms.

From the outset, and based on the literature, I hypothesized that farms with different access to markets (e.g. rural or urban) and farms that produced for highly processed or fresh markets would experience the effects of globalization differently. I then explored how farms’ ecological, economic and social sustainability could be seen differently on 12 farms that were chosen based on their access to markets and the extent to which they produced for fresh or processed markets. Amongst the many individual findings, three dominant themes stand out: (1) how globalization has affected the processing industry and how this impacts farm sustainability; (2) how globalization affects crop diversity and how this affects sustainability; (3) how globalization affects the ability of farmers to make their own decisions and how this impacts sustainability.

In addition to these three broad findings, a fourth area stands out as significant: the importance of farm context in determining the effects of globalization.

This chapter will now discuss these four main findings and then describe the theoretical and methodological contributions this project has made. Lastly, this chapter will provide a summary conclusion.
8.1.1 The Changing Nature of the Processing Industry

For farmers categorized as belong to the 1st type of farm (situated in rural Ontario and producing the processing industry) the changing nature of the processing industry creates different barriers and constraints than for those farmers who are either producing for fresh markets or are closer to urban markets. For tomato farmers producing their commodities for the processing industry, the orientation toward, and integration in, this particular supply chain is highly influential at the farm level and seems to impact on-farm sustainability in a number of ways. In comparison, farmers producing for fresh markets noted this restructuring as having more of an impact at the larger community level (as opposed to the individual farm level).

As previously noted, Canada has seen a decline in vegetable processing operations as industries are moving overseas mainly for cheaper production prices or in a search for more stable year-round supplies. This decline has contributed many negative economic outcomes for Ontario’s producers who used to supply to these industries. As fewer and fewer companies control larger portions of the industry, a farmers’ overall competitive advantage declines, as the number of potential businesses they have the option of supplying to decreases. These issues have a direct impact on contract tomato farmers producing for processing, but this process seems to have had relatively little direct influence or impact on the farmers I interviewed who produce for fresh market markets. However, the decline in the processing industry has an indirect influence for all farmers I interviewed, as it brings with it various social issues, such as a reduction in local job opportunities when a processing plant closes or relocates. This was particularly important to the fresh vegetable farmers I interviewed because they all expressed a high
degree of community engagement (which makes sense since their economic model is based on producer/consumer relationships). Based on my interviews, I speculate that this issue is particularly heightened in rural areas where farmers told me it was difficult to find jobs. By contrast, urban located farmers may find the closing of processing plants to be less of an issue due to the fact that urban areas and city centres provide access to an abundance of job opportunities.

In addition to the economic and social implications in response to a decline in the processing industry, environmental issues have begun to arise as well. As a result of less processing, the actual acreage of planted vegetables across Canada has decreased by 6.9% since processing capacity has declined. This trend can be seen across the country but has become particularly noticeable in Ontario and Quebec (Statistics Canada, 2006). It should be noted that this decline in the processing industry has the potential to provide greater opportunities for fresh and urban based farmers to expand and develop new markets.

8.1.2 On-farm Crop Diversity

The second main finding of this thesis is that one of the key ways globalization is likely to influence farm sustainability will be through changes in on-farm crop diversity. Globalization may change the way in which farmers have access to markets based on proximity to such markets.

For the tomato farmers producing for processing that I interviewed, globalization has likely reduced their options in terms of what to plant. For the urban proximate farmers, they have access to diverse urban consumers and as a result, they can produce a
huge range of crop varieties. On a different note, the rural/fresh farmers seem to be under pressure to compete with cheap imports and as a result may be trying to differentiate themselves by being very sustainable. In doing so, these farmers are planting a range of crops to take advantage of IPM and crop rotation methods. In comparison, farmers that produce for the processing industry generally have a limited choice in the amount of crops that they produce (however, it should be noted that these farmers could diversifying their farms but generally choose not to). As previously stated, tomato farmers are generally given the choice between 10 different types of tomatoes and pick generally 3-5 to grow. They personally select the varieties that they believe will perform the best on their specific soil types and based on climate. Certain processing industries want different types of tomatoes, therefore the farmers themselves do not ultimately have the choice to select any varieties that they wish, instead they can pick based on a pre-determined list. This removes some of the element of control out of the hands of the farmers and into the processing industry. However, giving the farmers a few choices still allows them to feel like they ultimately pick what it is they decide to grow. This leads into the third and final impact of globalization on farm sustainability, and is associated with a growing degree of false autonomy, as control shifts from the farmers to the industries and larger corporations. Therefore, it may not only be proximity to markets but also market type itself that can influence on-farm crop diversity.

8.1.3 Farm Agency

The third and final impact of globalization that is likely to influence farm sustainability is farm agency. Autonomy was previously discussed in section 7.2.3 in the
chapter pertaining to social sustainability. Farmers were asked whether they believe they have complete control over the decision making process of their farm, with the majority of farmers agreeing (to some degree, or by not disagreeing) that this statement is true. This issue highlights that globalization is potentially a ‘thing’ that restricts a farmers sense to fully make independent choices, creating a false sense of autonomy. Although this link might arguably be overstated, the truth in the matter becomes more apparent and well warranted when analyzing the decision making processes of tomato growers.

Tomato growers, as contract employees of the processing industry, are subjected to more restrictions in terms of choice of crop varieties, allowable inputs and harvesting dates.

This false sense of autonomy illustrates how the decision making and on-farm choices are becoming restricted by means of industry pressures and regulations without farmers truly understanding that the industry is making many of the major management decisions. In addition, farmers in this farm type category are also very restricted when it comes to harvesting their crops and delivering their commodities to the processors. Each farmer is allowed to provide their processor with a pre-determined amount of tomatoes on negotiated days (such as multiple times per week, once a week etc.). This means that many farmers must harvest their tomatoes before they are ripe in order to meet their weekly quotas, which then forces them to rely on ripening agents. Therefore, tomato growers that are producing their crops for processing face different challenges in terms of decision making on the farm than vegetable growers that are not on contracts and producing for the processing industry.

Farmers producing their vegetables for fresh markets felt, for the majority, that they too had complete control over the decision making process on their farms. However,
a false sense of autonomy may also be witnessed on these types of farm (whether they are rural or urban-proximate), although it would seem to be at a lesser extent than towards those that produce for the processing industry. Fresh market oriented farmers may lose full control over their decision making depending on which specific markets they are a part of. For example, a farmer can choose whether or not to become a certified organic vegetable grower. If a farmer took this route, they would be told what inputs they can and cannot use in the production of their vegetable, as organic growers adhere to a certain set of practices and principles. The type of restrictions associated with becoming a certified organic farmer is a different but somewhat similar restriction as felt by tomato producers.

8.1.4 The Importance of Context in Determining the Effects of Globalization

The potential effects of globalization on sustainability presented above highlight three of the more general trends that will likely affect all farm types. However, this research has also shown that many other possible effects of globalization are much more-context specific and will probably affect urban/rural and processing/fresh farms differently. For instance, while all farmers interviewed agreed that recent changes to global agri-food systems had caused a general consolidation of farms, required many farmers to obtain off-farm employment, hurt the vibrancy of rural communities, and meant that farms have become more specialized and input dependent, the way these points play out at the level of the individual farms is quite context-specific. For instance, it seems that becoming specialized and input-dependent is much more common amongst processing oriented farms than for fresh farmers. However, given the small sample size and qualitative approach used for this research, it would be inappropriate to draw firm
conclusions from the data presented here. As such, these findings have been summarized in table 7 as speculations that would warrant further exploration in follow up work.

<table>
<thead>
<tr>
<th>Context of Farming</th>
<th>Ecological Sustainability</th>
<th>Economic Sustainability</th>
<th>Social Sustainability</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Close to City (urban)</strong></td>
<td>- produce a wider diversity of crops (based on an abundance of diverse consumers and markets) - be more likely to use conservation tillage</td>
<td>- develop markets to urban consumers that do not involve ‘middlemen’ (therefore allowing farmers to reap more of the economic benefits)</td>
<td>- work to develop closer links with consumers</td>
</tr>
<tr>
<td><strong>Far from City (rural)</strong></td>
<td>- use organic practices to differentiate crops (but this may be good (in terms of inputs) or bad (in terms of soil erosion for the environment))</td>
<td>- be worried that globalization is costing jobs in local community</td>
<td>- live in less vibrant rural populations</td>
</tr>
<tr>
<td><strong>Processed Vegetables</strong></td>
<td>- become highly specialized farms that focus on maximizing yield regardless of environmental problems - only produce a very small number of crops</td>
<td>- be vulnerable to demands placed by processing industry that itself is driven by continent wide industry</td>
<td>- live in less vibrant rural populations - have less control over farm management decisions (less autonomy)</td>
</tr>
<tr>
<td><strong>Fresh Vegetables</strong></td>
<td>- produce a wider diversity of crops - be more likely to use conservation tillage</td>
<td>- be at an unfair disadvantage to other regions in terms of environmental regulations - grow a wide diversity of crops to protect from market</td>
<td>- work to develop closer links with consumers</td>
</tr>
</tbody>
</table>

Globalization may cause these types of farms to...
8.2 Contributions

In this research, I have identified potential links between globalization, ecological, economic and social dimensions of sustainability by analyzing the extent to which globalization creates incentives for unsustainable farming systems. Through an intensive, in-depth case study of 12 unique farms identifying with 1 of the 3 different ‘types’ of farms, this research has contributed to current agricultural geography scholarship by providing site and commodity specific trends. In addition, an exploration of farm sustainability in southern Ontario will contribute to existing literature.

The academic contributions of this research help fill some of the knowledge gaps in the current literature regarding the ways in which changes to the global agri-food system may trickle down and affect the social, ecological and economic environment of farming. By undertaking an idiographic approach, this research has provided an empirical enquiry that is essentially an investigation of contemporary phenomenon within its real-life, farm and community level contexts. This detailed analysis can be used to generate facts of the affects of globalizations on agricultural sustainability that provides potential for methodological contributions.

Due to the intensive and idiographic nature of this research, generalizability has been sacrificed in lieu of a more in depth understanding of how this phenomenon works on the ground level in a particular area amongst various farm types in relation to a specific commodity. This detailed treatment has allowed for the establishment of potential hypotheses based on noted trends that could be tested at a larger more
nomothetic scale. These contributions can be delineated in the form of providing future researchers the opportunity to establish potential hypotheses based on this project’s current findings that can then be tested in either a more extensive, generalizable way or on the same small scale in different locations or with different commodities. Therefore, this research has provided much needed insight at the individual, commodity specific, farm level of how farmers are dealing with and perceiving the ever evolving advancement and pressures of modern day agriculture and the changing nature of consumer habits.

This project has also contributed to the field of agricultural geography by providing insight into an aspect of Ontario’s vegetable system that is not well understood in terms of sustainable resilience. Thus, my work has sought to document this topic. On a practical level, this research contributes to a broader understanding of a global issue that to date, have been relatively unfocused upon.

8.3 Conclusion

This study has examined ecological, economic and social paradigms in order to analyze the implications of the intangible force of globalization on farm sustainability. An analysis of the findings revealed that in order to operate a farm that is considered sustainable, multiple criteria of ecological, economic and social nature must be met. Sustainability discourses sometimes portray a narrow-minded approach to agriculture, where conventional and organic farming practices are commonly viewed as the sole options in commodity production, revealing a wrong and right approach. Whether agriculture is viewed as a manipulation and non-reciprocal relationship between
producers and the environment or as mutual partnership that requires fostering on both ends, sustainable agriculture and the nurturing of healthy and supportive communities may be achievable through a combination of conventional and alternative production methods. By examining the conceptual placement of sustainable agriculture in modern society through an inquiry into the concept of sustainability as a whole, formal definitions may not necessarily be a tool for measuring or alleviating unsustainable practices. For example, when we analyze the multiple definitions of sustainable agriculture, a few key trends emerge amongst most of the concepts. Themes such as resource conservation, equitable farming practices, the reduction of environmental degradation, the maintenance and promotion of agricultural productivity, and the fostering of social structures such as supportive communities (Smit & Smithers, 1993), encompass a wide range of ecological, economic and social criteria. However, based on the findings of this study, certain types of farms generally excel in one or two of these categories but usually fall short of at least one of the indicators.

Nevertheless, generalizing the outcome of sustainability based on location and farm type would be grossly oversimplifying the issue at hand. The uniqueness and individual decision-making processes made by each farmer create inimitable farming operations that cannot be concluded on their level of sustainability simply based on generalized notions of common perceptions. This research illustrates the importance of a micro-scale methodological approach for research of this nature, as the effects of the manifestations of globalization are experienced different on the ground by farmers based on numerous ecological, economic and social conditions as well as supporting factors such as political and cultural conditions that are beyond the scope of this research.
The return to ‘local’ and government initiatives that support community agriculture such as ‘Buy Local, Buy Fresh’ and campaigns including ‘Good things Grow in Ontario’, have been initiated in response to the realization that agricultural sustainability is not solely ecologically related and that social structures and economic viability are necessary in fostering sustainable farms. Conventional farming’s role in shaping modern day agricultural landscapes in Ontario has further evidenced through a re-emergence of ‘backwards’ type trends that represent farming communities and methods of the past. For example, many people are returning to a more nostalgic way of purchasing their food such as buying bread from the bakery, vegetables from the local farmer at the market and shopping for meat at the local butcher store as opposed to one-stop type of shopping at large scale grocery stores. This perspective of social support was associated mainly with fresh market oriented farmers in this study, suggesting that the social indicators of sustainability may be more supported and met through farms that are oriented towards fresh markets and take part in the direct marketing of their products to consumers. These findings suggest that farm sustainability, in each of its various components is affected by both location and proximity to markets as well as by what type of market a farm is oriented towards.

Analysis of the qualitative and quantitative data presented in this research has helped conclude that the type of farm and therefore market that a farmer is oriented towards has a great affect on what aspect of the farm, based on ecological, economic and social components that a farmer chooses to focus on. Due to the competitive nature of contract tomato farming, it is evident that these farmers tend to focus largely on economic sustainability, generally at the expense of ecological sustainability. Social
sustainability seemed to be less of a focus in this type of farm based on the market orientation itself. These tomato farmers are not supplying directly to consumers, instead they are supplying their vegetables to processing plants and have a more extended food trade that consists of more nodes between producer and consumer. Therefore, social sustainability may not necessarily be seen as a vital component of this type of farm in comparison to farms that are fresh market oriented and rely on direct marketing to consumers. Since these types of farms supply directly to consumers and create relationships based on quality, reciprocity and trust, it may be the farm types themselves that make farmers focus on the ecological sustainability of their operations in order to supply quality commodities to consumers and therefore ensure social sustainability.
BIBLIOGRAPHY


Renting, H., Marsden, T. and Banks, Jo. 2003. Understanding alternative food networks:
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Appendix A
Interview Questionnaire

Basic Demographic Questions

1. Age: _____ (questions 1 and 2 will not be asked to the interviewee, the student investigator will place them into a category by general observation)
2. Gender: _____
3. Did you grow up on a farm? Yes___ No___
4. How long have you been farming? _____ years

Economic Questions

5. Are you the sole proprietor of this farm? Yes___ No___
6. Do you farm other land? Yes___ No___
7. If yes, list your other holdings.

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<tr>
<th>Location</th>
<th>Size</th>
<th>Rent or Own</th>
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8. How many acres (or hectares) are you farming this year? _____ acres: hectares
9. Are you actively farming more or less acres/hectares now than since you started farming? More___ Less___
10. Why? ____________________________________________________________
________________________________________

11. Is your entire farm devoted for vegetables farming? Yes___ No___
12. If no, could you estimate the proportion of area you’re farming this year that is not devoted to vegetables?
   - grain crops ____ %
   - pasture ____ %
   - tree fruit ____ %
   - other 1: _____________ ____%
   - other 2: _____________ ____%
   - other 3: _____________ ____%

13. What was your average total value of farm sales last year? (check one)
   - ___ under $10,000
   - ___ $10,000 to $24,999
   - ___ $25,000 to $49,999
   - ___ $50,000 to $99,999
   - ___ $100,000 to $249,999
   - ___ $250,000 to $499,999
   - ___ $500,000 to $999,999
   - ___ $1,000,000 to $1,999,999
   - ___ $ 2,000,000 +

14. Have your annual sales as indicated above changed significantly over the past 5 years? (check one)
   - ___ Yes, significantly decreased
   - ___ Yes, significantly increased
   - ___ No

15. If yes, why do you think this is the case?

_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________
_____________________________________________________________________________________

16. Growing lettuce (or tomatoes, depending on which farmer the survey is going to) is consistently profitable. (check one)
   - ___ strongly agree
   - ___ agree
   - ___ neither agree nor disagree
   - ___ disagree
17. Why do you think this is the case?  
____________________________________________________________________________________  
____________________________________________________________________________________  
____________________________________________________________________________________  
____________________________________________________________________________________

18. What was your average price (cents/lb) last year for tomatoes (or lettuce)? (circle one) ______ cents/lbs

19. How has this changed in recent years?  
-the price/lb has increased _____  
-the price/lb has decreased _____

20. Why do you think this has happened?  
____________________________________________________________________________________  
____________________________________________________________________________________  
____________________________________________________________________________________  
____________________________________________________________________________________  

21. Has your equity increased since you’ve been farming? (i.e. you’ve acquired more acres, more equipment etc.) Yes ____ No ___
22. Why do you think this is the case?

__________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

________

23. Are you employed off the farm? Yes___ No___

24. If yes, what is your off farm job?

__________________________________________

_____________________________________________________________________

__________________________

__

25. If yes, why are you employed off the farm?

__________________________________________

_____________________________________________________________________

_____________________________________________________________________

_____________________________________________________________________

__________________________

____________

26. If yes, what type of work do you do off the farm? (check one)
- ___ part-time, year round
- ___ part-time, seasonal
- ___ full-time, year round
- ___ full-time seasonal
- __other (please specify)

27. Are there adequate opportunities for off-farm work in your local community? Yes____ No ____

**Environmental Questions**

28. How many species of tomatoes (or lettuce) do you grow?

____________________

_______________________________________________________

30. What is your average yield ('000lbs/acre)? (for tomatoes or lettuce) (circle one)_______ lbs/acre(or hectare)

31. Have your yields increased since you’ve been farming? Yes__ No ___

32. Why do you think this is the case?

_________________________________________
_____________________________________________________________________
_____________________________________________________________________

33. What types of fertilizers do you use? (please list)

________________________

________________________

________________________

34. What pest control methods do you use? (please list)

________________________

________________________

________________________
35. Are you able to buy these inputs from within your local community? Yes___ No___

36. If no, where do you get these inputs from? (how far away from your community)
_____________________________________________________________________
_____________________________________________________________________
_____________________________________________________________________
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37. Have you increased the quantities of inputs to your field since you’ve been farming? Yes___ No___

38. Why or why not?
_____________________________________________________________________
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39. Which (if any) of the following strategies do you use:
- intercropping: Yes___ No___
- cover cropping: Yes___ No___
- strip cropping: Yes___ No___
- crop rotations: Yes___ No___

40. If yes (to any of the above) why have you chosen to use this/these method(s)?
_____________________________________________________________________

___
Social Questions

41. I have complete control in the decision making processes with regards to the management of my farm. (i.e. I grow what commodities I want, I use whatever seeds I want, I use whatever inputs I want, I supply to whichever markets I want etc.)
   - ___ strongly agree
   - ___ agree
   - ___ neither agree nor disagree
   - ___ disagree
   - ___ strongly disagree

42. Why is this case?

   ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________

   ____________________________________________________________

43. The location my farm is located in has easy access to an abundance of markets (check one)
   - ___ strongly agree
   - ___ agree
   - ___ neither agree nor disagree
   - ___ disagree
   - ___ strongly disagree
44. Why do you think this?

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________


45. What local community activities (if any) do you and your family participate in?
   (i.e. social, religious, sports, charity groups, etc.)

______________________________________________________________

______________________________________________________________

______________________________________________________________

______________________________________________________________


46. How does the location of your farm affect the following factors? (check one)

1. My farm is located too far from the markets: agreed_____ disagreed____

2. If I wanted to expand to more markets I easily could based on the location of my farm:
   disagreed____
   agreed____

3. I supply my products to mainly fresh markets: agreed____
   disagreed____

4. My farm has good soil quality: agreed_____ disagreed____
5. My farm is located in an area with a good growing season:
   agreed____
disagreed____

**Open ended Questions**

47. Why are you farming? _______________________________________________

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48. Why have you chosen to grow vegetables? (have you always grown vegetables?
   Why these species/number of species?)
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49. In terms of inputs (fertilizers, herbicides, pesticides) have you always used that many/in the same quantity/the same brand/synthetic or organic? (how do you manage these inputs? What is the cost?)
50. What barriers (if any) do you think prevent you from accessing more markets and perhaps improving your margins?

_____________________________________________________________________

_____________________________________________________________________

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_____________________________________________________________________

_____________________________________________________________________

51. How do you feel your farm does or doesn’t support the local community? In what ways do you feel supported (or not) by the local community? (prompting questions: can you describe your interactions with the local community?)

_____________________________________________________________________

_____________________________________________________________________

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_____________________________________________________________________
52. Over the decades, how has the way you’ve managed your farm changed? (prompting questions: has there been a change in the crops, harvesting techniques, machinery used, expansion into different markets?)

53. In a general sense, what do you think (tomato or lettuce) farming in (community name) will look like down the road? (prompting questions: why do you think this is? Do you think it will be any different from what farming across Ontario would look like?)
54. Thinking of your entire farm, what types of vegetables are you growing this year on your farm? What proportion of your total does each commodity account for? (check all that apply and provide a %)

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<th>Vegetable</th>
<th>&lt;5%</th>
<th>5-10%</th>
<th>10-20%</th>
<th>20-25%</th>
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<td>Eggplant</td>
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<td>Lettuce and leafy greens</td>
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<tr>
<td>Market</td>
<td>Strategies used</td>
<td>Crops/Commodities</td>
<td>Volume Sold</td>
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55. What marketing opportunities do you use the mist? For which crops/commodities? And approximately what is the volume sold? (fill out all that apply)
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56. Are the strategies that you’re currently using the ones you envision continuing with or are they trending? (prompting questions: trending either by choice or by pressure, toward other forms of marketing?)
Appendix B
Farm Type 4: Urban/Processing

Farm type 4 in the specific case of tomato processing in Ontario does not exist in the urban criteria as created for this research. All of the tomato processing plants are located in Chatham-Kent and Norfolk County, residing outside of Ontario’s Greater Golden Horseshoe, denoting them as rurally located (Figure 12).

![Figure 12: Location of tomato processing plants in Ontario (Source: OPVG, 2010; map adapted from Statistics Canada 2006 Census of Agriculture, 2012).](image)

In order to create a testable fourth farm type, further indicators were examined in attempts to generate an acceptable standard for this group. These indicators included variables such as: each processing plants’ proximity to major city centres, population density of the city in which the processing plant is located and population of the largest census division per county in closest proximity to the processing plant. However, these variables did not create a usable framework from which 3 other farm types could be classified, therefore, for this project, the fourth farm type will not be used. This does not prove to be problematic or detrimental to the findings of this research due to the fact that
I am interested in 2 variables that are independent of each other: market choice/control and location, therefore, 3 testable farm categories will be able to provide useful findings based on a rural-urban continuum and farm type classification. This project is less concerned about the ‘farm types’ themselves and more focused upon the individual experiences of farmers along the rural-urban continuum and between various market focuses, therefore this component of the framework does not get populated for purposes of the empirical analysis.