

Ethno-Cultural Vegetable Value Chain Structure and Supply Characteristics in
Ontario.

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Abstract

Ethno-Cultural Vegetable Value Chain Structure and Supply Characteristics in Ontario.

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An analysis of the wholesale availability of okra, Chinese long eggplant and Indian round eggplant in the greater Toronto area (GTA). Market observation at the Ontario Food Terminal (OFT) included recording each observation of these products including the price, country of origin and photographs of the product. Interviews were completed with ECV producers, wholesalers and retailers. All three crops are available at the OFT. Locally-produced Indian round eggplant was rarely available, Chinese long eggplant commonly available and okra available but of inferior in quality to imports.

The value chain structure in the GTA includes relational networks and market structures. The central role of supermarkets in the market was confirmed, privately-held specifications define ECV quality in the market. Imported supplies of ECV's have undergone superior post-harvest handling procedures to most Ontario-grown ECV supplies. Ontario-grown ECV's with proper post-harvest handling met quality standards and received competitive prices.

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Table of Contents

Abstract.....	ii
Acknowledgments.....	iii
Table of Contents.....	v
List of Tables.....	x
List of Figures.....	xi
Chapter 1 Introduction.....	1
1.1 Background.....	1
1.2 Research Problem.....	3
1.3 Research Goal.....	4
1.4 Research Objectives.....	4
1.5 Organization of the Thesis.....	4
1.6 Summary.....	5
Chapter 2 Literature Review.....	8
2.1 Value Chain Analysis Theory.....	8
2.1.1 The UK-Kenya Trade Example.....	8
2.1.2 Supply Chain Structure and Governance.....	9
2.2 ECV Value Chain Structures.....	11
2.3 Food Regime Theory.....	12
2.3.1 Introduction to Food Regimes.....	12
2.3.2 A Third Food Regime?.....	13
2.4 Private Standards and Quality.....	14
2.5 Evolving Super-Market Produce Purchasing Systems.....	15
2.6 ECV Quality and Standards.....	17
2.7 Localizing Produce Supply Chains.....	17
2.7.1 Food Security.....	18
2.8 Food Justice.....	19
2.9 Existing Research Gap.....	22
2.10 Conclusion.....	23
2.11 Conceptual Framework.....	23
Chapter 3 Research Methods.....	28

3.1 Mixed Methods Approach	28
3.2 Quantitative Methods.....	28
3.2.1 Market Observation	28
3.2.2 Photograph Analysis	32
3.3 Product Quality Scores	33
3.3.1 Chinese Long Eggplant Quality Scores	34
3.3.2 Okra Quality Scores.....	39
3.4 Quantitative Methods Conclusion.....	43
3.5 Qualitative Methods.....	43
3.5.1 Semi-Structured Interviews	44
3.5.2 Interviewees	47
3.5.3 Coding.....	48
3.6 Qualitative Conclusion.....	52
3.7 Statistical Analysis Methods.....	43
3.8 Methods Conclusion	52
Chapter 4 Results	54
4.1 Ethno-cultural Vegetable Wholesale Availability at the Ontario Food Terminal	55
4.1.1 Okra Availability	55
4.1.2 Chinese Long Eggplant Availability.....	57
4.1.3 Indian Round Eggplant Availability	60
4.2 Qualitative Results on Local Production	63
4.2.1 Early Season.....	64
4.2.2 Peak Season	65
4.2.3 Late Season	67
4.3 Characteristics of Wholesale Ethno-cultural Vegetables at the Ontario Food Terminal....	69
4.3.1 Okra Price Characteristics.....	69
4.3.2 Chinese Long Eggplant Price Characteristics.....	73
4.3.3 Qualitative Interviews Pricing Observations	77
4.3.4 Okra Physical Product Characteristics.....	79
4.3.5 Chinese Long Eggplant Physical Product Characteristics	87
4.3.6 Qualitative Interviews Observations on Product Quality	96
4.4 Post-Harvest Handling Characteristics of Wholesale Ethno-cultural Vegetables in the GTA	99

4.4.1 Post-Harvest Handling Characteristics of Okra and Wholesale Marketability	100
4.4.2 Post-Harvest Handling Characteristics of Chinese long eggplant and Wholesale Marketability.....	102
4.4.3 Qualitative Interview Observations on Post-Harvest Handling.....	104
4.4.4 Qualitative Interviews Observations on Transport and Distribution	106
4.5 Analysis of the Wholesale Ethno-cultural Vegetable Value Chain Structure in the GTA	109
4.6 Ethno-cultural Vegetable Product Specifications	119
4.7 Qualitative Interviews Observations on Sourcing and Selling Ethno-cultural Vegetables	123
4.8 Qualitative Interviews Observations on the Future of Local Production of Ethno-cultural Vegetables.....	126
4.9 Summary of Results	127
Chapter 5 Discussion	129
5.1 The Evolution of Value Chains and the Dominance of Supermarkets	129
5.1.1 Inter-chain Retail Grocery Competition	130
5.1.2 Produce Quality and Brand Recognition	130
5.1.3 Supermarkets as Decision Makers	131
5.1.4 Buyer Driven Supply Chains and Supermarket Produce Buyers.....	132
5.2 Impact of Value Chain Structural Changes on Producers	133
5.2.1 Organisational Capabilities.....	133
5.2.2 Post-Harvest Handling.....	134
5.2.3 Labour Costs	135
5.2.4 Logistics.....	136
5.3 Value Chain Structure and Governance.....	137
5.3.1 Retail Chain Store Value Chain.....	137
5.3.2 Independent and Specialty Supply Chains.....	138
5.3.3 Regional Supermarket Value Chain.....	139
5.3.4 Food Service Value Chain	139
5.4 Ontario ECV Producer Types and their Interaction with the GTA ECV Value Chain	140
5.4.1 Value Chain derived Limiting Factors to Ontario ECV Production.....	141
5.5 Firm Structure and Import Supplies of ECV's in the GTA	144
5.5.1 Value Adding in the ECV Value Chain.....	145
5.5.2 Mutual Inter-firm Dependence and ECV's.....	145

5.5.3 Asset Specificity and ECV's.....	146
5.5.4 Inter-firm Relationships and the roles of Trust and Governance.....	148
5.5.5 Evolving value chain Structures and the onset of Modular Networks.....	148
5.5.6 Ethnic and Personal Ties in the GTA ECV Value Chain	151
5.6 Product Specifications and ECV Marketing in the GTA.....	152
5.6.1 Visual Characteristics	153
5.6.2 Physical Characteristics	153
5.6.3 Limitations of Product Specifications.....	153
5.6.4 Supermarket Produce Purchasing Programs	154
5.7 Power and Influence in the ECV Value Chain	156
5.7.1 Externalized Capabilities and Responsibilities.....	157
5.7.2 ECV's and New Product Development	158
5.8 The Third Food Regime and ECV Value Chains	159
5.9 Limitations	161
5.9.1 Quantitative Methods Limitations	161
5.9.2 Qualitative Methods Limitations	163
5.10 Summary of Discussion	164
Chapter 6 Conclusions	165
6.1 Market Structure	165
6.1.1 Traditional Wholesalers.....	165
6.1.2 Modern Wholesalers	166
6.1.3 Direct Purchasing by Retailers.....	166
6.1.4 Transforming Supply Chains into Value Chains	167
6.2 Product Requirements.....	167
6.2.1 Chinese Long Eggplant Quality Requirements.....	167
6.2.2 Okra Quality Requirements	168
6.3 Current state of Ontario-Grown Ethno-cultural Vegetables	168
6.4 Research Objectives Revisited.....	173
6.4.1 Assess the wholesale availability of okra, Chinese long eggplant and Indian round eggplant at the Ontario Food Terminal wholesale market.....	173
6.4.2 Assess the quality and market characteristics of the imported and local supplies of okra, Chinese long eggplant and Indian round eggplant observed at the Ontario Food Terminal	173

6.4.3 Investigate the inter-firm relationships among wholesale firms, retailers and producers in order to develop an understanding of the value chain structure of ECV's in the GTA..	174
6.4.4 Investigate potential ways to increase the marketability of locally produced okra, Chinese long eggplant and Indian round eggplant.....	174
6.4.5 Determine the role that private product specifications play in the marketing of ethno-cultural vegetables in the GTA.	174
6.5 Research Goal Revisited	174
Chapter 7 Recommendations	176
7.1 For Ontario Vegetable Producers.....	176
7.2 For Wholesalers	176
7.3 For Retailers.....	176
7.4 For Ontario Food Terminal.....	177
7.5 For Government	178
7.6 For Further Research at the University Level.....	178
7.7 For Further Research at the Public Private Partnership Level	179
Bibliography	180
Appendix 1 Key Informant Producer Interview Outline	183
Appendix 2 Key Informant Wholesaler Interview Outline.....	186
Appendix 3 Key Informant Retailer Interview Outline	189

List of Tables

Table 4.1 Okra Availability at the Ontario Food Terminal between July 3rd and November 28th 2013

Table 4.2 Chinese Long Eggplant Availability at the Ontario Food Terminal between July 3rd and November 28th 2013

Table 4.3 Indian Round Eggplant Availability at the Ontario Food Terminal between July 3rd and November 28th 2013

Table 4.4 Qualitative Interview List with ECV Value Chain Participants in the GTA

Table 4.5 Spearman's Correlation Results for Okra Wholesale Price, Country of Origin and Overall Quality Score

Table 4.6 Spearman's correlation results for Chinese long eggplant between Wholesale price, Observation period, Country of Origin and Overall Quality Score.

Table 4.7 Okra Quality Scores of Samples observed on August 13th 2013

Table 4.8 Chinese Long Eggplant Quality Scores of Samples observed and photographed on August 28th 2013

Table 4.9 Tests of Normality for Chinese long eggplant Wholesale Price and Average Fruit Length to Width Ratio

Table 4.10 Spearman Correlations between Chinese Long Eggplant Quality Scores for Locally Produced Samples

List of Figures

Figure 2.1 Existing ECV Value Chain Research and Research Gap

Figure 2.2 Conceptual Framework

Figure 2.3 Relational Value Chains

Figure 3.1 Examples of Chinese Long Eggplant samples with assigned Product Size Consistency Score

Figure 3.2 Examples of Chinese Long Eggplant samples with assigned Product Shape Score

Figure 3.3 Examples of Chinese Long Eggplant samples with assigned Product Colour Score

Figure 3.4 Examples of Chinese Long Eggplant samples with assigned Product Damage Score

Figure 3.5 Examples of Chinese Long Eggplant samples with assigned Product Visual Appeal Score

Figure 3.6 Examples of Okra samples with assigned Product Size Consistency Score

Figure 3.7 Examples of Okra samples with assigned Product Colour Score

Figure 3.8 Examples of Okra samples with assigned Product Damage Score

Figure 3.9 Examples of Okra samples with assigned Product Visual Appeal Score

Figure 3.10 Primary Coding Structure of ECV Value Chain Participant Interviews

Figure 3.11 Secondary Codes of the Primary Code Quality under the Category Code of Dependent codes

Figure 3.12 Secondary codes of the Network Dependent codes

Figure 3.13 Secondary codes of the Capital Dependent codes

Figure 3.14 Secondary codes of the Independent codes

Figure 3.15 Secondary codes of the Qualifier codes

Figure 4.1 Observed Wholesale Okra Prices at the Ontario Food Terminal (July 1st to November 31st 2013)

Figure 4.2 Okra Prices Observed at the Ontario Food Terminal and USDA Average Okra Prices in Toronto (July 1st to November 31st 2013)

Figure 4.3 Observed Wholesale Chinese long eggplant prices at the Ontario Food Terminal (July 1st to November 31st 2013)

Figure 4.4 Quality Scores of Wholesale Okra observed at the Ontario Food Terminal (July 1st to November 31st 2013)

Figure 4.5 Average Okra Wholesale Fruit Size observed at the Ontario Food Terminal (July 1st to November 31st 2013)

Figure 4.6 Annotated Photographs of Okra Samples Observed on August 13th 2013

Figure 4.7 Annotated Photographs of Okra Samples Observed at the Ontario Food Terminal over the 2013 Ontario Okra Growing Season (Paired samples by country of origin, spring and fall)

Figure 4.8 Chinese Long Eggplants Observed and Photographed on August 28th 2013

Figure 4.9 Various samples of Ontario Grown Chinese Long Eggplants Observed at the Ontario Food Terminal over the 2013 Ontario Eggplant Growing Season.

Figure 4.10 Quality Scores of Chinese long eggplants Displayed for Wholesale at the Ontario Food Terminal Between July 1st 2013 and November 31st 2013

Figure 4.11 Chinese long eggplant fruit size ratio observed at the Ontario Food Terminal (July 1st to November 31st 2013)

Figure 4.12 Wholesale Price and Fruit Size Ration of Observed Chinese Long Eggplant at the Ontario Food Terminal (July 1st to November 31st 2013)

Figure 4.13 Quality Scores and Prices of Okra samples observed at the Ontario Food Terminal (July 1st to November 31st 2013)

Figure 4.14 In Season Quality Scores and Prices of Ontario-grown and Imported Okra at the Ontario Food Terminal (July 30th and September 17th 2013)

Figure 4.15 Ontario-grown Chinese Long Eggplant Product Quality Score and Wholesale Price at the Ontario Food Terminal (July 1st to November 31st 2013)

Figure 4.16 Ethno-cultural Vegetable Value Chain as observed in 2013 Ontario Production Season

Figure 4.17 Okra Value Chain Governance Structure in the GTA

Figure 4.18 Chinese long eggplant Value Chain Governance Structure in the GTA

Chapter 1 Introduction

This Study examines the wholesale availability of three ethno-cultural vegetables (ECV's): okra, Chinese long eggplant and Indian round eggplant. The available supplies of these produce items were characterized and analyzed according to their country of origin, wholesale price and other quality characteristics. Furthermore, this study investigates the value chain structure and governance of the wholesale, retail and producer firms involved in the ECV trade in the GTA.

1.1 Background

As significant immigration, changes the cultural dynamics of the Greater Toronto Area (GTA), there is a large and growing demand for ethno-cultural vegetables (ECV's). Adekunle et al. have shown through three published papers in 2011, 2012 and 2013 that demand for ethno-cultural vegetables in the GTA is significant. According to their estimates there is a \$21 million monthly demand for ethno-cultural vegetables amongst Chinese Canadians (Adekunle, Filson, & Sethuratnam, 2013), \$7 million monthly demand amongst Afro-Caribbean Canadians (Adekunle, 2011) and \$33 million monthly demand from South-East Asian Canadians (Adekunle, Filson, & Sethuratnam, 2012), for a total of \$61 million monthly demand between these three largest ethnic groups in the GTA (Adekunle et al., 2012). This represents a large potential for Ontario farmers to supply new products to new growth markets. Adekunle et al. recognize that there is a "lack of production and value chain information and very limited published research data in Canada to date" (2012, p.148) this is where this thesis is targeted, providing information pertaining to the Canadian value chain for ECV's.

What are Ethno-cultural vegetables (ECV's)? Working from the definition of ethnicity given by Adekunle et al. (2011), referring to a group of people who share a common cultural

heritage, we can show that ethno-cultural vegetables are the preferred vegetables of an ethnic group that are common to their shared cultural heritage and cuisine. Adekunle et al. collected the names of the most purchased and requested vegetables by each ethnic group. It was determined by Vineland Research and Innovation Center (VRIC) that the most promising vegetables for further research in Ontario were Okra, Chinese Long Eggplants and Indian Round Eggplants. This decision was based on two factors: these crops could be produced within Ontario, at least on a small scale, and they had the highest demand of the ECV crops that were not already being commercially produced in Ontario. Another factor in the importance of ethno-cultural vegetables in the GTA market, aside from the overall size of the ethnic populations, is the percentage of their food budget that various ethnic groups spend on vegetables, as high as 39% for Chinese Canadians (Adekunle et al., 2013) as opposed to 7% for the average Ontario consumer (Adekunle et al., 2012).

This consumer research has provided strong insight into what consumers are looking for, where they are looking for it and what traits they want it to have. The results are showing that there is potential for greater production of ECV's within Ontario. This has caused Vineland Research and Innovation Center (VRIC) to invest in researching the crops further. Their research includes variety selection based on local testing for productivity, pest and disease presence, consumer preference and post-harvest handling. This research has focused on the same 3 target crops as this paper: Okra, Chinese Long Eggplants and Indian Round Eggplants. This research has made significant advances towards providing more information to local growers about the agronomic production factors associated with these crops. They have also completed further research on consumer preferences between multiple varieties of each crop as well as a comparison between locally-produced and imported produce to determine consumer preferences.

Finally, efforts have been made to determine the economic feasibility of ECV production in Ontario taking into account all of the costs of production and the potential income from these crops. The income potential appears to be comparable to similar horticultural crops and therefore these crops could be competitive.

This research was supported financially by a New Directions grant provided by the Ontario Ministry of Agriculture, Food and Rural Affairs to Vineland Research and Innovation Center.

1.2 Research Problem

The research problem that this thesis was established to address is based on the large undersupplied market demand for ECV's in the GTA as described by Adekunle et al. (2011, 2012, 2013). This undersupplied demand is paired with falling farm-incomes amongst vegetable producers in Ontario and a food system that is increasingly dependent on imported fresh fruits and vegetables. It has previously been cited that there are many small scale producers in Ontario growing ECV's (Narwaratne, 2012) and yet they do not appear to be able to supply the wholesale market. There is a lack of information as to why these small scale producers with experience growing ECV's are not expanding to fulfill the need for wholesale scale producers and why larger scale producers growing wholesale vegetables of other types are not entering the ECV market. This research is an attempt to address the problem of limited information about the current wholesale supplies of ECV's and to explore potential issues with Ontario grown produce at the wholesale level, as well as exploring any potential limitations to expansion of the Ontario wholesale ECV market. Without an understanding of the current status of both Ontario-grown wholesale ECV's and imported ECV's, little progress can be made to increase local production. Previous research has shown that okra, Chinese long eggplant and Indian round eggplant all have high demand in the GTA (Adekunle et al., 2011) and can be successfully grown in Ontario

(VRIC); therefore, these three crops were chosen as preliminary crops to research at the wholesale market level.

1.3 Research Goal

To better understand the current state of supply of okra, Chinese long eggplant and Indian round eggplant in the Greater Toronto Area and investigate the potential to increase large scale, local production of these crops and in turn improve the availability of high quality fresh culturally-appropriate foods in the GTA.

1.4 Research Objectives

In order to achieve the research goal the following are the research objectives:

1. Assess the wholesale availability of okra, Chinese long eggplant and Indian round eggplant at the Ontario Food Terminal wholesale and farmers markets.
2. Assess the quality and market characteristics of the imported and local supplies of okra, Chinese long eggplant and Indian round eggplant observed at the Ontario Food Terminal
3. Investigate the inter-firm relationships among wholesale firms, retailers and producers in order to develop an understanding of the value chain structure of ECV's in the GTA.
4. Investigate potential ways to increase the marketability of locally-produced okra, Chinese long eggplant and Indian round eggplant.
5. Determine the role that private product specifications play in the marketing of ethno-cultural vegetables in the GTA.

1.5 Organization of the Thesis

This thesis begins with an introduction to the topic of ethno-cultural vegetables and a background of the existing and on-going research on the topic that has been completed in the province. It continues with a brief summary of the research process and findings before moving

into a foundational literature review grounding the thesis in food systems theory, value chain structure and governance and food regime theory. After the literature review, Chapter 3 outlines the qualitative and quantitative methods used to collect the data for the analysis which follows in the results, in Chapter 4. The broader implications of those results are discussed in Chapter 5 and brought into the contexts of food systems theory and value chain structures. In Chapter 6, the overall conclusions of the thesis are brought forward and the most significant findings of the research are described. The final chapter also includes recommendations for further action toward improving local production of ECV's in Ontario for each level of the value chains, as well as recommendations for further research into the topic.

1.6 Summary

This thesis is an analysis of the wholesale market availability of okra, Chinese long eggplant and Indian round eggplant in the greater Toronto area (GTA). These niche crops fit into the category of ethno-cultural vegetables, an area of potential growth in the wholesale produce market with over \$60 million worth of monthly demand in the GTA according to Adekunle et al. in their three papers (2011, 2012, 2013) outlining the demand from Asian, South-east Asian and Afro-Caribbean ethnic groups in the GTA. An understanding of the current wholesale supplies - both from imports and local suppliers and the characteristics of those supplies - is needed to inform further development in this area and is the goal of this thesis. Furthermore, little information was known about the structure and governance of the value chain participants involved in the trade of ECV's in the GTA, and therefore investigation into the value chain structure was also included in this thesis.

Two data collection methodologies were used to address both quantitative and qualitative questions about the current ECV supply and the value chain structure. The first data collection

technique used was regular market observations at the Ontario Food Terminal (OFT) which was visited weekly between July 1st 2013 and November 31st 2013 with all visibly available supplies of the specified ethno-cultural vegetables (ECV) being sampled. Each sampling included the collection of the unit price, country of origin and unit size. A photograph of the product and product packaging was also collected and later analysed to determine the average product size for each observation and Likert-scale quality scores for characteristics such as colour, shape and damage for each observation. The second data collection process consisted of qualitative interviews with key members of the ECV value chain including farmers, wholesalers and retail produce buyers. These qualitative interviews were semi-structured, open-ended interviews which were recorded, transcribed and coded to develop themes and extract concepts. These qualitative results were used to better understand the value chain structure and governance within the value chains of each of the observed supply chains.

The analysis found that Chinese long eggplant and okra are readily available at the OFT with multiple wholesalers offering these ECV's on a daily basis. Indian round eggplant was less readily available at the OFT although still commonly available from at least one source, and is readily available from other wholesale sources in the GTA. Locally-produced versions of Chinese long eggplant were readily available from multiple sources at the OFT throughout the Ontario growing season. Locally-produced okra was sporadically available at the food terminal although all of the Ontario-produced okra observed at the OFT was of inferior quality to the import supplies available at the OFT. Locally-produced Indian round eggplant was not commonly available at the OFT during the observation period.

The value chain structure amongst firms involved in the trade of ECV's in the GTA was found to include multiple unique value chain structures with some okra being marketed via a

simple market structure and the majority of Chinese long eggplants and locally grown ECV's being marketed via a relational network value chain structure. Characteristics of an emerging market structure were observed amongst some local producers of ECV's as well as a significant import supplier of okra. The central role of chain supermarket retailers in the GTA wholesale produce market was confirmed. Privately-held product specifications developed by supermarkets were found to play a central role in defining ECV product quality on the wholesale market. It was found that imported supplies of ECV's had undergone superior post-harvest handling procedures in comparison to the majority of Ontario-grown ECV supplies. Few Ontario ECV producers had invested in these post-harvest handling capabilities and therefore the majority of Ontario-grown okra and some of the Chinese long eggplants did not meet minimum post-harvest handling standards. Ontario grown Chinese long eggplant which had undergone proper post-harvest handling was found to meet high quality standards and receive competitive market prices.

Chapter 2 Literature Review

This literature review chapter presents the theoretical perspective from which the research was undertaken. It also presents the greater context within which the research is situated theoretically. It begins with an introduction into value chain analysis theory and value chain structures as well as their governance models. The chapter continues with a discussion of food regime theory and its impact on concepts surrounding the evolution of food retailing. Furthermore, it addresses the role of quality standards and consumer expectations for ECV's and the modern supermarket purchasing model on the ECV market and brings together theories on food security, food system localization and food justice theory as it relates to the availability of ECV's in the GTA. The chapter concludes with a discussion of the research gap within which the research is focused as well as the conceptual framework of the research and the values on which the research has been grounded.

2.1 Value Chain Analysis Theory

2.1.1 The UK-Kenya Trade Example

The most similar research to this thesis research was completed in the UK by Hingley, Lindgreen and Beverland in Barriers to network innovation in UK ethnic fresh produce supply (2010) which investigated the “supply chains and networks that attempt to meet market demand for ‘specialist’ fresh produce, targeted at and run by ethnic minority controlled food service businesses in the UK” (p.77); this research focused on the same actors in the supply chain and used similar methods to the research that was undertaken in the GTA. The UK study found that “Asian and Afro-Caribbean food products often are imported through small wholesalers in the Manchester area and delivered to communities” (Hingley et al., 2010, p.78) this small scale wholesaler value chain was investigated in Toronto but was found to be only one of multiple co-

existing value chains of various sizes and degrees of organization, which require further study to understand their role in ECV distribution with the city.

Previous research by Narwaratne (2012) investigated the value chain for ECV's in Ontario from the perspective of the farmers and included multiple interviews with researchers and a small sample of industry members to assess the overall structure of the value chains in Ontario. This research focused primarily on small scale producers and established producers of Chinese greens (Nawaratne, 2012); further research is required to assess the market access potential for new crops such as okra and eggplants, specifically into the main stream supermarket value chain. A second article on the UK produce value chain by Dolan and Humphrey (2000) discussed value chains supplying supermarkets as opposed to smaller community based independent businesses. The Dolan and Humphrey paper also addresses the evolution of these value chains specifically between the UK and Kenya, from small exporters and producers working with independent importers in the UK, who would then sell these products to independent retailers, evolving into larger producers exporting directly to major retail chains. This evolution is paralleled in the value chains between Canada, the United States of America (USA) and several Central American countries (Dolan & Humphrey, 2000).

2.1.2 Supply Chain Structure and Governance

Dolan and Humphrey also introduce the concept of supply chain governance which includes decision making and communication channels within a supply chain as well as the physical movement and transformation of product. Supply chain governance includes the development of standards and protocols, decision-making authority and long-term planning surrounding the product; firms within the value chain are able and expected to fill these governance roles. Another key concept introduced by Dolan and Humphrey (2000) is producer-driven versus buyer-driven chains – two value chains with fundamentally different governance

structures and functions. Producer-driven chains exist where technology and capital investment by producers provides them with market power and governance potential through control of key technologies (Dolan & Humphrey, 2000). Conversely, buyer-driven chains are defined primarily by brands with market share that do not produce products themselves but govern the supply chain by maintaining market demand for their own branded products (Dolan & Humphrey, 2000). The common supermarket value chain for produce, therefore, is generally a buyer-driven chain where supermarkets control the chain via their significant market share. Importantly, Dolan and Humphrey (2000) state that “whereas imported horticultural produce was previously channeled primarily through wholesale markets, the largest UK retailers now control 70-90% of fresh produce imports from Africa” (Dolan & Humphrey, 2000, p.152). This is the significant evolution in fresh produce value chains that has been noted in Europe and in North America.

Humphrey digs deeper into this supply chain analysis with Gereffi and Sturgeon in The governance of Global Value Chains (2005) which introduces concepts such as vertical integration: companies that incorporate all or many stages of their value-chain from input manufacturing to production, processing, marketing, and sales; corporate dis-integration: the process of selling off or segregating specific competencies of a company from the main corporation (Gereffi, Humphrey, & Sturgeon, 2005); value-adding: a series of steps through which value is added to a product (Gereffi et al., 2005); arm’s length markets: market relationships with other firms outside the primary firm, generally completed without contracts and based on reputation and repeat transactions (Gereffi et al., 2005); as well as a company’s core competency: those actions in which a firm has a competitive advantage (Gereffi et al., 2005). They propose “three modes of industrial organization: market, hierarchy and network” (Gereffi et al., 2005, p.82). They specify that networks can take many forms which leads to five

models of value chain governance which are markets, modular value chains, relational value chains, captive value chains and hierarchy (Gereffi et al., 2005). Markets are defined by the low cost of switching suppliers or buyers for both parties being low (Gereffi et al., 2005). Hierarchical value chains are generally internalized within a firm, where switching providers of components in the value chain is not common as they are all internal (Gereffi et al., 2005). Modular value chains are closest to markets with the smallest amount of connection between actors; most decisions are made independently with some coordination when needed (Gereffi et al., 2005). Captive value chains are closest to hierarchical systems with large integrated firms controlling some sections of the value chain and many small actors in other sections of the value chain that are dependent on the large firm or firms (Gereffi et al., 2005). Relational value chains require the greatest amount of inter-firm governance with complex decisions being made amongst actors in the chain (Gereffi et al., 2005). They explain that relational value chains

may be managed through reputation, or family and ethnic ties. Many authors have highlighted the role of spatial proximity in supporting relational value chain linkages, but trust and reputation might well function in spatially diverse networks where relations are built-up over time or are based on dispersed family and social groups. (Gereffi et al., 2005, p.84)

2.2 ECV Value Chain Structures

These various forms of value chain governance can be seen in the ECV value chains in the UK and later within the Ontario ECV value chain. Many authors have stressed the significance of relational and family businesses in the ECV sector. Cheung and Gomez (2009) explore that idea in more depth, questioning the role ethnicity plays and “the argument that Chinese businesses have evolved well because of family ties and their inclusion in mutually-beneficial ethnically constructed networks.” (p.133) Instead they claim that although “[k]inship ties have evidently proven an important mechanism in obtaining labor for the enterprise. Management,

however, remains very closely controlled by the family” (Gomez & Cheung, 2009, p.153).

Perhaps ethnic cooperation may be exaggerated in some cases but the concepts of relational value chains appear to still hold up in many ECV value chains.

Gereffi et al. (2005) also introduce the concept of codification, various ways to transfer information including standards, which are important in the governance of supermarket value chains and are discussed later in more detail. Codification also allows for greater “[a]rm’s length market relations [which] work well for standard products because they are easily described and valued” (Gereffi et al., 2005, p.80). They use the UK/Kenya produce trade as a case study in the article and emphasize that the majority of the relationships in these types of chains are relational rather than simple market transactions due to the long-term, arm’s length relationships between producers and retailers where significant governance and co-operation are practiced (Gereffi et al., 2005).

2.3 Food Regime Theory

2.3.1 Introduction to Food Regimes

All of this value chain governance theory is set within a food system theory which is discussed by Burch and Lawrence (2009) in Towards a third food regime: behind the transformation; they delineate the previous two Food Regimes as first “colonial trade in bulk commodities like wheat and sugar” (p.267) and second “industrial agriculture and manufactured foods”(p.267). They go on to suggest that the third regime will be characterized by two things, “fresh/healthy foods” (Burch & Lawrence, 2009, p.267) and the importance of supermarkets and their “ready-meals and other own-brand products” (p.267). This aligns well with the forces postulated by Gereffi et al. (2005) and Dolan and Humphreys (2000) as to the driving forces behind the changes in supermarket purchasing and the value chains that have formed to supply these now dominant actors in the food sector. The theory of food regimes was introduced by

University of Toronto Professor of Sociology Harriet Friedman in 1987 to provide “a structured perspective to the understanding of agriculture and food’s role in capital accumulation across time and space” (McMichael, 2009, p.140). Food regimes are “stable periods of capital accumulation associated with particular configurations of geopolitical power, conditioned by forms of agricultural production and consumption relations within and across national spaces”(McMichael, 2009, p.139). Food regimes change over time through “[c]ontradictory relations within food regimes [which] produce crisis, transformation and transition to successor regimes”(McMichael, 2009, p.139); it is commonly agreed that the first food regime was stable from the 1870’s to the 1930’s, followed by a second stable food regime from the 1950’s to 1970’s when a period of transition began.(Mcmichael, 2009)

2.3.2 *A Third Food Regime?*

There has since been some debate over the state of a third food regime, with Friedman (1993) arguing that, at least in 1993, no clear food regime had coalesced since the end of the second food regime, due partially to the fact that “agrofood corporations are the major agents attempting to regulate agrofood conditions”(p.52) and therefore determine the defining characteristics of the food regime, as opposed to national governments in previous food regimes, this paired with the diverse efforts to establish a food system centered around ecology, personal health and social sustainability which represent an internal and significant stress within a potential third food regime (Friedmann, 1993). Burch and Lawrence examine this issue in detail in their 2009 paper, explaining that later in 2005 both Friedmann and McMichael would agree that the corporate influence over the food system and increasing global dominance of finance shows that the Third food regime has formed and can be described as a “corporate-environmental food regime” (p.267). Burch and Lawrence explain that for a period in the early nineties there was significant debate over the potential formation of a third food regime and what form it may

take but that by the early two-thousands that their remained an consensus that “understanding the historico-political contours of different periods can help to explain the structures and processes of global food production and consumption” (Goodwin, 2006 from Burch & Lawrence, 2009, p.268). This agreement paired with the recognition of the changing influence of corporate retail brands and government influence on the food system lead to the adoption of the third food regime. Burch and Lawrence go on to explore in more detail the role that food service companies and the financial sector play as significant influencers of the third food regime alongside the supermarkets or “new masters of the food system” (Winson, 1993 from Burch & Lawrence, 2009, p.268). Understanding the influence of supermarket purchasing and supply chains and their relations to the ECV market is critical if they hold such a key position in the control of the third food regime. As previously mentioned Burch and Lawrence (2009) stated that the supermarket dominance is based on two key values, fresh healthy products and branding. Fresh produce such as ECV are therefore a key component in the fresh and healthy food image the supermarkets are developing, and produce quality is one of the primary ways in which supermarkets compete for consumers (Berdegué, Balsevich, Flores & Reardon, 2005). This focus on quality produce also relates back to the second factor of branding and own-brand products, where supermarkets are working to develop loyalty and trust to their own brands as opposed to the brands of food manufacturers in efforts to develop customer loyalty. This trend has resulted in a significant focus on ensuring quality through their own private standards.

2.4 Private Standards and Quality

This shift of value chains and dominance of supermarkets has also appeared in central America, one key issue there is the importance of private standards as discussed by Berdegué Balsevich, Flores and Reardon in Central American supermarkets’ private standards of quality

and safety in procurement of fresh fruits and vegetables (2005), who together examine how the changes attributed to the third food regime and seen within retail brand decision-making are playing out in Central America. They chronicle the changes that are occurring in Central America and the important role fresh fruits and vegetables play in supermarket marketing. They state that “the concept of fruit and vegetable ‘quality’ among retailers and consumers is restricted to the cosmetic and flavor characteristics of the FFV” (Berdegué et al., 2005, p.258) they go on to state that in central America increased market share for supermarkets “depends on widening the quality gap and narrowing the price gaps with traditional markets” (Berdegué et al., 2005, p.258).

Reardon, Timmer, Barrett and Berdegué reveal the common pressures under which super market produce buyers operate. The pressures appear to be nearly universal, having low profit margins and significant competition in the marketplace; “the procurement officers strive to meet this pressure by reducing purchase and transaction costs and raising product quality” (Reardon, Timmer, Barrett, & Berdegué, 2003, p. 1144). They go on to stress that supermarkets “seek to maintain diversity, year-round availability, and products with assured quality and safety levels”(Reardon et al., 2003, p.1144). These micro level observations about decisions made at individual supermarkets can also be seen at the macro-scale of retail brand strategy.

2.5 Evolving Super-Market Produce Purchasing Systems

Reardon et al. (2003) suggest that there are four pillars to this new procurement system: specialized procurement agents, centralized distribution, preferred suppliers and private safety/quality standards. Specialized procurement agents are a subset of wholesale companies

that have internalized additional competencies such as: storage, transportation, re-grading facilities, logistics and marketing, in an effort to provide greater services to the retail chains and increase their market share and governance potential. At times they are also called modern wholesale distributors. Centralized distribution is both a characteristic of modern retailers and specialized procurement agents who may own distribution hubs where all or many of the products for a retail chain are sorted and distributed through one efficient central location where oversight and standards can be easily enforced. Preferred suppliers are suppliers with which an arm's length relationship exists based on reputation, trust and repeated transactions; these suppliers receive preferential treatment and special conditions when working with major retail chain buyers. Private safety and quality standards are a way of codifying the requirements for products, making these requirements easier to communicate and compare or track across time and other variables. In effect these standards help to externalize some of the risk of the retailer, and are essentially the supermarkets saying, 'we will only purchase your product if it meets these requirements'. This new procurement system differs from the traditional system due to the increased complexity of interactions between retailers and wholesalers, many traditional wholesalers have adapted and invested in additional competencies in order to become specialized procurement agents or at least preferred suppliers of the major retail chains. In some cases producers or wholesalers become preferred suppliers for a specific retail chain and focus their entire business towards supplying that single retail chain, without any guarantees or contracts from the chain, but instead based on reputation and trust.

In his paper on the expansion of supermarkets in the EU and their impact on value chain governance Gibbon (2003) explains that

[s]upermarkets in the Anglo-Saxon countries have typically sought to externalize [functional activities which] include analysis of sales data to

forecast demand, procurement of a ‘category’ of products rather than a single item, inventory management, quality assurance and new product development. (p.616)

Leading to the formation of specialized procurement agents, therefore, “those actors [wholesalers or producers] who can move into roles embracing some of these functions that lead firms seek to offload, ...can attain significant levels of upgrading”(Gibbon, 2003, p.616). Gibbon goes on to explain that UK supermarkets were specifically interested in “assuring consistency in supply, taste and appearance; and in encouraging the emergence of new products and forms for presenting/packaging them” (2003, p.616); also relevant is when Gibbon states that supermarkets “established a role in direct monitoring of growers and exporters”(2003, p.616). This supports the value chain governance theory of arm’s length relationships that are significantly more involved than simple market transactions but also external to the retail firm.

2.6 ECV Quality and Standards

A large scale survey of Asian consumers in 16 east coast states within the USA evaluated the willingness of those consumers to purchase locally produced ethno-cultural produce showed that 65% of respondents would purchase locally produced ECV (Puduri & Govindasamy, 2011). They also found that the most significant attributes to positively affect the respondents likelihood to buy local ECV’s were, “price, selection, packaging, country of origin label, recently introduced or new product, home grown fruit and vegetables for consumption, gender of the shopper, language spoken and place of birth”(Puduri & Govindasamy, 2011, p.519). This corresponds well with the results of Bamidele et al. who reported “ consumers purchase ethnic vegetables based on certain attributes such as quality, traceable production, versatility and language”(Adekunle et al., 2013, p.662) and that “[t]he most important quality that respondents wanted to see in the vegetables they purchased was freshness”(Adekunle et al., 2013, p.660)

2.7 Localizing Produce Supply Chains

Friedmann (2007) describes the unique nature of the Toronto food system stating that “diverse immigrant communities have sustained a web of small specialty shops, often in low income neighborhoods.” (p.390). She also mentions that the primary goal of food politics in the city has been towards “link[ing] long-term food security and sustainable agriculture to the (re)building of local supply chains”(Friedmann, 2007, p.391). Friedman focuses her analysis on alternative paths to market including good food boxes, organic food box delivery, cooperative stores, and independent specialty retailers. Her only mention of supermarkets and their impact on local sustainable food supply chains was as a form of competition to locally-produced organic products with supermarket chains sourcing organic products in the same way as they source conventional products (Friedmann, 2007), thus disconnecting the local production aspect from the sustainable ideals present at the outset of organic farming, prior to the codification of organic.

2.7.1 Food Security

Wormsbecker (2007) begins to describe the rationale behind localizing food systems through the lense of food security. Addressing the stresses inherent in the globalized food system on local food producers, “in order to compete, farmers are forced to adopt ever more industrial models of specialization and mass production to cover the rising costs of inputs and compete with cheap agricultural labour overseas”(Wormsbecker, 2007, p.2) Furthermore, Wormsbecker also describes the interrelationship between local and sustainable food systems and food security in light of the decreasing numbers of small diversified farms because “ As subsistence farms are lost to export producers, local food security is jeopardized for the purpose of cash cropping for vulnerable export markets (Hines, 2000 from Wormsbecker, 2007, p.3)” Wormsbecker also describes the interrelationships between local and sustainable food systems and food security. With localization being a positive addition in most cases to both the sustainable production of

food and the secure distribution of food in a fair and equitable manner, localizing food systems becomes a primary goal in the pursuit of both sustainability and equity. Wormsbecker briefly touches on the limitations of defensive, quality-based claims such as organic and fair trade, which have become codified, and are therefore readily incorporated into conventional distribution systems. Recognizing that conventional distribution systems are a significant obstacle to the end goals of sustainability and the increase in food security efforts, products with quality based claims that are incorporated into these systems are also limited in their ability to address these same issues. Wormsbecker continues her discussion of codified quality based claims; with

This is not to say that quality is an unimportant component of alternative agrifood systems only that it should not be the sole means of distinguishing this market from the industrial food system, since the ideas behind what this means can be morphed out of context to benefit the industrial system to which it is trying to pose alternatives. (Wormsbecker, 2007, p.16)

She also explores the concepts of bioregionalism to the context of localizing Canadian food systems. Bioregionalism stresses the impact of local environments and cultural identity over the artificial boundaries of political structures, which leads to the idea that “localization should be about government provision of policy and an economic framework, which nurtures locally owned businesses that use local resources sustainably, employ local workers, and serve primarily local customers”(Wormsbecker, 2007, p.16). In order to be truly sustainable outside of the conventional main stream food system, local food systems need to be alternative not only geographically but also socially, economically, and in maintaining diversity. In that way they can be truly distinct from the conventional system and achieve the greater goals of the local community of both sustainability, security and equity (Wormsbecker, 2007).

2.8 Food Justice

Vahabi and Damba, in their paper Perceived Barriers in accessing food among recent Latin American immigrants in Toronto (2013), address the particular need for culturally appropriate foods. They state that “[t]he main barrier to food security among our sample of [Latin American] newcomers to Toronto is limited financial resources, highlighting the need for policies and strategies that could improve their financial power to purchase sufficient, nutritious and culturally-acceptable foods”(Vahabi & Damba, 2013, p.1). “Many participants also said that the quality, taste and smell of some foods differed from those in their home countries”(Vahabi & Damba, 2013, p.7). This paper also expressed some participants’ opinions about the availability of culturally-appropriate foods at small community ethnic food stores and larger chains; “one participant stated, it is nice to see that some larger food chain stores like ‘No Frills’ carry some of our ethnic food at reasonable prices. I hope other stores do the same”(Vahabi & Damba, 2013, p.8). Showing that there is both a need and a demand for reasonably-priced quality ECV’s.

Bringing it back to food justice and ethnicity, Devine, Sobal, Bisogni, & Connors, explain ethnicity as “a complex, multidimensional concept that represents differences among groups in a population that are associated with lineage and region” (1999, p.86). This is an appropriate definition of the term but they go on to explain that ethnicity is also “dynamic and may be expressed situationally with ethnic group members following their ethnic traditions in some places and times and not in others” (Devine et al., 1999, p.86). When looking at food systems and their interactions with various ethnicities, especially those which may represent populations that are new to the GTA and may have less developed support systems, a food justice lens is commonly used. Food justice is another complex concept, “which places access to healthy, affordable, culturally-appropriate food in the contexts of institutional racism, racial formation and racialized geographies”(Alkon & Norgaard, 2009, p.3). As a multi-cultural society, Canada

and the GTA in particular should be studying issues of food justice and investing in solutions as “meeting ethnic food ideals often required more effort for members of minority cultures than it did for members of the majority culture”; this accentuates the importance of the major culture’s point of view and the need for an active involvement of public institutions in the support of minority cultures (Devine et al., 1999, p.88). “Immigrants from other cultures or parts of the country found that their preferred fruits and vegetables were not always available or were unacceptable in quality”(Devine et al., 1999, p.88); this quote again stresses the importance of quality as well as simple availability. Finally any potential solutions must be developed in a participatory method to ensure that the individuals directly impacted are involved throughout the process as “[e]thnicity is complex and dynamic, and the examination of ethnicity as a process in food choices reflects it’s multifaceted and changing character” (Devine et al., 1999, p.90). One potential solution is civic agriculture, “which links the agricultural and environmental to the ‘economic, social, cultural, and political dimensions of community life’ and encourages community involvement in the creation of local food systems (Lyson,2004, p.28 from Alkon &Norgaard,2009, p.291). Through the lenses of food justice and civic agriculture, research can help “activists and policymakers working on food security to understand the institutionalized nature of denied access to healthy food” (Alkon & Norgaard, 2009, p.302).

It is also important to note that simple access to food is not the final conclusion but also access to high quality, culturally appropriate, affordable food (Alkon & Norgaard, 2009) is required. These issues of food justice interact with the value chain structure and governance in unique ways with relational value chains being structured around long-term relationships and cultural ties, which could influence decision making. This needs to be taken into account at the policy level. These interactions happen throughout the value

chain, not simply at the farm or retail level, and impact both the flow of product and the governance decisions being made throughout the system. The issues of food justice and local sustainable food production must be addressed across all of these interactions.

2.9 Existing Research Gap

This literature review has covered many different aspects of research into the ECV Value chain. The following diagram (Figure 2.1- Existing Research Gap) graphically represents the research gap that this research will attempt to address.

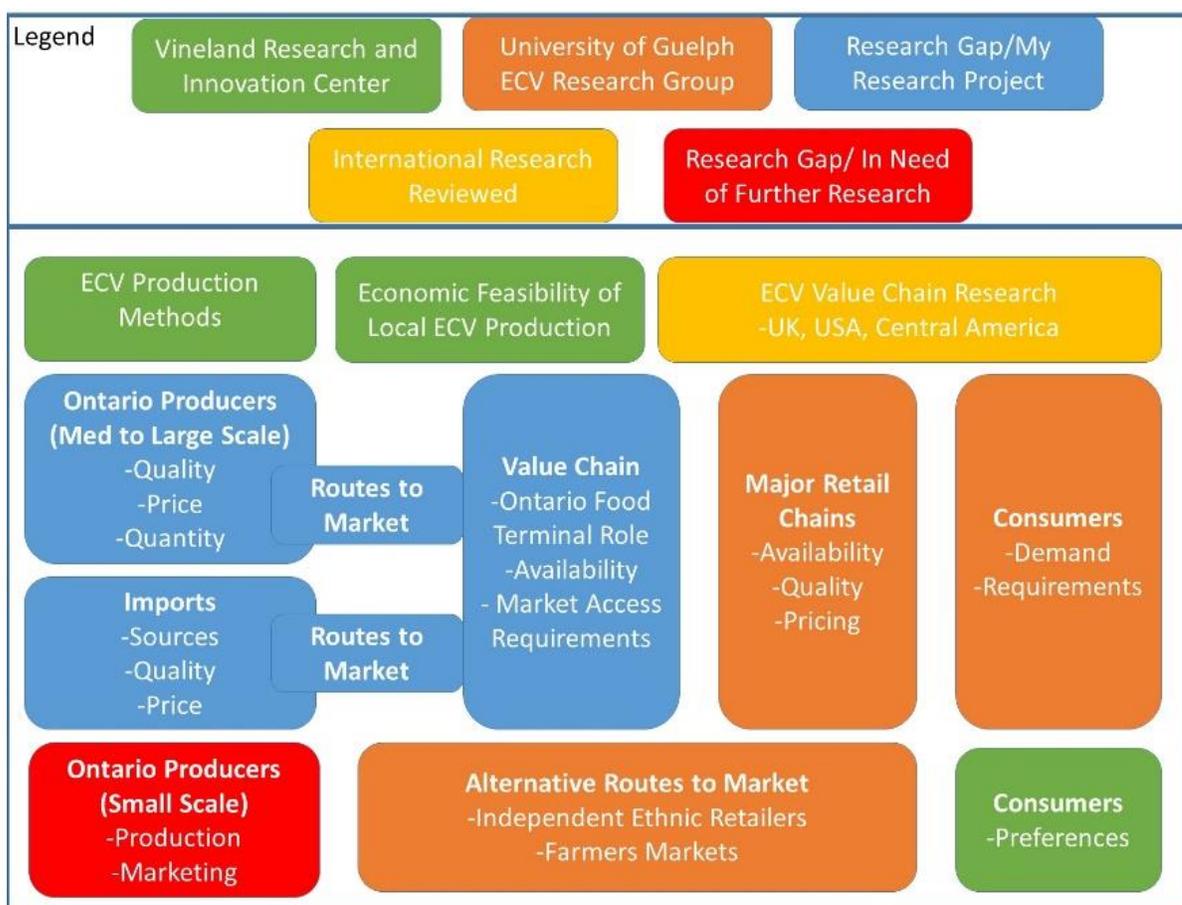


Figure 2.1 Existing ECV Value Chain Research and Research Gap

Figure 2.1 shows the extent of the research previously completed by the University of Guelph ECV research group regarding consumer demand and produce availability, as well as several routes to market for products. It also includes the research completed by Vineland

Research and Innovation Center into ECV production and storage, economic feasibility of local production of ECV's and consumer taste preferences for local ECV's vs imported ECV's. It also includes the research completed in other jurisdictions on ECV value chains. The diagram shows that there has been a lack of research into the middle of the value chain between buyers specifically at larger supermarket chains and producers of ECV's, as well as a lack of information pertaining to the current sources and quality of imported ECV's available on the wholesale market in the GTA. Those areas are the focus of this research. There are some areas still remaining to be researched in the future, specifically production and marketing methods targeted towards small scale local producers.

2.10 Conclusion

Ethno-cultural foods, and specifically healthy fresh vegetables produced locally and distributed fairly to those who wish to purchase them, would represent a significant step towards food justice in Ontario. Its impacts on food security, sovereignty and sustainability would also be important. In order to achieve these important goals an understanding of the current market and value chain of ECV's will be required. An understanding of the impact of changing value chain structures and the values inherent in those systems to support a significant shift towards locally sourced ECV's being available to the greatest number of consumers through major retail chains. The remainder of this thesis will focus on applying the understanding of food regimes, value chain structure and governance, standards and evolving food systems to understand the current state of the ECV value chain and market status in the GTA, in an attempt to determine the best practices for increasing local sourcing and production of ECV's.

2.11 Conceptual Framework

A conceptual framework was developed to bring together the diverse concepts and theories explored in this literature review in one graphical representation (Figure 2.2-Conceptual Framework).

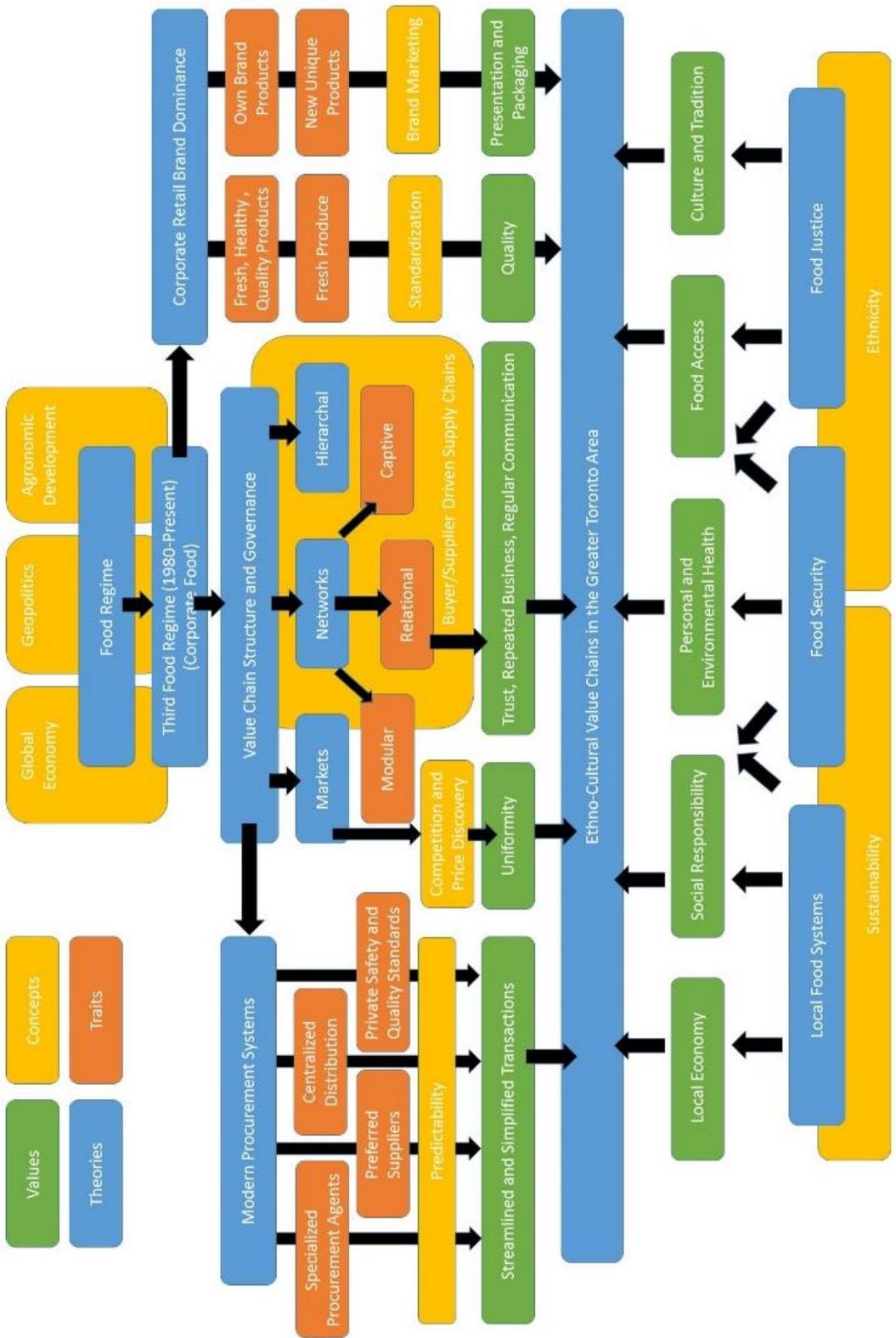


Figure 2.2 Conceptual Framework

The framework begins with the broadest theory reviewed, food regimes, and the concepts that are embedded within the food regime theory. This moves into theories of value chain governance and corporate dominance of the food system. Each of these theories are broken down into their component traits. These traits introduce new concepts and exert unique forces and the values they represent on the actors and form of the ECV value chains in the GTA. The bottom half of the framework incorporates some of the values, concepts and theories behind the effort to research and improve the ethno-cultural foods value chain in the GTA. This conceptual framework helps to explain how diverse theories and concepts interact with the value chain in a real way through their unique traits and the values that those traits express. The importance of these values to the actors within the chain represent the reasoning behind their decision making. A second conceptual diagram was also produced to visualize the values inherent in relational value chains (Figure 2.3- Relational Value Chains), which expresses the complexity of relational value chains and the many forms of communication and connection present between buyers and sellers, aside from simple financial transactions.

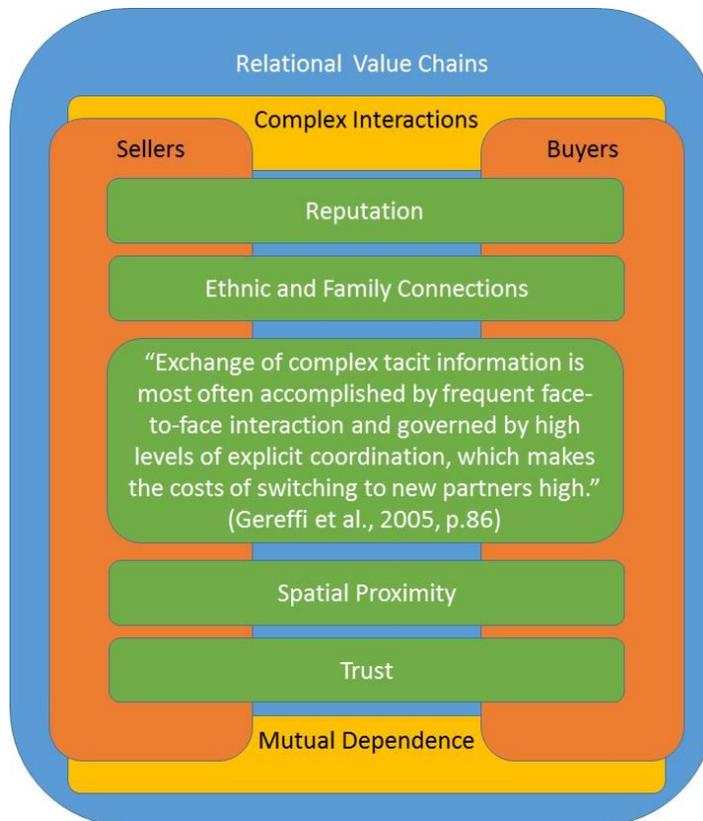


Figure 2.3 Relational Value Chains

Chapter 3 Research Methods

3.1 Mixed Methods Approach

This thesis used a mixed methods approach to better understand the availability of ethno-cultural vegetables in the GTA. Quantitative methods used in the investigation consisted of wholesale market observations at the Ontario Food Terminal of wholesale price, product availability, country of origin and quality characteristics of the observed produce. The qualitative methods used in the research process were semi-structured interviews, literature review and participatory observation.

3.2 Quantitative Methods

The quantitative methods used in this thesis research were chosen to provide a comparative understanding of the characteristics of the various supplies of ECV's available in Ontario. The methods included observation of a wholesale market, collection of photographic and price records of each observed sample, and the development of numeric quality scores and measurements from the collected photographs. This data was collected in order to compare amongst the observed samples and assess differences in the characteristics of each supply.

3.2.1 Market Observation

The Ontario Food Terminal (OFT) was selected as the location of wholesale market observation as it is the largest wholesale produce market in Ontario and provides a single location where wholesale firms and farmers have produce displayed for sale on a regular basis, year round. The OFT consists of two distinct markets on the same 40 acre property in downtown Toronto; the first market is the main market building which consists of 21 warehouse tenants. These tenants are wholesale firms that operate out of the OFT and commonly have additional warehouse and office space within the city but outside the OFT grounds. The OFT is open from

Monday to Friday from 4:00am to 2:00pm for wholesalers and the farmers' market section is also open Saturdays from 6:00 am to 11:00am. The farmers' market consists of 400 stalls with tenants, who are either individual farmers or small local wholesalers, renting stalls by the day, semi-annually or annually (www.OFTB.com).

Stalls in the wholesaler section of the OFT generally consist of large well-lit warehouse space with rows of pallets of different produce items. In general, there is one pallet of each type of produce on display, although higher volume produce items may have multiple pallets on the showroom floor at any one time. The layout and location of specific produce items remains relatively consistent from week to week, with most stalls keeping the same items in the same areas of their stalls. Each produce item available for sale generally has a single case open for display either directly in front of the pallet or in a large central display area. These display cases are monitored by salespeople and any sub-standard produce is removed; the remaining produce is arranged to best display the product as time allows during the busy sales period. All of the stalls in the main section of the OFT are produce wholesalers trading in fresh produce items except, for one stall that deals in dry goods such as nuts, seeds and dried fruits.

Stalls in the Farmers Market section of the Ontario Food Terminal are located outside the main building of the terminal in a paved area; half of the area is covered by a raised parking lot. Stalls in the market consist of simply a single parking space capable of fitting a transport trailer. These spaces are numbered and individual growers or wholesalers can rent them for the year, month or day. The main area of the market consists of wholesalers and large farms that rent their spaces for the entire year and are generally at the market selling every weekday and Saturday. Similar to the indoor stalls the produce is displayed by the skid along the length of the stall. Larger sellers, who commonly rent multiple stalls in a row, generally have a small portable

office structure, and will have one or more salespeople in their stall, as well as other workers delivering product to customers' vehicles and retrieving additional produce from storage in refrigerated trailers. Smaller independent producers will commonly have their vehicles parked in their stall with cases or bushel baskets of produce laid out on the ground in their stall and are ready and willing to answer questions or serve customers. Sellers in the farmers' market section of the OFT are restricted to selling only Canadian grown products. This market area has a greater variety of products for sale, including horticultural products such as cut flowers, potted plants and items such as honey and baked goods, which are rarely available in the main building of the terminal.

Each week during the observation period one market observation was completed. On the chosen market observation day, the market observer arrived at the OFT between 5am and 6am to begin the observation. The busiest market days at the OFT are Tuesday and Thursday and therefore these two days were sampled more frequently than Monday and Friday with Wednesdays being sampled moderately frequently as it is the slowest day at the OFT. This allowed for greater interaction with the vendors at the market. Wednesday observations allowed for increased qualitative observations and interviews with market participants. During the observation period each of the stalls selling produce were visited. Any stall with okra, Chinese long eggplant or Indian round eggplant displayed for sale in the showroom or stall area would be fully sampled. The sampling procedure began by contacting a salesperson on the showroom floor and briefly explaining the research project to the salesperson. Contact information and further information about the research and consent process were provided in printed format to the salesperson. The consent process included verbal consent being given by the salesperson to collect information pertaining to the country of origin, case size and wholesale price per case of

the three crops being researched, as well as a second consent to collect photographs of the produce item and the labeling on the produce cases for later analysis. If required by the salesperson or previously requested by the management of a given stall consent was requested not from a salesperson but from a manager at the stall. Prior to the first observation day the observer visited the OFT with staff from the Vineland Research and Innovation Center who had existing relationships with the wholesale firms at the OFT and introduced the observer and the research plan to the firms and salespeople at the OFT. After consent was received for each sampling attempt, the salesperson was asked to provide the wholesale price for the observed okra, Chinese long eggplant and Indian round eggplants, including each unique type of those crops (commonly multiple countries of origin of the same crop) as well as any supplies the firm may have had available for sale but did not have currently displayed in the sales area at the OFT. Wholesale prices are not displayed on produce at the OFT but are held by the salespeople in each stall either by memory or via price lists. The given prices were recorded for each distinct sample of ECV's observed at the stall along with case size and country of origin as observed on the labels of the produce. If consent to gather photographs was granted and the produce was available to be photographed on the showroom floor, as was the case in 162 of 184 cases (88%), two photographs were collected of each sample.

The first photograph taken of each sample was of the produce itself. If possible, an unopened case was selected from the top layer of a pallet of the produce in question on the showroom floor and opened. If this was not possible or allowed by the stall management, a photograph was taken of the display case of the product. The photograph was taken of the entire open top surface of the case without any of the produce being manipulated by the observer; the case was simply opened and photographed. The sampling observation form produced for the

sampling process included a scale printed on the bottom of each page and a location for the observation date and the codified stall identifier; these two pieces of information were completed by the observer prior to taking the photographs. This scale and information section of the sampling form was held at the edge of the product case in the frame of the photograph in order to provide a consistent scale between all the photographs and ensure that the photographs could be correctly matched to the sampling information later. The photographs were taken with a smart phone in order to not be intrusive to the sampling environment where a larger camera would have been out of place and where smart phones are used by the majority of market participants. The photographs were taken from directly above the open case from a distance which allowed the case of produce to fill the entire field of view of the camera without the use of the camera's digital zoom. Once the produce had been photographed, the case was reclosed and returned to the pallet from which it had been taken and the case and its label was photographed; cases without labels were only photographed if their shape, style and size could not be easily discerned from the produce photo. The photograph of the case was collected for three primary reasons: first, in order to verify the country of origin, case size and product name provided by the salesperson; second, to assess the completeness of the labeling components; and, thirdly, to assess the condition and type of case used. Once the sampling of each observed type of okra, Chinese long eggplant and Indian round eggplant was complete in a given stall the observer would move to the next stall, repeating the process for each observed ECV item.

3.2.2 Photograph Analysis

Each photograph collected was given a code to track the photograph and allow for it to be easily correlated with the appropriate data during the analysis stage. From each photograph two types of data were developed, the first being quantitative data pertaining to the size and shape of the produce visible in the photograph and, the second being qualitative grading of the produce

and case on several scales developed to codify the relative characteristics of the samples. In order to gather the size and shape data of the produce in each photograph, each photograph was displayed full screen on a computer monitor; the scale included on the sampling form in each photograph was measured on the computer monitor and recorded. Five approximately-average-sized pods or eggplants were selected for which the majority of the item was visible in the photograph; each okra pods length from tip to crown was measured on the computer screen and recorded; and each eggplant's length from stem to tip was measured, as well as its width at the visually widest point. After the five approximately-average-sized items had been measured, the largest and smallest item visible in the photograph were also recorded using the same method. Using computer software the measurement of the scale in the photograph was compared to the real length of the printed scale to develop a unique scale factor for each photograph; each item measured in the photograph was then multiplied by this unique scale factor to create an estimate of the actual size of the item in millimeters.

3.3 Product Quality Scores

Product quality scores were developed for okra, Chinese long eggplant and Indian round eggplant after the completion of all market observations and qualitative interviews. They were developed based on the specifications outlined by value chain participants in interviews, as discussed further in the results and discussion chapters, as well as observation of the market response to various samples over the observation period. They were developed in consultation with VRIC and their ongoing research pertaining to consumer preferences for these crops, as well as direct discussions with experienced producers of these crops. After the development of the scores, all of the photographs collected at the Ontario Food Terminal were given scores in

each category; each sample was given a whole number score between one and five in each category, with one being the lowest score and five being the highest score.

3.3.1 Chinese Long Eggplant Quality Scores

Six quality scores were developed to assess the overall quality of Chinese long eggplants visible in the photographs collected at the OFT. These six scores were based on specific characteristics of the eggplants that were visible in the photographs and were each given a scale between one and five; each sample was then given a whole number score between one and five for each of the qualities assessed. The six characteristics scored in Chinese long eggplants were product size consistency, product shape, product colour, product damage, product visual appeal and product packaging.

3.3.1.1 Product Size Consistency Score

The Product Size Consistency score was assigned based on the relative consistency of eggplant sizes in a given case relative to all of the cases photographed during the assessment. The most uniform cases observed received a score of five and the least uniform cases received a score of one. Scores of three and four were assigned to cases that were generally acceptable in their uniformity with cases scoring three if they were slightly below the trend of uniformity and four if they represented the trend. Cases scoring a two for product size consistency were significantly inconsistent in their size but those sizes were within a similar range to the samples scored higher; samples that scored one had a very large variability in their fruit sizes and that range would be deemed unacceptable by most buyers. This score was assigned based on visual assessment of the produce photographs and was not determined by the quantitative fruit size measurements taken, as those measurements were recorded in an effort to determine the average

size of the eggplants in the case and the extremes, not the overall variability.



Figure 3.1 Examples of Chinese Long Eggplant samples with assigned Product Size Consistency Score

3.3.1.2 Product Shape Score

The Product Shape Score was assigned based on the overall shape of the eggplants in each observed case. The measure was relative amongst the samples collected with the most appealingly-shaped eggplants receiving scores of five and least-appealing eggplants scoring one. The most desired shape for Chinese long eggplants which scored a five was oblong straight eggplants with a consistent width from calyx to tip. Eggplants scoring a four had an oblong shape with a greater taper than those scoring five, and could be slightly curved. Eggplants scoring three had minor tapering and were more curved than those scoring four. Eggplants scoring two had two potential forms: either they were not oblong enough with a shorter length and greater width than higher scoring eggplants, or they were overly long and thin with too much curvature to score higher. Eggplants scoring one had either of the two shapes as those that scored two, but their flaws were even more pronounced.



Figure 3.2 Examples of Chinese Long Eggplant samples with assigned Product Shape Score

3.3.1.3 Product Colour Score

The product colour score was assigned based on the visible colouring of the eggplants as seen in the photographs collected at the OFT. The scale printed on the sampling form and included in all product photos provided a white and black sample in order to provide colour balancing between all of the product photos. This allowed for photograph samples in different lighting conditions to be compared; only moderate adjustments were made to photograph colours in order to preserve as much of the original colouring as possible. The visual grading of colouring was chosen over the use of quantitative methods in order to lessen the impact of differences in lighting conditions present at the time of observation on the final score of the sample. Samples scoring five for colour had a solid deep purple colouring across the entire surface of the eggplant and a dark green calyx. Samples scoring one for colour had a brown colour instead of the characteristic purple colouring (see Figure 3.3.1). These brown eggplants are also ECV's. Although not, technically, Chinese Long eggplant, they were at times marketed as Chinese long eggplants at the OFT and therefore included in the analysis. Samples receiving a score of two had a light purple colouration with white markings over a significant area of the eggplant. Samples receiving a score of three had a light to medium green calyx and a light to medium purple colour with some white markings. Samples receiving a colour score of 4 had

medium to dark purple colour across the entire surface of the eggplant and medium to dark green calyx.



Figure 3.3 Examples of Chinese Long Eggplant samples with assigned Product Colour Score

3.3.1.4 Product Damage Score

The product damage score was assigned to each sample of Chinese long eggplant based on the prevalence of damage visible in the collected photograph. There were four main types of damage observed in the samples: scarring, wrinkling, cracking and decay. The most serious form of damage was decay, with any samples showing clear signs of decay being scored one for damage. Samples with significant cracking, scarring and wrinkling but no signs of decay received a score of 2. Samples with moderate amounts of cracking and scarring and only minor wrinkling scored three, while samples with either minor wrinkling, cracking, or scarring received a damage score of four. Samples with no visible signs of damage were scored five.



Figure 3.4 Examples of Chinese Long Eggplant samples with assigned Product Damage Score

3.3.1.5 Product Visual Appeal Score

The product visual appeal score was developed in order to buffer the impacts of the other quality scores. This score was based on the overall appeal of the product in the photo and was not tied to any one particular characteristic. This allowed a product that may have scored highly on several of the other scores, despite being in some way not appealing to buyers or customers, to receive a low score in order to provide a grounding influence on the quality scores as a whole.



Figure 3.5 Examples of Chinese Long Eggplant samples with assigned Product Visual Appeal Score

3.3.1.6 Packaging Score

The packaging score was determined by the specifications established by retail produce buyers. Samples which received a score of five had waxed cardboard cases that held one bushel of eggplants by volume, were properly labeled with the supplier's information, country of origin, case size and contents and were in good condition when sampled. Samples that received a score

of four had waxed cardboard cases that held one or one-half bushel of eggplants by volume, were in good condition when sampled, and were properly labeled with the supplier's information, country of origin and case size but may have lacked the label 'Chinese long eggplants'. Samples that received a score of three met all of the same conditions as those that scored four but had some significant damage to the case. Samples that received a score of two were packaged in non-standard cardboard cases with some form of labeling, including the country of origin and producers information. Samples receiving a score of one were packed in unlabeled non-standard cardboard boxes or bushel baskets.

3.3.2 Okra Quality Scores

Five quality scores were developed to assess the overall quality of okra pods visible in the photographs collected at the OFT. These five scores were based on specific characteristics of the pods that were visible in the photographs and were each given a scale between one and five, each sample was given a whole number score between one and five for each of the qualities assessed. The five characteristics scored in okra pods were product size consistency, product colour, product damage, product visual appeal and product packaging.

3.3.2.1 Product Size Consistency Score

The product size consistency score was assigned based on the relative consistency of okra pod sizes in a given case relative to all of the cases photographed during the assessment. The most uniform cases observed received a score of five and the least uniform cases received a score of one. Scores of three and four were assigned to cases that were generally acceptable in their uniformity, with cases scoring three if they were slightly below the trend of uniformity and four if they represented the trend. Cases scoring a two for product size consistency were significantly inconsistent in their size but those sizes were within a similar range to the samples scored higher; samples scored one had a very large variability in their pod sizes and would be deemed

unacceptable by most buyers. This score was assigned based on visual assessment of the produce photographs and was not determined by the quantitative pod size measurements taken as those measurements were recorded in an effort to determine the average size of the pods in the case and the extremes, not the overall variability.

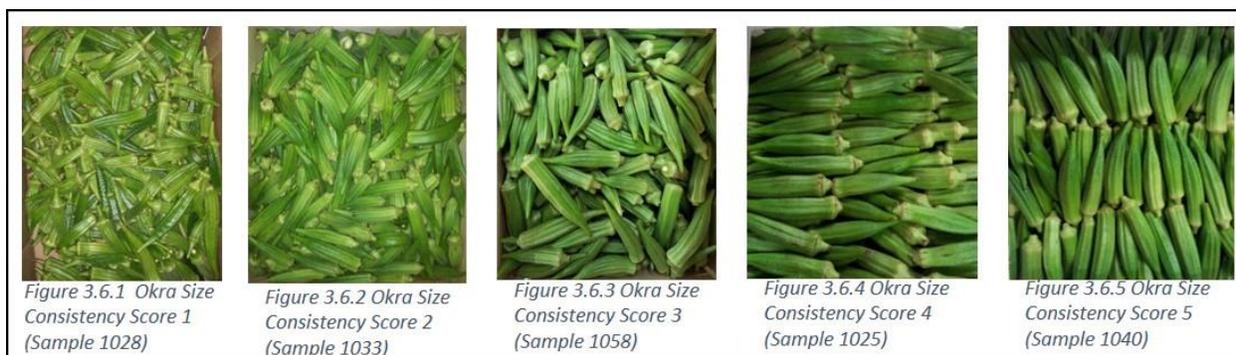


Figure 3.6 Examples of Okra samples with assigned Product Size Consistency Score

3.3.2.2 Product Colour Score

The product colour score was assigned based on the visible colouring of the okra pods as seen in the photographs collected at the OFT. The same colour adjustment and grading procedure was used for Okra as for Chinese long eggplants. Samples scoring five for colour had a vibrant deep green colour across the entire surface of the pod and no signs of yellowing. Samples scoring one for colour had a yellow green colour over the surface of the pod and darkening of the crown on all pods. Samples receiving a score of two had a pale green colouration with yellowing of the crown on the majority of pods. Samples receiving a score of three had a light to medium green colour and yellowing of the crown on the majority of pods. Samples receiving a colour score of 4 had deep green colour across the surface of the pod and only minor yellowing of the crown on some pods.



Figure 3.7 Examples of Okra samples with assigned Product Colour Score

3.3.2.3 Product Damage Score

The product damage score was assigned to each sample of okra based on the prevalence of damage visible in the collected photograph. There were four main types of damage observed in the samples: bruising, insect damage, unclean stem cuts and blackening (a sign of decay). The most serious form of damage was blackening, with any samples showing more than 25% blackening pods being scored one for damage. Samples with no visible signs of damage were scored five. Samples with moderate bruising, insect damage and/or unclean stem cuts and some blackening pods received a score of 2. Samples with moderate amounts of bruising, insect damage, unclean stem cuts or minor blackening scored three. Samples with minor amounts of bruising or unclean stem cuts and no signs of blackening pods received a damage score of four.



Figure 3.8 Examples of Okra samples with assigned Product Damage Score

3.3.2.4 Product Visual Appeal Score

The product visual appeal score was developed in order to buffer the impacts of the other quality scores. This score was based on the overall appeal of the product in the photo and was not tied to any one particular characteristic; this allowed a product that may have scored highly on several of the other scores, despite being in some way not appealing to buyers or customers, to receive a low score in order to provide a grounding influence on the quality scores as a whole.

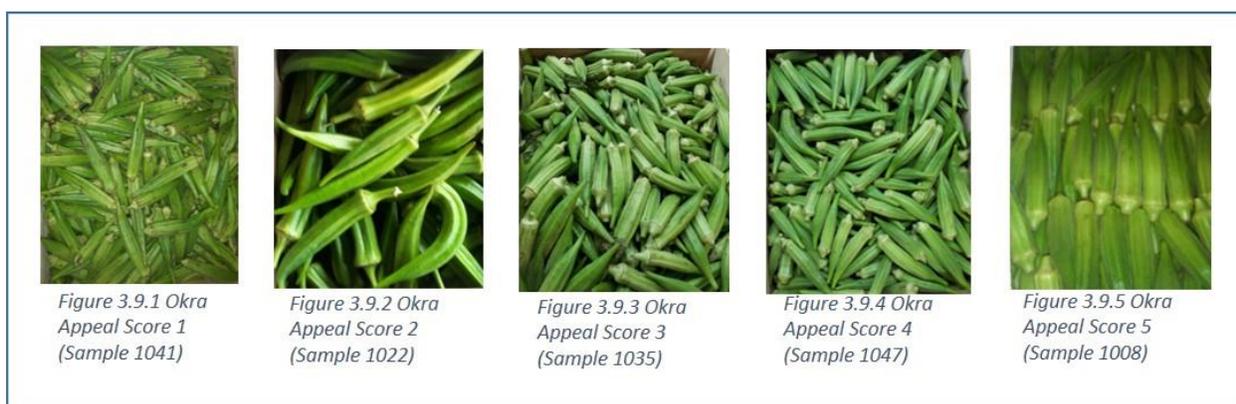


Figure 3.9 Examples of Okra samples with assigned Product Visual Appeal Score

3.3.2.5 Packaging Score

The packaging score was determined by the specifications established by retail produce buyers. Samples which received a score of five had corrugated plastic cases that held one-half bushel of okra pods by weight, were properly labeled with the supplier's information, country of origin, case size and contents, and were in good condition when sampled. Samples that received a score of four had wooden cases which held one-half bushel of okra pods by volume, that were in good condition when sampled, and were labeled with at least the supplier's information, country of origin and case size. Samples that received a score of three met all of the same conditions as those that scored four, except that the supplier's information was missing. Samples that received a score of two were volume packaged in non-standard cardboard cases with some form of labeling, including the country of origin and producers information. Samples receiving a score of one were volume packed in unlabeled non-standard cardboard boxes or bushel baskets.

3.4 Statistical Analysis Methods

Several statistical methods were used in the analysis of the quantitative data collected. The Mann Whitney U test, was used as a test of difference, it is used for two independent ordinal level samples. This test was used to compare the means of the collected okra prices to an external data set of okra prices collected independently in the same area and over the same time period. A Pearson product moment correlation coefficient is used with two independent random samples measured at the interval level, which are normally distributed. Within this research it was used to compare an interval level data set of Chinese long eggplant prices and a second interval level data set of Chinese long eggplant size ratios, both data sets were tested for normality and were found to be normally distributed.

A Spearman's Rank Correlation Coefficient for Ordinal data is used for independent random samples collected at the ordinal level. In this research Spearman correlations were used to assess the level of correlation between pairs of variables recorded at the ordinal observation level, these included the product quality scores, observation period and country of origin codes. Country of origin data, would not ordinarily be considered ordinal but was ranked in order of distance from the observation location, Toronto, and used as an ordinal data set as opposed to nominal variable. In this research Spearman correlations also included interval level data sets such as wholesale price in pairs with ordinal level data sets such as those listed above.

3.5 Quantitative Methods Conclusion

Three unique sources of quantitative data were collected, with the market price data, product size data and product quality data all contributing to quantitative results in the analysis of the current availability of okra and Chinese long eggplant in the GTA.

3.6 Qualitative Methods

Qualitative research methods were included in the study in order to gain an understanding of the existing relationships between various actors in the ECV value chain in the GTA. The qualitative method chosen for this purpose was semi-structured interviews with key members in the ECV value chain.

3.6.1 Semi-Structured Interviews

Semi-structured interviews were completed with key members of the ECV value chain in the GTA. The interviews were completed in person by the researcher and a digital audio recording of each interview was made. To create a complete transcript of each interview. The interview transcripts were coded using an open coding method where the codes were developed throughout the coding process and later classified and grouped to enable further analysis. Coding was completed by hand without the use of qualitative research coding software.

3.6.1.1 Interview Questionnaires

Three separate interview questionnaires were developed for the in-depth interviews with various value-chain participants. Unique questionnaires were developed for retailers, wholesalers and producers; each questionnaire was developed with open ended questions to allow respondents to discuss their role in the value chain using their own words. The interviews were completed on site at the interviewees' place of work. Questionnaires included the opportunity for all participants to contribute any thoughts or views to their interviews that had not been directly requested by a specific question but brought forward by the discussion in general. Each of the questionnaires was split into multiple categories of questions based on a specific topic of interest to the research. The interviews progressed through these categories, generally moving from one category to the next in the order that they were written in the questionnaire. Questions being asked from each category in whichever order allowed for the most natural flow of the conversation. Questions that the interviewer felt had already been answered in previous

responses were skipped and all efforts were made to encourage a natural and open dialogue between the interviewer and the respondent.

3.6.1.2 Producer Questionnaire

The producer questionnaire, see appendix A, included questions in five categories beginning with introductory questions relating to the farm operation, moving into questions related to ECV production, ECV post-harvest handling and ECV sales, and concluding with questions relating to the future development potential of ECV production in Ontario. The producer questionnaire included 40 open-ended questions and follow up questions. The introductory section of the questionnaire included questions relating to the producers' current production activities, including both ECV production and other vegetable production, their history as producers, the scale of their operations in terms of land area, sales volume and labour requirements and any additional capabilities that they may have invested in besides vegetable production. The ECV production section of the questionnaire included questions pertaining to specific production variables including seed sourcing, harvest frequencies, production techniques and costs of production. The section also included questions pertaining to on-farm production decision-making including planning of areas dedicated to the production of specific ECV's, sources of information related to ECV production and the grower's personal experience with growing ECV's. This section also included questions related to the advantages and disadvantages of growing ECV's compared to other potential crops as well as the most limiting factors to their production of ECV's. The handling section of the ECV producers' questionnaire included questions relating to their post-harvest handling practices of ECV's on their farm and how they may have differed from their other crops. The ECV sales section of the questionnaire included questions relating to their interaction with other members of the supply chain, including what types of businesses represented there primary buyers, their price setting mechanisms with those

buyers, and any requirements dictated by those buyers in reference to packaging, product specification and food safety verifications. This section also included questions relating to their marketing strategies, future plans and their opinions of competitors in the ECV market. The future perspectives section of the ECV producers' questionnaire included questions related to the ongoing research into ECV production in Ontario and provided the producers with an open opportunity to discuss their views on the future trajectory of ECV production in the province.

3.6.1.3 Wholesaler Questionnaire

The wholesaler questionnaire, see appendix B, included the same five categories of questions as the producer questionnaire with the production section replaced by a purchasing section. The introduction and background section remained the same as the producer questionnaire with the addition of a questioning line about the handling of imported ECV's as well as local ECV's. The purchasing section of the wholesaler questionnaire contained questions related to the sourcing practices of the wholesaler, the location of their sources of ECV's and their business relationships with their suppliers. This section also included questions pertaining to purchasing decisions including how prices and quantities purchased are determined, limiting factors on supplies and supplier requirements. The sections also addressed questions pertaining to advantages and disadvantages of purchasing ECV's locally or from imported supplies. The handling section of the questionnaire included questions pertaining to the storage conditions of the ECV's. The sales section of the questionnaire was developed in order to gain an understanding of marketing procedures used within the value chain as well as the types of relationships that wholesalers have with the firms to whom they sell ECVs. This section also included questions pertaining to any requirements or specifications dictated by buyers and the impact of competition on the ECV wholesale market. The future perspectives section remained unchanged from the producer questionnaire.

3.6.1.4 Retailer Questionnaire

The retailer questionnaire, see appendix C, contained all of the same sections as the wholesaler questionnaire, with changes being made to reflect requirements of retailers by government regulations rather than requirements passed down by other firms. Changes to the questions pertaining to the customers of wholesale firms were made to reflect the customers of retail chains as their constituent stores and the customers of those stores. The final change pertained to demographic changes in Ontario and the potential impact on future demand for ECVs in the province.

3.6.2 Interviewees

The interviewees were selected and contacted based on their involvement in the production or trade of ECV's in the GTA. Wholesale vendors at the OFT who were observed selling ECV's on a regular basis during the market observation and data collection period were contacted in person at the OFT and asked if they would be willing to participate in the interview process. Two wholesale buyers from the OFT accepted the invitation to participate in the interviews; several other representatives of wholesale firms were willing to speak briefly on the topic during the observation periods but did not commit to an in-depth interview. Other interview participants had existing research relationships with researchers at VRIC and were contacted by the interviewer by phone and or email and asked if they would be willing to participate in the interview portion of the research project. From the connections developed through VRIC, two additional wholesalers with experience marketing locally-produced ECV's were interviewed and an ECV buyer from one of the three major retail chain brands was interviewed.

Interviews were also completed with seven Ontario ECV producers: one professional ECV producer, two traditional vegetable producers and four local alternative ECV growers; these subcategories of producers were developed based on the total acreage of vegetable

production, percentage of vegetable production that was ECV's and marketing method of the vegetables they produce. Traditional vegetable producers were defined by ECV's representing only a small percentage of their vegetables crops and having the largest acreages of overall vegetable production, and also being the most likely to sell directly to retailers and wholesalers. Professional ECV producers were defined as growing ECV's on a significant percentage of their moderate to large-sized farms and marketing primarily to wholesalers with potential for expansion into marketing directly to major chain retailers in the future. Local alternative growers were defined as producing a wide range of vegetables on relatively small areas of land with their primary marketing structure being directly to consumers or directly to independent retailers or restaurants.

3.6.3 Coding

The written transcripts of the completed interviews were used for a qualitative coding procedure. Codes were developed from the content and later grouped into categories. After an initial reading of the material and collecting of key words and concepts, primary codes were determined and key words and concepts attributed to the chosen codes. Each code was assigned a colour and the transcripts were read through a second time with each example of a noted code being highlighted with the chosen colour for the code. This visual coding of the transcripts allowed for themes of responses to be visually distinguished and compared between questions and respondents. Figure 3.10 below shows the primary coding structure developed through analysis of the value chain participant interview transcripts.

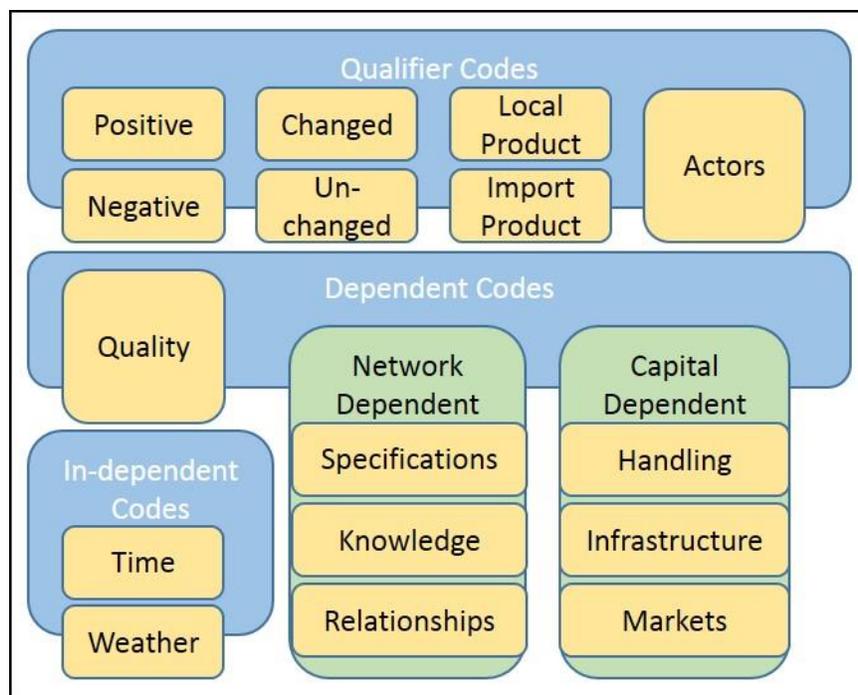


Figure 3.10 Primary Coding Structure of ECV Value Chain Participant Interviews

The primary codes were further categorized into dependent codes, independent codes and qualifier codes. Qualifier codes were defined as being codes relating to modifiers or descriptors of other primary codes, this category included primary codes; such as positive, negative, local, import and actors (a primary code used to denote individuals and firms referenced in the transcripts). Independent codes were defined as those relating to independent variables in the production and handling of ECV's. This category included the primary codes' time and weather. Finally the dependent code category was defined by codes that were dependent on external or internal factors and directly impacted the production or marketing of ECV's; this category included the primary code quality and two subcategories entitled network and capital dependent codes. The network sub-category of codes was defined by the influence of the network structure of the value chain on the primary codes of knowledge, relationships and specifications. The capital sub-category of dependent codes was defined by the influence of finances and money on the primary codes handling, infrastructure and markets. This hierarchical structure was used to

aid in the classification of concepts and codes within the qualitative coding process, and each primary code contained within it multiple secondary codes and concepts. Several of these secondary codes and concepts could be classified under multiple primary codes and, in different contexts within the transcripts, were coded into different primary codes based on the surrounding context and intonations of the texts. These overlapping concepts and secondary codes informed the categorization of the primary codes into the categories shown in Figure 3.10.

Figures 3.11 to 3.15 show each of the primary codes developed and the secondary codes and concepts attributed to those primary codes.

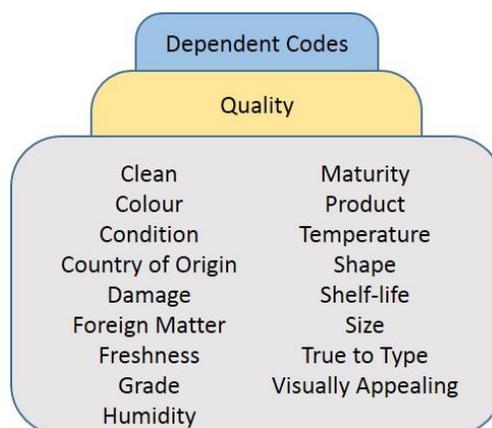


Figure 3.11 Secondary Codes of the Primary Code Quality under the Category Code of Dependent codes

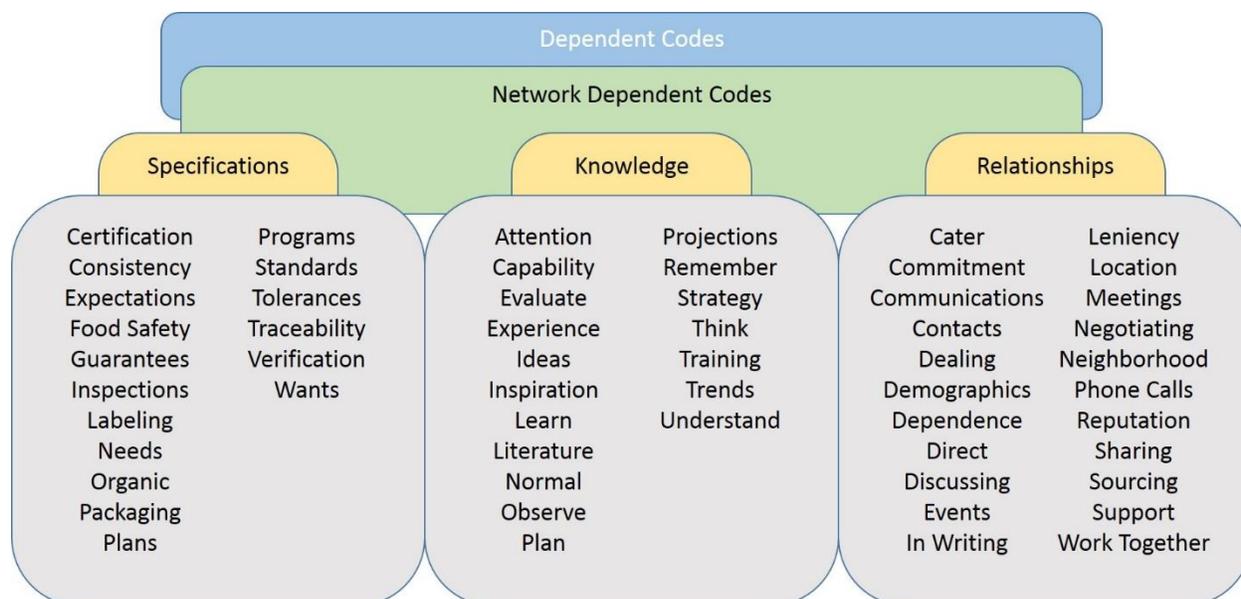


Figure 3.12 Secondary Codes of the Network Dependent Codes

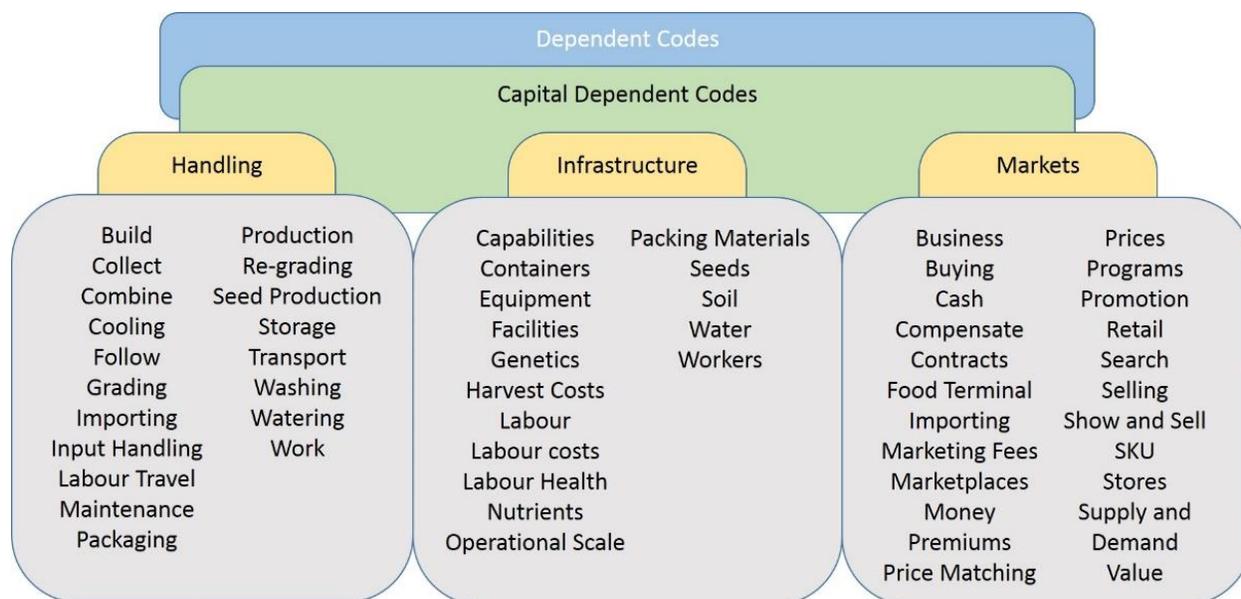


Figure 3.13 Secondary Codes of the Capital Dependent Codes

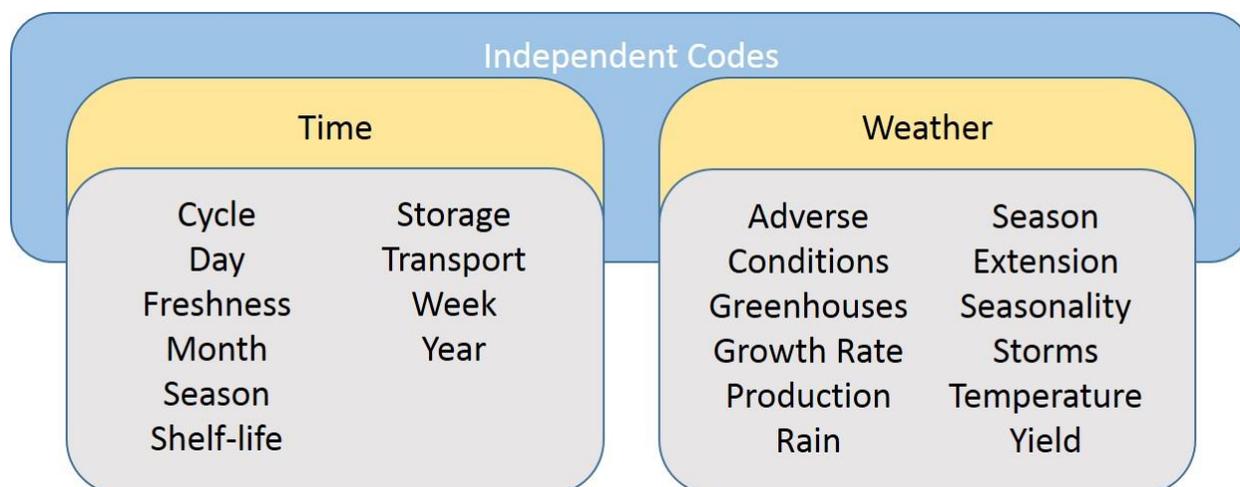


Figure 3.14 Secondary Codes of the Independent Codes

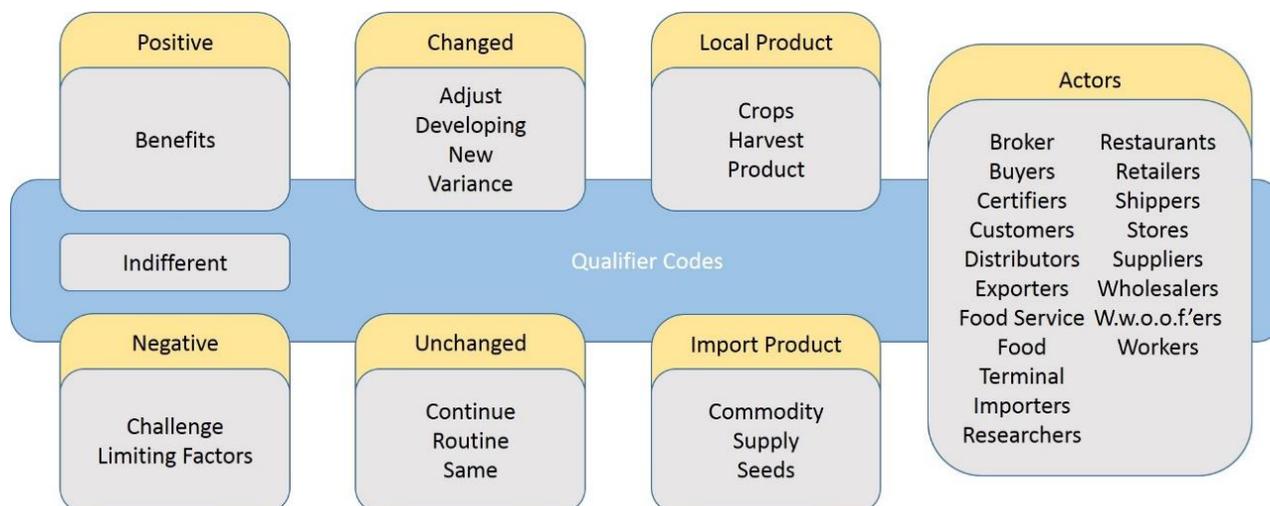


Figure 3.15 Secondary Codes of the Qualifier Codes

The resulting coding structure of secondary codes, primary codes and categorical codes shown above in Figures 3.11 to 3.15 were used to analyze the transcripts of all the interviews completed with the participants in the ECV value chain in the GTA.

3.7 Qualitative Conclusion

The qualitative data collected from the interviews with value chain participants provided the starting point for analysis of the value chain structure of ECV wholesale firms in the GTA.

3.8 Methods Conclusion

The research methodology developed to address the research objectives outlined in section 1.4 included multiple data sources, both quantitative and qualitative, in order to address each objective in the most complete and effective method possible. These methods have recognized limitations, discussed further in Section 5.9 and have been adapted in order to minimize the impacts of those limitations. The chosen methods were successful in most cases at collecting the data required to address the research objectives.

Chapter 4 Results

Three primary data sources were collected and analysed to better understand the wholesale availability of okra, Chinese long eggplant and Indian round eggplant as well as the value chain structure present amongst the wholesalers, retailers and producers of these three vegetables in the GTA. The three primary data sets were observed wholesale prices and countries of origin, product photographs and semi-structured interviews with key value chain participants. These data sets were analysed to determine the relative availability of these crops at the wholesale level. For okra and Chinese long eggplant enough data was collected in order to assess differences and trends in quality for each of the countries of origin of the produce available on the wholesale market. The interviews revealed the significant role that post-harvest handling played in the marketability of these produce items and provided insight into the inter-firm relationships within the various value chains that supply these crops to the Ontario market.

This chapter begins by outlining the findings related to the availability of each of the three crops during the 2013 observation period, including changes in availability prior to the onset of the Ontario harvest period, during the harvest period and after the conclusion of the Ontario production season. This temporal analysis of availability will be followed by an analysis of quality trends amongst the various supplies of these crops in terms of price, physical attributes and post-harvest handling characteristics. The discussion of post-harvest handling practices leads into points related to transportation and the time from harvest to wholesale. This period of time in transport and storage relates directly to the structure and governance of the value chain, which is the third and final section of these results. The discussion of value chain structures concludes with value chain members' insights into the potential future development of local production of high quality ethno-cultural vegetables for the wholesale market.

4.1 Ethno-cultural Vegetable Wholesale Availability at the Ontario Food Terminal

4.1.1 Okra Availability

During the observation period of July 1st to December 1st 2013, the Ontario Food Terminal was visited once a week, on a weekday morning, with preference given to busier market days at the terminal (Tuesday and Thursday). During these weekly observations each stall in the wholesale market and the farmers market was visited. Any stalls that had Okra on display for sale were recorded (see Table 4.1 below).

Table 4.1 Okra Availability at the Ontario Food Terminal Between July 3rd and November 28th 2013					
	Number of Stalls with Okra on Display	Countries of Origin Available			
	Total	USA	Nicaragua	Canada	Honduras
July 3rd 2013	4	3	1	0	0
July 11th 2013	4	2	2	0	0
July 18th 2013	3	2	1	0	0
July 25th 2013	2	1	1	0	0
July 30th 2013	2	1	0	1	0
August 6th 2013	7	4	2	1	0
August 13th 2013	6	4	1	1	0
August 22nd 2013	4	1	1	2	0
August 28th 2013	6	3	1	2	0
September 4th 2013	4	2	1	1	0
September 9th 2013	2	1	1	0	0
September 17th 2013	1	0	0	1	0
September 26th 2013	1	1	0	0	0
October 1st 2013	1	1	0	0	0
October 8th 2013	3	2	1	0	0
October 18th 2013	0	0	0	0	0
October 24th 2013	2	2	0	0	0
October 29th 2013	3	3	0	0	0
November 7th 2013	2	2	0	0	0

November 14th 2013	3	3	0	0	0
November 22nd 2013	3	2	1	0	0
November 28th 2013	4	2	1	0	1
Grand Total	67	42	15	9	1

Table 4.1 above shows that American, Nicaraguan, Canadian and Honduran okra was present for sale at the Ontario Food Terminal, in that order from most commonly available to least commonly available between July 3rd and Nov. 28, 2013. During the 22 observation periods, okra was displayed for sale by at least one stall on all occasions except for October 18th 2013 when at the time of observation no stalls had okra displayed. On 14 of the 22 observation periods there were at least two unique import supplies of okra available for sale from at least two different stalls at the terminal. Therefore, in general, okra is commonly available for sale at the wholesale level in Toronto throughout the Ontario growing season.

4.1.1.1 Okra Availability by Country of Origin

Ontario grown okra was available at the market during the period from July 30th to September 17th, during the peak of the season in late August there were two farmers' market stalls selling Ontario okra. USA grown okra was the most consistently available okra supply with only the one observation period on October 18th where there was not at least one stall with USA-grown okra for sale at the terminal. There were seven unique stalls that had USA-grown okra displayed at least once and four stalls that had it displayed at least 4 times during the observation period. Okra grown in Honduras was only observed once on the final observation period; there is not enough data available to determine if this was due to the onset of the production season or the establishment of a new supply chain into the Toronto market. Nicaraguan grown okra was

available for sale from one wholesale stall during 13 of the 22 observation periods and also available from another stall during 2 of those observation periods.

4.1.1.2 Okra Availability by Seller Type

Over the observation period, four different Farmers Market stalls were observed with Ontario grown okra displayed for sale. One stall was observed five times between August 6th and September 17th and the remaining three stalls were each observed one or two times. At no point in the observation period did any of the wholesale stalls have any Ontario okra displayed for sale. At no point did any Farmers Market stalls have any non-Ontario-grown okra for sale as their leases for Farmers Market stalls at the Ontario Food Terminal only allow them to sell Canadian-grown produce.

There were 7 stalls within the food terminals' wholesale stalls that had okra displayed for sale at least once during the observation period. There were another 13 stalls within the wholesale stall area of the terminal that never had okra displayed for sale during the observation period. Two of these stalls specialized in food products other than vegetables, specifically dry goods and tropical fruits, and therefore would not be expected to have okra or any other ethno-cultural vegetables for sale. All of the remaining stalls carried a variety of imported fruits and vegetables. Several of the stalls in the wholesale stall section of the OFT are owned by the same firms; one of the firms that carried okra had two unique stalls that each carried a slightly different variety of produce with okra at times being available from one stall and at times from the other or from both stalls on the same day. Another wholesale firm owns multiple stalls at the terminal and has sorted their produce so that each stall has a specific list of produce items available at each stall every day.

4.1.2 Chinese Long Eggplant Availability

The availability of Chinese Long Eggplant is presented in table 4.2 below.

Table 4.2 Chinese Long Eggplant Availability at the Ontario Food Terminal between July 3rd and November 28th 2013					
	Number of Stalls with Chinese Long Eggplant on Display	Countries of Origin Available			
		Total	USA	Dominican Republic	Canada
July 3rd 2013	2	0	1	0	1
July 11th 2013	2	0	1	0	1
July 18th 2013	1	0	1	0	0
July 25th 2013	3	1	1	1	0
July 30th 2013	3	0	1	2	0
August 6th 2013	5	1	2	2	0
August 13th 2013	5	1	1	3	0
August 22nd 2013	5	0	1	4	0
August 28th 2013	8	1	1	5	1
September 4th 2013	3	0	1	1	1
September 9th 2013	6	0	1	4	1
September 17th 2013	6	0	1	4	1
September 26th 2013	5	1	1	2	1
October 1st 2013	5	0	2	3	0
October 8th 2013	2	0	1	1	0
October 18th 2013	6	0	2	4	0
October 24th 2013	2	0	1	1	0
October 29th 2013	1	0	1	0	0
November 7th 2013	1	0	1	0	0
November 14th 2013	3	0	3	0	0
November 22nd 2013	4	0	3	0	1
November 28th 2013	3	0	2	0	1
Grand Total	80	5	30	37	9

Table 4.2 above shows that Canadian, Dominican Republic, Honduran and U.S.A. grown Chinese long eggplant were available at the OFT, from most commonly available to least commonly available from July 3rd to Nov. 28th 2013, in that order. During the 22 observations

Chinese Long Eggplant was displayed for sale by at least one stall on all occasions. On 19 of the 22 observation periods there were at least two unique import supplies of Chinese long eggplant available for sale; for five of the observation periods only one stall at the terminal had Chinese long eggplant on display. This same stall had Chinese long eggplant on display 21 out of the 22 observation periods, never had Canadian Chinese long eggplant and during seven observation periods had two unique supplies of Chinese Long Eggplant displayed. In general, Chinese long eggplant is available for sale at the wholesale level in Toronto throughout the Ontario growing season.

4.1.2.1 Chinese Long Eggplant Availability by Country of Origin

Ontario grown Chinese long eggplant was available at the market during the period from July 25th to October 24th. During the peak of the season there were seven weeks when three or more stalls in the farmers' market and wholesale stalls were selling Ontario Chinese long eggplant. Dominican Republic-grown Chinese long eggplant was the most consistently available Chinese long eggplant supply with at least one stall having it displayed for sale in each observation period. Although more samples of Canadian-grown Chinese long eggplant were observed over the observation period there was not the same degree of consistency with the same sellers reliably having the same Canadian-grown product each week at the market. Chinese long eggplant grown in Honduras was the least consistently available only being observed nine times displayed for sale and only at one wholesale stall. USA-grown Chinese long eggplant was only displayed for sale from one wholesale firm which operates two wholesale stalls at the terminal; these stalls also had Ontario-grown Chinese long eggplant on display and only during one observation period were both Ontario and USA Chinese long eggplant displayed at the same time.

4.1.2.2 Chinese Long Eggplant Availability by Seller Type

On 22 separate occasions, Ontario-grown Chinese long eggplant was observed displayed for sale by wholesale stalls at the OFT. At no point did any Farmers' Market stalls have any Ontario-grown Chinese long eggplant for sale, as their leases for Farmers' Market stalls at the OFT only allow them to sell Canadian grown produce. On 15 occasions Chinese long eggplant was observed displayed for sale in the Farmers' Market at the OFT. Over the observation period six different Farmers' Market stalls were observed with Chinese long eggplant displayed for sale. One stall was observed five times between July 30th and October 18th and the remaining five stalls were each observed three or less times.

There were six stalls within the food terminal's wholesale stalls in which Chinese long eggplant was displayed for sale at least once during the observation period, five of which had Chinese long eggplant displayed at least six times and one which had Chinese long eggplant displayed only once. There were another 14 stalls within the wholesale stall area of the terminal that never had Chinese long eggplant displayed for sale during the observation period.

4.1.3 Indian Round Eggplant Availability

Indian Round Eggplant's availability at the Ontario Food Terminal is presented in Table 4.3 below.

	Number of Stalls with Indian Round Eggplant on Display	Countries of Origin Available			
		Total	USA	Dominican Republic	Canada
July 3rd 2013	2	1	0	0	1
July 11th 2013	0	0	0	0	0

July 18th 2013	1	0	1	0	0
July 25th 2013	2	1	0	0	1
July 30th 2013	1	0	1	0	0
August 6th 2013	1	0	1	0	0
August 13th 2013	1	0	1	0	0
August 22nd 2013	1	0	1	0	0
August 28th 2013	1	0	1	0	0
September 4th 2013	1	0	1	0	0
September 9th 2013	0	0	0	0	0
September 17th 2013	3	1	2	0	0
September 26th 2013	2	0	1	1	0
October 1st 2013	2	0	2	0	0
October 8th 2013	2	0	2	0	0
October 18th 2013	5	0	4	1	0
October 24th 2013	2	0	2	0	0
October 29th 2013	2	0	2	0	0
November 7th 2013	2	1	1	0	0
November 14th 2013	1	1	0	0	0
November 22nd 2013	1	0	1	0	0
November 28th 2013	3	0	3	0	0
Grand Total	36	5	27	2	2

As shown in Table 4.3 above, during the 22 observation periods Indian round eggplant was displayed for sale by at least one stall on 20 occasions. On only two of the 22 observation periods there were at least two unique import supplies of Chinese long eggplant available for sale; for nine of the observation periods only one stall at the terminal had Chinese long eggplant on display. On only six occasions were there supplies of Indian round eggplant on display from more than one supply region. Therefore, it is clear that, of the three ECV's studied, Indian round eggplant is the least readily available for sale at the OFT throughout the Ontario growing season.

4.1.3.1 Indian Round Eggplant Availability by Country of Origin

Ontario-grown Indian round eggplant was observed at the market only on September 26th and October 18th. There was only ever one stall in the Farmers' Market and never any wholesale stalls displaying Ontario Indian round eggplant for sale. Dominican Republic-grown Indian round eggplant was the most consistently available Indian round eggplant supply with at least one stall having it displayed for sale in 17 of the 22 observation periods. Indian round eggplant grown in Honduras was the least consistently available only being observed two times displayed for sale and only at one particular wholesale stall. USA-grown Indian round eggplant was only displayed for sale five times at two stalls and only when stalls that normally displayed Dominican Republic-grown Indian round eggplant displayed USA grown Indian round eggplant in its place.

4.1.3.2 Indian Round Eggplant Availability by Seller Type

Ontario grown Indian round eggplant was never observed displayed for sale by wholesale stalls at the OFT. At no point did any Farmers' Market stall have any none Ontario-grown Indian round eggplant for sale as their leases for Farmers' Market stalls at the OFT only allow them to sell Canadian-grown produce. On only two occasions Indian round eggplant was observed displayed for sale in the Farmers' Market at the OFT, and both times at the same stall.

There were four stalls within the OFT's wholesale stalls in which Indian round eggplant was displayed for sale at least once during the observation period, two of which had Indian round eggplant displayed at least nine times and two which had Indian round eggplant displayed four or less times. There were another 18 stalls within the wholesaler stall area of the terminal that never had Indian round eggplant displayed for sale during the observation period.

4.2 Qualitative Results on Local Production

Table 4.4 shows the interview dates of each of the in-depth interviews completed. As well as the template used, the three templates included as appendices A, B and C, and the position the interviewee holds in the ECV value chain in Ontario. Ten in-depth interviews were completed with six producers, three wholesalers and one produce buyer for a major retail chain. The six producers interviewed included two producers who specialized in the production of ECVs at a wholesale production level. Two producers who had previously grown ECVs at a wholesale level but whose primary production was not ECVs, and two producers who grew ECV's and other crops for local direct to consumer markets. The three wholesalers interviewed consisted of one specialized procurement agent, one traditional wholesaler and one modernized wholesaler. The retail produce buyer that was interviewed represented a major retail supermarket chain and specialized in the procurement of ECVs for the chain.

#	Interview Date	Interview Template Used	Interviewees' Value Chain Involvement
1	August 28 th 2013	Wholesaler	Specialized Procurement Agent
2	September 17 th 2013	Producer	Professional ECV Producer
3	September 17 th 2013	Producer	Professional ECV Producer
4	September 17 th 2013	Producer	Conventional Vegetable Producer
5	October 24 th 2013	Wholesaler	Traditional Wholesaler
6	October 29 th 2013	Producer	Conventional Vegetable Producer
7	October 30 th 2013	Wholesaler	Modern Wholesaler
8	October 31 st 2013	Producer	Local Alternative Grower
9	November 1 st 2013	Producer	Local Alternative Grower
10	November 15 th 2013	Retailer	Major Chain Retailer

The sample of interviews was small, however the ECV value chain in the GTA is relatively small compared to the produce value chain as a whole in the region. The actors who were interviewed each held key positions in the value chain and represented significant influencers on the market as a whole.

The observations made by the value chain participants on local production of ECV's were categorized based on observations made in relation to the early stages of the production season and those relating to trends and observations of the late season. All general comments and those pertaining to the regular production of ECV's in the province were collected in the peak season section.

4.2.1 Early Season

The most significant pressure on ECV production in Ontario prior to the production season and into the early part of the season is weather. As by definition, ethno-cultural vegetables, specifically those currently being studied, have not evolved locally or been selected for local production; they are not perfectly adapted to the Ontario growing season. Okra, Chinese long eggplant and Indian round eggplant are all hot weather crops that prefer moderate temperatures. During the 2013 production season the average day and night temperatures were below average for a significant portion of the early growing season in a large portion of the vegetable-growing regions of the province. The impact of this weather resulted in the earliest okra being observed at the food terminal on July 30th approximately 4 weeks later than anticipated by Ontario growers. This was echoed by an okra producer who stated that, "weather is the biggest challenge and the labour is second". This small scale alternative producer had limited access to skilled labour due to the small scale of operation and high labour demands of okra production. This is a significant issue for Ontario okra production as labour costs are

significantly lower in the USA and Nicaragua where the majority of imported okra is being produced during the Ontario production season. Labour costs are difficult for individual producers to mitigate as labour costs are fixed by minimum wages. Investment in labour saving equipment and technology can have a beneficial impact on the profitability of okra, but the return on investment increases proportionately with increased acreage. Similarly, the use of season extending technical fixes and equipment were described positively in their ability to mitigate the impacts of unusual temperature. These technical investments include plastic mulch, fabric row cover, and heated and unheated greenhouses. One grower described the impact of these season extending techniques as such,

Only problem is that Ontario's outside growing season is 90 days most of the time and most of the south Asian crops, that have [consumer] demand, their time to flowering is 90 days so by the time they start flowering we have already the cold and they get stunted, a little bit the addition of greenhouse, even unheated greenhouses can extend that season for two months of harvest-Producer

Producers who invest in these season extending technologies can access higher prices earlier in the season and distribute fixed production costs over a larger number of harvests thus increasing their profitability, but many small producers require access to additional capital in order to make those investments.

4.2.2 Peak Season

Retailers interviewed expressed that they are looking for locally-grown produce in season and are willing to replace imported produce with local produce. A retail produce buyer interviewed explained as follows, "Let's say we need 500 cases of Indian eggplant, if the local production is servicing me 500 cases then we will be replacing that import 100% with local". The same buyer continued, answering the question of if there was an increased demand for local produce, by saying,

I'm not certain whether customers are willing to pay differently for a different country of origin, they are willing to pay for value, or they are very value conscious, all these customers. They are willing to pay for quality, but I don't know if they are willing to pay 20 cents more because it's Ontario grown or 20 cents less because it's Mexico grown-Retailer

This distinction between differences in quality and country of origin was also noted in discussions with wholesale buyers who expressed that high quality produce is the number one priority for wholesale buyers and consumers. Some buyers expressed concern that some samples of Ontario-grown ECV's were not comparable in quality and specifications to import products and therefore did not meet the requirements of the market and did not receive good market returns. One wholesaler described how some buyers were not happy with the quality of locally-grown produce samples, "I'm not sure, they say that local one and Dominican one they don't really taste the same but [local professional ECV Grower]'s eggplants look more like the Dominican ones, like the real oblong". This distinction of high quality Ontario-grown is important as when the same wholesaler was asked to describe the quality of the professional ECV growers Chinese long eggplant they replied, "I think the quality is very good but there is a huge market, huge market." Thus the market was accepting of the high quality Ontario produce but not all Ontario-grown ECV's. This was echoed by a supermarket produce buyer who explained that, "There is a big necessity or vacuum in terms of handling or post-harvest handling of these commodities that, many growers or shippers, they don't understand". These stages of post-harvest handling have been shown to be critical for ensuring the maintenance of high quality produce.

A traditional vegetable grower that had experimented with the production of ECV's described how the small area of the total farm production that had been dedicated to ECV's hindered the farm's ability to produce the desired quality of ECV's and that the ECV's were not

meeting the quality that was expected from the other crops produced on the farm. “We didn't grow enough acres for me to know what the disease pressures are, or to even bring someone in”. This farm had also invested in post-harvest handling facilities for their other crops but, due to the limited volume of ECV's produced, had not invested in the same type of equipment for their ECV production. The farmer continued that, “It was my fault but we get too many things going on in the summer that I didn't pay enough attention. I'm not familiar enough with that crop, I scout my peppers and tomatoes big time, every week”. This lack of attention and investment into the ECV crops was a common thread amongst the traditional vegetable growers who had attempted to diversify and begin a small scale production of ECV's alongside their primary crop. The result was commonly an inferior quality product in terms of quality and packing scores of these crops. These quality and packing issues resulted in lower prices at market as these crops did not meet the minimum requirements that imports were meeting and therefore needed to be sold at a discounted price. This in turn resulted in growers expressing concern over the low prices and lack of profit on these ECV crops. Therefore they were unlikely to continue production or invest in further acreage or proper post-harvest handling in order to improve the quality of the product that they were delivering to market, despite having almost unanimously invested in this manner with their primary crops.

4.2.3 Late Season

Several wholesalers at the OFT expressed concern with late fall harvests of Ontario-grown Chinese long eggplants. It was noted during observations at the food terminal that, as the production season neared its conclusion, some traditional vegetable growers would arrive at the food terminal with large bins of Chinese long eggplants which had not been properly graded or packed into proper cases. These bins contained eggplants with significant damage, unconventional shapes and poor colouration as well as a large variety of sizes from smaller than

specified to much larger than specified. These eggplants would sell for very low prices due to their significant quality concerns and had the effect of decreasing the market price of all of the other Chinese long eggplant at the terminal. One wholesaler described the situation as follows,

I've seen it in the past the local growers, you know, I don't know them, they come with the bins, they dump everything in the bin and if it doesn't sell, at the end of the day they sell it. They sell it for like \$30 a bin or whatever they can get, cash and go, and that creates the market. People take advantage of that and people wait for that kind of stuff. So they won't buy from me, they prefer to wait for that stuff, there buy the bin \$30, here buy the case \$30, that's what they say-Wholesaler

A second wholesaler confirmed this trend saying, in an interview completed in October 2013, "Just now at the end of the season, it was the same thing kind of all the odd eggplants in a bin" and "I think in August even the farm market there was so many Chinese eggplant in a big bin". The sale of entire bins or pallets of Chinese long eggplant (see Figure 4.9.4), therefore, had a distinct impact on the market for both imported and properly graded and packed Ontario-grown eggplants. The first wholesaler described the impact of these late fall bins of poor quality eggplants on their market for imported Chinese long eggplants, "If the local growers like that comes outside and sells it that way then it hurts me so I can't sell any extra volume, I just sell whatever I normally sell." Note that the wholesaler did not say that they would not be able to sell any product during that period, only that they would not sell any extra. This sales period can be seen in Figure 4.3, it shows that during this late fall period, impacted by bulk discounted bins of local eggplants, the wholesale price of Dominican Republic-grown eggplant was negatively impacted, although only temporarily. It would appear that the largest volume buyers of ECV's, the supermarkets and retail buyers, are not likely to purchase these low quality, end of season eggplants as they are available only for a limited time, in limited quantity and would require grading and repacking before they could be introduced into their distribution systems. This low

cost produce is most likely to impact the reseller market of local distributors who have the greatest cost sensitivity.

A local traditional produce grower presented the situation slightly differently, from the perspective of the producer. They would ship the eggplants sorted out of their grade A cases to the OFT as grade B eggplants throughout the season saying,

Well we will ship it to the food terminal, but these are the number twos that, they probably get shipped to restaurants, and it wouldn't surprise me if some went to even little retail stores cause there is not much wrong with them- Producer

and

They taste the same, there will just be a scar on them. They're probably being sold at a reduced price so it's a win-win situation. We can get rid of them, and somebody buys them for a discounted price.-Producer

This selling of grade B produce at a discounted price could take several different forms and is unique occurrence, from the bins of un-graded bulk produce being dumped onto the market at highly discounted prices but the impacts of these two types of sales could be significant.

4.3 Characteristics of Wholesale Ethno-cultural Vegetables at the Ontario Food Terminal

4.3.1 Okra Price Characteristics

Figure 4.1 below shows the observed wholesale okra prices at the Ontario Food Terminal. Wholesale okra prices at the Ontario food terminal, shown in Figure 4.1 are highly correlated to their country of origin and seasonal changes as shown in Table 4.4. The most consistently-priced okra source was Nicaraguan okra which remained priced between \$30 and \$40 per half bushel case throughout the observation period.

The first Ontario-grown okra was observed on the market on July 30th 2013, marked in Figure 4.1 above as the start of the Ontario okra season, the last observed Ontario-grown okra

was on September 26th 2013, also marked on Figure 4.1 as the end of the Ontario okra production season. The Nicaraguan okra had a consistent price of between \$30 and \$33 per half bushel case from the beginning of the observation period until the end of the Ontario okra production season.

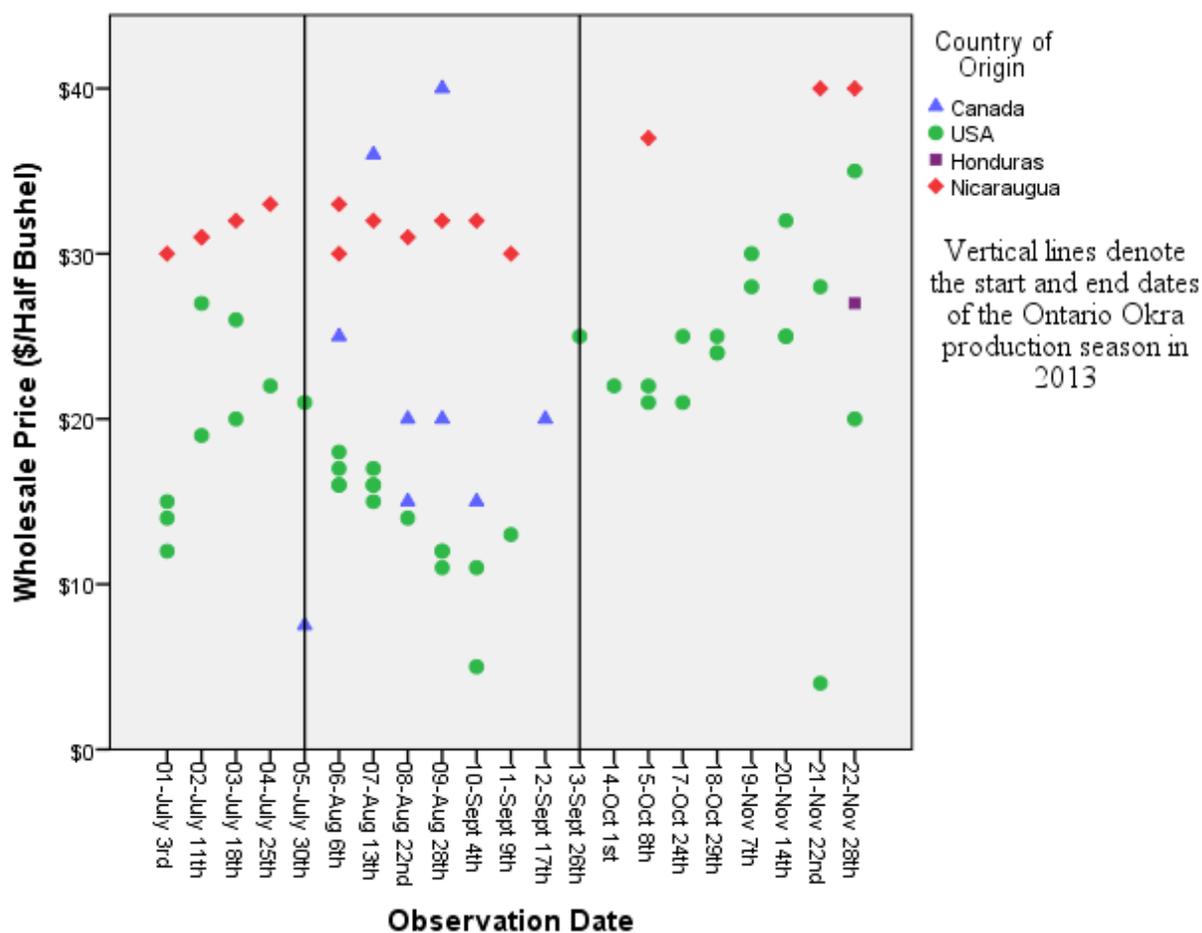


Figure 4.1 Observed Wholesale Okra Prices at the Ontario Food Terminal (July 1st to November 31st 2013)

After the end of the Ontario season, the price increased to between \$37 and \$40 per half bushel case. These were the highest prices recorded for okra available in significant volume and for which a strong market was observed. On two occasions, Ontario-grown okra was observed with a wholesale price of over \$35 per half bushel; these were both examples of Ontario product packaged in smaller volumes with a wholesale price, that when multiplied out to the standard 15

lb half bushel case, had a price above \$35. They were also only available in relatively small quantities of generally less than 10 bushels.

The wholesale price for USA-grown okra was more turbulent over that same period with the price prior to the Ontario season and during the Ontario season, being between \$11 and \$22 per half bushel with high outliers due again to uniquely-sized cases with higher standardized prices, and low outliers due to poor quality or old product discounted for fast sale. The greatest volume of USA-grown okra was on the wholesale market at the OFT in early August and the price trend was decreasing during the growing season with the lowest prices occurring in late August and early September. After the end of the Ontario production season, the price of USA-grown okra recovered, increasing to between \$21 and \$35 per half bushel case in October and November; again, low price outliers were due to discounted old product that was of a sub-standard quality.

As there was only one sample of Honduras-grown okra observed, it is impossible to establish a price trend of Honduras-grown okra based on this information. Ontario-grown okra was commonly priced between the wholesale prices of USA and Nicaraguan-grown okra; it was commonly priced between \$15 and \$25 for the equivalent of a half bushel case. Although package sizes were inconsistent which meant that price per package was also inconsistent.

Table 4.5					
Spearman's Correlation Results for Okra Wholesale Price, Country of Origin and Overall Quality Score					
			Wholesale Price	Country of Origin	Overall Quality Score
Spearman's Correlation	Wholesale Price	Correlation Coefficient		.515**	.452**

		Sig. (2-tailed)		.000	.000
		N		67	60
	Country of Origin	Correlation Coefficient			.291*
		Sig. (2-tailed)			.024
		N			60
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

Table 4.5 shows a statistically significant correlation between wholesale price and country of origin, the country of origin variable was a ranked numerical variable based on the countries distance from Toronto with Canada receiving the lowest rank, therefore the country of origin data set is ordinal and not nominal as would be expected with this type of data set. Table 4.5 also shows a significant correlation between wholesale price and overall quality score at the 0.01 level, and a significant correlation between country of origin and overall quality score at the 0.05 level. Overall, quality score and country of origin had the most significant correlation to wholesale price of all the variables tested.

The United States Department of Agriculture (USDA) Agricultural Marketing Service provides a market news service where wholesale prices of many produce crops are made available online. Wholesale prices are collected weekly at produce hubs around the USA and some foreign cities, including Toronto. For the observation period this data was collected for Toronto and compared in Figure 4.2 above to verify the prices collected at the OFT. A Mann-Whitney U test of the USDA (2014) sourced data against the observed data resulted in a significance of 0.165 at a significance level of 0.05 which means that the two samples are not statistically different. This would suggest that the observed prices collected in this research were not statistically different from the prices observed and published by the USDA during the same

observation period. The average high price and average low price recorded by the USDA also generally bound the observed prices at the OFT, as would be expected. The observed prices are well within the high and low range in the first third of the observation period and the USA-grown okra is priced within the range for the final third of the period. In the central third of the observation period in the peak of the production season, the USA okra prices dropped below the low average and the Nicaraguan-grown okra jumped above the high average, with Ontario-grown okra prices falling between the two averages.

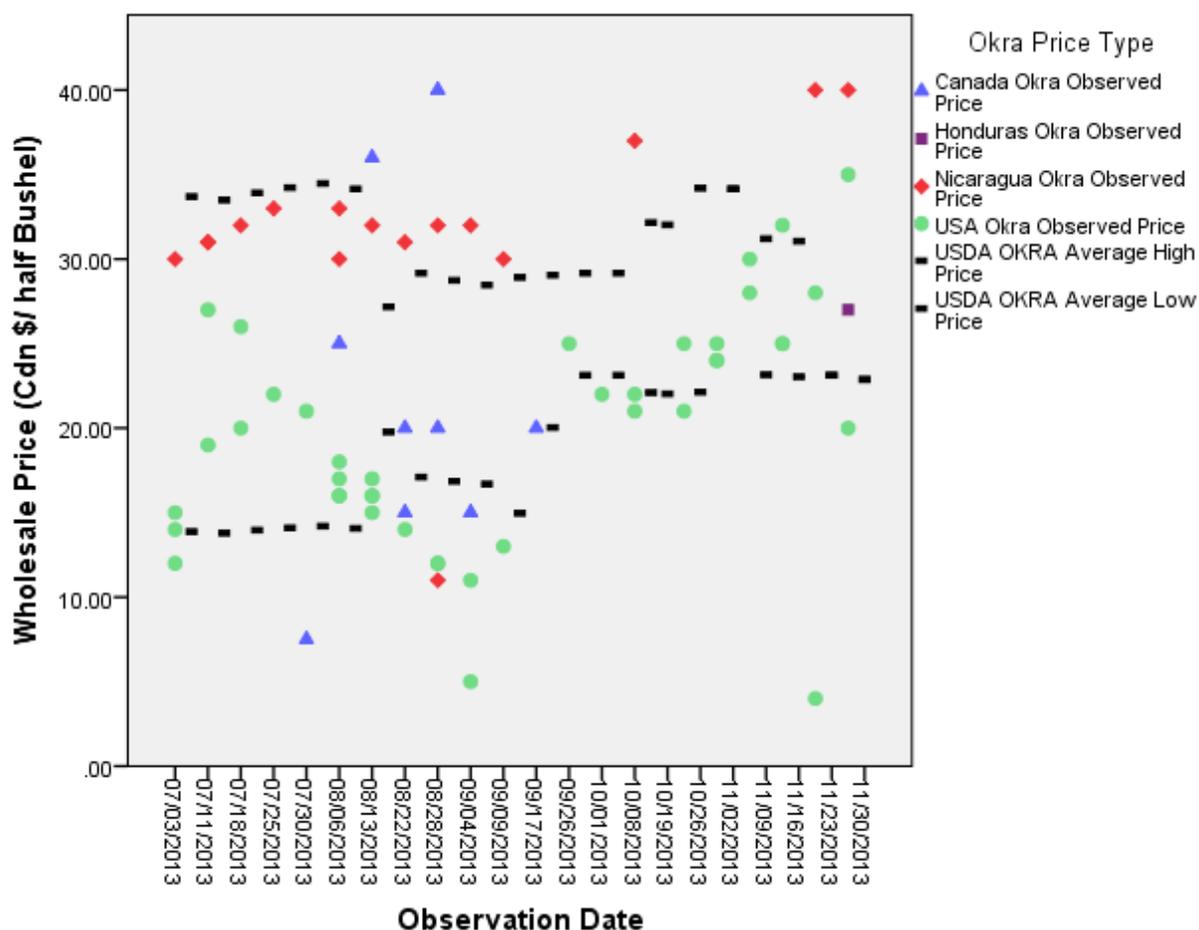


Figure 4.2 Okra Prices Observed at the Ontario Food Terminal and USDA Average Okra Prices in Toronto (July 1st to November 31st 2013)

4.3.2 Chinese Long Eggplant Price Characteristics

Figure 4.3 below shows the observed wholesale Chinese long eggplant prices at the OFT between July 1st and Nov. 31st, 2013.

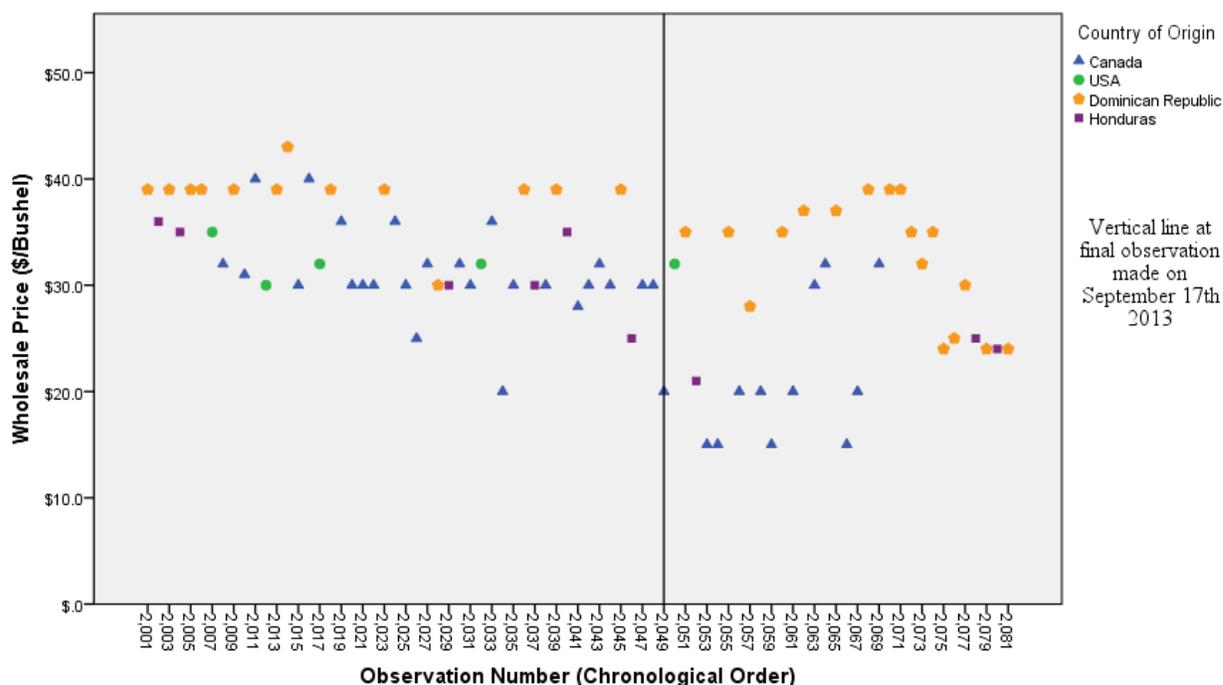


Figure 4.3 Observed Wholesale Chinese long eggplant prices at the Ontario Food Terminal (July 1st to November 31st 2013)

Wholesale Chinese long eggplant prices at the OFT are highly correlated to their country of origin and seasonal changes as shown in Table 4.5.

			Wholesale Price (\$/Bushel)	Observation Period	Country of Origin	Overall Quality Score
Spearman's Correlation	Wholesale Price (\$/Bushel)	Correlation Coefficient		-.414**	.311**	.108
		Sig. (2-tailed)		.000	.005	.340
		N		81	81	80
	Observation Period	Correlation Coefficient			.139	.143
		Sig. (2-tailed)			.217	.207
		N			81	80

	Country of Origin	Correlation Coefficient				.278*	
		Sig. (2-tailed)				.013	
		N					80
**.							Correlation is significant at the 0.01 level (2-tailed).
*.							Correlation is significant at the 0.05 level (2-tailed).

The Spearman's correlations in Table 4.6 show significant correlations between wholesale price and country of origin, a ranked ordinal variable as in okra, at the 0.01 level as was the case with okra, and between wholesale price and observation period at the 0.01 level which was not the case for okra. No statistically significant correlation was found between wholesale price and overall quality score. These two significant differences between the two sets of observations are important. They show that the quality and price of Chinese long eggplant are more temporally variable than they are for okra; the lack of a statistical correlation between overall quality and wholesale price could indicate that the quality score developed and applied to Chinese long eggplants was less accurate than it was for okra, obscuring the correlation between wholesale price and the quality score. The overall quality score did have a statistically significant correlation with country of origin at the 0.05 level, which would suggest that there were differences in quality between the different countries of origin and that the quality score system established was able to capture those differences. The lack of statistical correlation between the quality score and wholesale price could also show that wholesale price of Chinese eggplant is more correlated to shipping costs than variations in quality.

The most consistently-priced Chinese eggplant source during the observation period was Dominican Republic, which remained consistently priced at \$39 per bushel case between July 1st and early September when the price began to fall below the \$39 mark, reaching as low as \$24 per bushel at the end of the observation period.

The first Ontario-grown Chinese long eggplant was observed on the market on July 25th 2013, the last observed Ontario-grown Chinese long eggplant was on October 17th 2013. The vertical line marked on Figure 4.3 is placed on the final observation made on September 17th 2013. This represents a noted change in price and quality trends of Chinese long eggplant supplies at the OFT. The Dominican Republic Chinese long eggplant had a consistent price of \$39 per bushel case from the beginning of the observation period until the September 17th dateline with only two variations, one of which was likely due to discounted product when new product was about to arrive and the other when a stall that did not regularly carry Chinese long eggplant had product displayed at above market price. After the September 17th date, the price of Chinese long eggplant became more volatile as two additional wholesale stalls began to market Dominican Republic-grown Chinese long eggplant and the late harvest of some Ontario-grown Chinese long eggplant influenced the market, causing the price to fluctuate between the original \$39 and \$24 per bushel case.

On two occasions Ontario-grown Chinese long eggplant was observed with a wholesale price of \$40 per bushel; in both cases these were half bushel cases of Ontario product marketed at \$20 per half bushel and were available in relatively limited quantities.

The wholesale price for USA-grown Chinese long eggplant was generally stable between \$30 and \$40 per bushel case over the period from early July to mid-September. USA-grown Chinese long eggplant was only present at the terminal sporadically.

Honduras-grown Chinese long eggplant was observed exclusively as an alternative to Dominican Republic grown Chinese long eggplant and was always priced lower than the Dominican Republic product. Its price was less stable than the Dominican Republic price and its availability was less consistent. In general, its price trend followed the Dominican Republic

trend, although the price began to drop to \$30 per case or lower earlier than the Dominican Republic product.

Ontario-grown Chinese long eggplant was the second most consistently priced supply of Chinese long eggplant at the OFT between July 1st and November 31st 2013. The price for Chinese long eggplants from one professional ECV producer was consistently \$15 for a half bushel case giving it a wholesale price of \$30 per bushel as noted on the chart. There were several other less-consistent supplies of Ontario-grown Chinese long eggplant that were priced less consistently. The price trend for Ontario-grown Chinese long eggplant changed significantly around the September 17th observation period, with the price dropping to \$20 per bushel for the consistent supply and lower for the inconsistent supply for several weeks before the price for the consistent supply recovered and the inconsistent supply remained at or below \$20 per bushel.

4.3.3 Qualitative Interviews Pricing Observations

When asked about how they determined the prices they paid for produce and the price for which they marketed that produce, the wholesalers expressed that it, “pretty much stays the same all the time on the price” and a second explained that, “usually you know everybody gets the same thing [produce], area [country of origin] and the same price”. These actors in the value chain are in the middle of growers and larger retail-chain buyers and have little flexibility in their prices. They are primarily tied to the greater market price for the products. One of these wholesale produce buyers explained that they set their wholesale price of produce,

Based on the purchase price and we have to see what we can do, how much we need to add there. Then we get the [wholesale] price and we just check the market price, see if it's good and just let it go. Sometimes if it is at times too expensive maybe have a little bit lower profit. That's usually how we operate here-Wholesaler

One commercial grower interviewed explained the process they used to establish a price with a wholesaler at the OFT when the producer is also working directly with a major retail chain supplying them with produce directly marketed via an online marketplace.

When I'm dealing with [retail chains] I can say, no, I'm not going to ship them to [food terminal wholesaler] because I'm getting \$15 [from the retail chains] and I'll ask [the wholesaler] what he's paying and he will say \$8. Well no. Then he says ok. Well I can get you a better deal, I can get you \$12. Well then, if I have any surplus he'll get them-Producer

This interaction shows the same situation; the wholesaler is not able to easily set a price for purchase or sale because the commercial-scale producer has knowledge of the final market price directly from the retail chains. As the retail chains set the consumer price for the produce in the region, they also directly influence the top wholesale price that any other retail buyers will be able to pay for the same produce. The situation described above was using an example of tomatoes, the primary crop of the producer, which are a highly commoditized and readily available crop in Ontario during the peak growing season and therefore function on a simple market structure. For ECV's, the limited availability of the produce means that they are marketed in a more network-based approach where supply is more important than price.

During the interview with the supermarket produce buyer, their responses were less focused on fixing a price but instead on securing supply for a period of time and then negotiating a price for that supply, "If you're negotiating for that particular week, you do have a fixed costing for that particular week. Let's say if you negotiated the whole contract for that particular season, those prices are fixed for a particular season". This process of negotiation and determining contract prices is different from the daily price determinations of an open marketplace, and are generally formed between a supermarket chain and a producer or producer group without the inclusion of a traditional wholesaler. However, in some cases modern

wholesalers described the establishment of contracts and fixed pricing with producers in order to fill a contract signed with a retailer by the modern wholesale firm.

4.3.4 Okra Physical Product Characteristics

Figure 4.4 below shows the quality scores of wholesale okra at the Ontario Food Terminal.

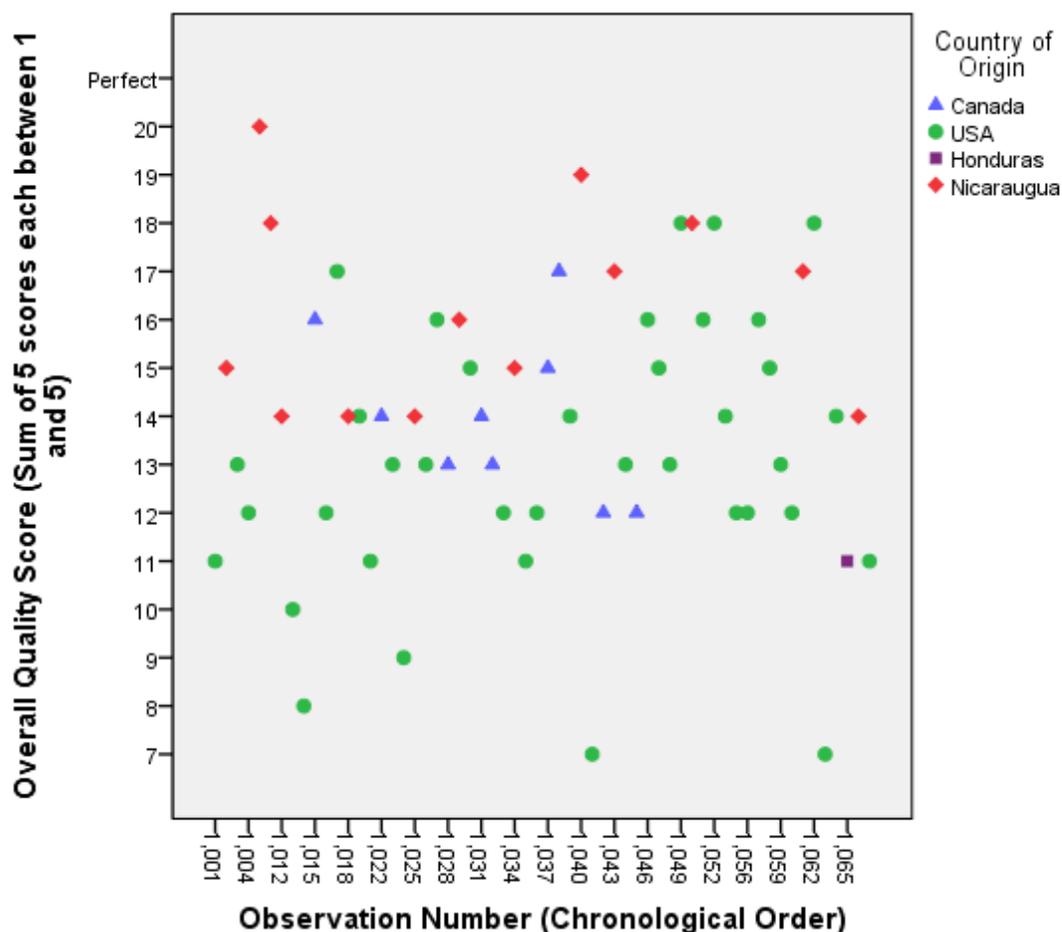


Figure 4.4 Quality Scores of Wholesale Okra observed at the Ontario Food Terminal (July 1st to November 31st 2013)

All of the okra observed at the OFT was photographed and later analysed, with five quality scores being given to each okra sample. The scores were numerical, between one and five, with one being the lowest score and five being the highest. Each sample was scored based on colour, consistency of size, appeal, damage and packaging. These five scores were aggregated giving each sample a quality score out of 25 possible points, as shown in Figure 4.4.

The Nicaraguan-grown okra had the highest overall quality scores with a range between 14 and 20 points. The Ontario-grown okra had a range of between 12 and 17 points on the overall quality score and the USA okra had the greatest variability of scores ranging from as low as seven points to as high as 18 points. Although, the majority of USA-grown okra samples scored between 12 and 16 points. The single Honduras-grown sample scored 11 points on the cumulative quality score.

Figure 4.5 below reveals the average okra fruit size in wholesale cases at the Ontario Food Terminal from July 1st to Dec. 1st, 2013.

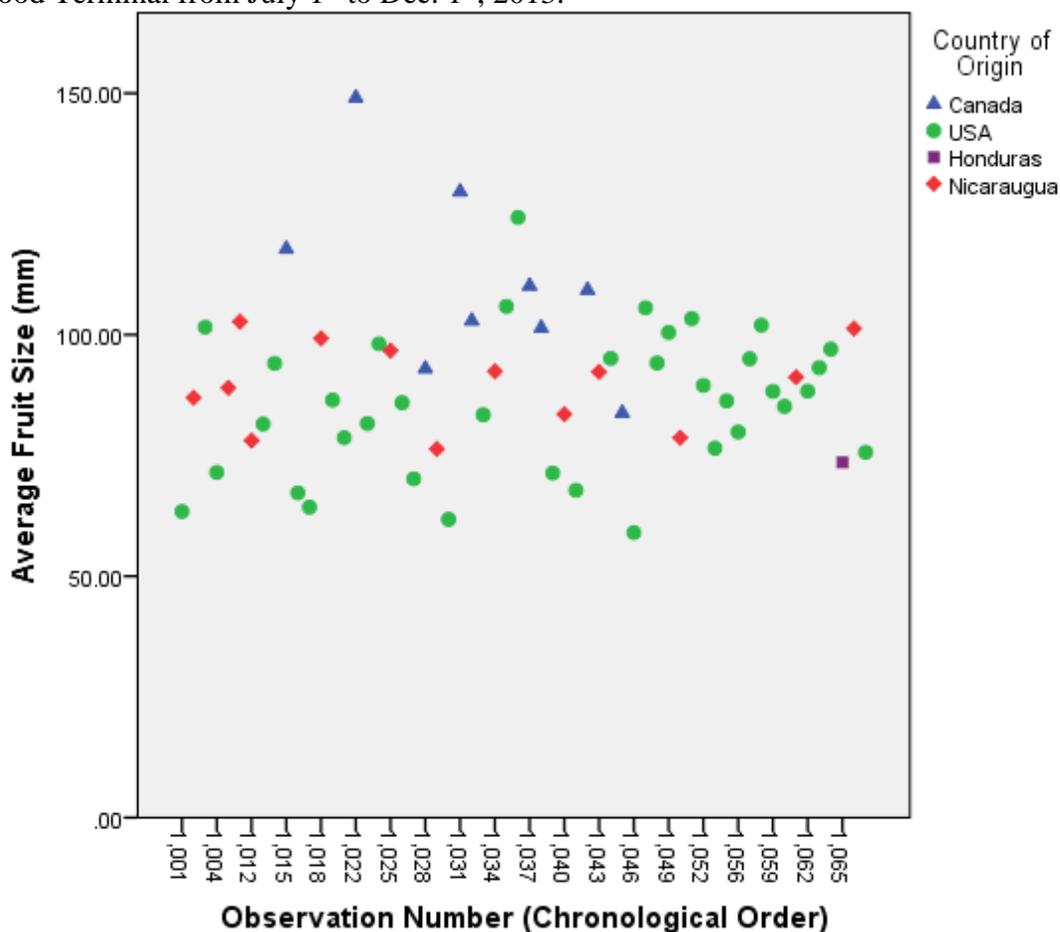


Figure 4.5 Average Okra Wholesale Fruit Size observed at the Ontario Food Terminal (July 1st to November 31st 2013)

The physical appearance of okra is primarily determined by its shape and size, in particular the pod length. Nicaraguan-grown okra had the greatest consistency of size over the

sampling period with the average pod length in observed cases ranging between 76mm and 102mm. USA-grown okra had observed cases with average pod length of between 60mm and as high as 125 mm with the majority of cases averaging less than 102mm. Ontario-grown okra was the largest okra on average, with the lowest average pod length in a case being 83 mm and the largest being 149mm. The standards gathered from wholesale buyers specified that okra pod length should be between 63 and 115mm.

4.3.4.1 Visual Observations of Okra Pod Quality and Consistency

Each observation of okra at the OFT was photographed, if permission was received from the seller, for later analysis of the overall quality of the okra and consistency of the okra within the case and over time. Figure 4.6 below shows the pictures of all six observed samples of okra on August 13th 2013. Of the six samples observed that day four samples were USA-grown okra, one sample was Nicaraguan-grown and one sample was Ontario-grown okra.

Several quality defects have been annotated in Figures 4.4.2 and 4.4.6; these are as follows.

1. Foreign matter in the case; in Figure 4.4.2 the foreign matter is okra leaves.
2. Insect damage, in Figure 4.4.2; the small round indentations on the okra surface and slight browning are characteristic of insects that puncture the skin of the pod of the pod and extract nutrients.
3. Improper harvest technique; in Figure 4.4.2 there are several pods which have been broken off at the crown and several others that have not been cleanly cut from the stem, which has left an uneven stem on the okra pod.

Insect damage can also be seen in Figure 4.6.4 and some minor darkening of the crowns is visible on the pods in Figure 4.6.3. All of the pods in Figures 4.6.1 and 4.6.3-6 have been properly harvested and have clean cuts. The annotations on Figure 4.6.6 denote the significant

variability in pod size and pod colour within the sample. The pod marked with the line a, has been harvested too early and has not reached the required size to meet retailer product specifications. In the same sample, the pod marked with line b has been allowed to mature too long on the plant and has reached a size above the maximum allowable size within okra product specifications. Similarly, the pods outlined in red represent a large variability in okra pod colours, although neither of these two colours would be restricted by a specification as they are both marketable colours of okra; the variability of the colours in the case accentuate the variability in pod size within the case. In comparison, the uniformity and alignment of the okra pods in Figure 4.6.3 is highly desired by retail produce buyers and receives a higher wholesale price than even the relatively consistent okra cases in Figure 4.6.1, 4.6.4, and 4.6.5. Table 4.7 below shows the quality scores given to the samples shown in Figure 4.6.

Table 4.7						
Okra Quality Scores of Samples observed on August 13th 2013						
Sample #	Product Size Consistency Score	Product Colour Score	Product Damage Score	Product Appeal Score	Packaging Score	Overall Quality Score
1023	4	3	3	3	3	16
1024	2	3	2	2	4	13
1025	4	4	3	3	5	19
1026	3	4	3	3	3	16
1027	3	4	5	4	4	20
1028	1	4	5	3	2	15
Note: Scores (1-Unacceptable 2-Poor 3-Good 4-Great 5-Excellent)						Out of 25



Figure 4.6.1 USA Okra Quality Photo
(Sample 1023)



Figure 4.6.2 USA Okra Quality Photo
(Sample 1024)



Figure 4.6.3 Nicaraguan Okra Quality Photo
(Sample 1025)



Figure 4.6.4 USA Okra Quality Photo
(Sample 1026)



Figure 4.6.5 USA Okra Quality Photo
(Sample 1027)



Figure 4.6.6 Ontario Okra Quality
Photo (Sample 1028)

Legend : 1: Foreign Matter 2: Insect Damage 3: Improper Harvest
A-B Lines: In-Consistent pod lengths Red Circles: In-Consistent pod colours

Figure 4.6 Annotated Photographs of Okra Samples Observed on August 13th 2013

The okra samples observed on August 13th 2013 (Figure 4.6) had overall quality scores (Table 4.7) ranging between 13 and 20, with samples 1025 and 1027 receiving the highest overall scores and sample 1024 receiving the lowest score. The low score of sample 1024 can be attributed to the inconsistent sizing of the pods, pod damage and foreign matter in the case giving the sample three poor ratings. In contrast, sample 1027 scored highly in all categories with no sign of damage, relatively-consistent pod sizes and great colour. The Ontario-grown sample 1028 received scores of three in appeal, four in colour and five in damage; all three of these characteristics are related to some extent to freshness as damage becomes increasingly visible over time and colour will become less vibrant over time, impacting the overall appeal of the produce. The Ontario sample was reduced due to the unacceptable score it received for pod size consistency and poor packaging score; both of these characteristics, as well as damage, are related primarily to management decisions made around harvest and post-harvest handling. This provides evidence that this sample of Ontario-grown okra was produced by a traditional vegetable producer with limited knowledge of the crop and not a professional ECV producer dedicated to the production of high quality ECV's. With improved management of harvest and post-harvest activities this sample could have scored a much more competitive score and received a higher wholesale price.

Figure 4.7.1-3-5 shows a selection of okra samples observed in the early period of the 2013 season and samples observed in the late period of the season Figures 4.7.2-4-6 from Nicaragua (Figures 4.7.1-2), USA (Figures 4.7.3-4) and Canada (Figures 4.7.5-6). These photos have been chosen to show the changes in these three supplies of okra over the production season. Note the lack of differences between the Nicaraguan samples. The lines marked c in each photograph are the same length; the uniformity in pod size in these two samples is near perfect

and representative of the trend of samples recorded from this Nicaraguan producer over the entire observation period. The USA-grown okra again shares similar traits over the entire season, again noting the foreign matter in the cases and similar degrees of uniformity and damage between the two samples. The Canadian-grown okra was the least consistent okra over the length of the season with some samples showing signs of harvest damage (Figure 4.5.5) but good colour and appeal traits and other samples showing no signs of damage but inconsistent pod sizing and colouring. The Canadian okra was also the least consistently packed, with samples scoring only one or two; these cases were commonly unmarked cardboard flats, incorrectly marked cardboard cases or bushel baskets, and did not meet the product specifications. USA-grown okra was consistently packed into wooden half bushel cases which, when labeled with the producers' information, scored four points; when the producers' information was missing, they scored three points. Finally the Nicaraguan okra was always packed in the producers fully labeled and traceable corrugated plastic half bushel case, which received the full five points.



Figure 4.7.1 Nicaraguan Okra Quality Photo (Sample 1005)



Figure 4.7.2 Nicaraguan Okra Quality Photo (Sample 1050)



Figure 4.7.3 USA Okra Quality Photo (Sample 1004)



Figure 4.7.4 USA Okra Quality Photo (Sample 1049)



Figure 4.7.5 Ontario Okra Quality Photo (Sample 1015)



Figure 4.7.6 Ontario Okra Quality Photo (Sample 1045)

Legend : 1: Foreign Matter 2: Insect Damage 3: Improper Harvest
 A-B Lines: In-Consistent pod lengths C-Lines: Consistent pod lengths

Figure 4.7 Annotated Photographs of Okra Samples Observed at the Ontario Food Terminal over the 2013 Ontario Okra Growing Season (Paired samples by country of origin, spring and fall)

4.3.5 Chinese Long Eggplant Physical Product Characteristics

On August 28th 2013, eight wholesale lots of Chinese long eggplants were observed at the OFT. Of these eight lots, six were photographed with the consent of the wholesale firms selling the product and analyzed for their quality from those collected photos. On that observation date, samples from the Dominican Republic, Honduras and Canada were all available, leaving only USA-grown Chinese long eggplant not represented. The quality scores recorded for each of the samples for which photographs were available are displayed in Table 4.8 along with their overall quality scores.

The Honduras-grown Chinese long eggplants observed on August 28th received a perfect score in all 6 quality scores. In Figure 4.7.3, it is possible to see the consistent size and uniform shape of all the eggplants in the case, the deep purple colour, skin free of markings or scars, and no other issues that would reduce the overall appeal of the eggplants. The packaging, a waxed cardboard bushel box, was also correctly labeled and appropriate to the specifications of the market. This perfect overall quality score does not mean that the eggplants shown in Figure 4.7.3 are perfect and the ideal Chinese long eggplants, but that visually and within the developed scoring system they cannot be faulted. These eggplants may have tough skins or unappealing flavours and may not be preferred by consumers but using the scoring system developed they cannot be scored any lower as there are no visual faults to these eggplants. Conversely, one sample of Canadian-grown Chinese long eggplant (sample 2034) received an overall quality score of only 15 due to the fact that the shape was not the desired shape for Chinese long eggplant, as its length to width ratio was not high enough. This resulted in the sample scoring only a two on shape and appeal. Although the product was consistently sized, the packaging choice of bushel baskets resulted in a score of only one. The three remaining Ontario-grown Chinese long eggplant samples were all produced by the same grower and sold to several

wholesalers at the terminal on August 28th. This grower had consistently high scores in colour, damage and appeal in nearly all of their samples. As the waxed half bushel cardboard cases were appropriate except for the fact that they were all mislabelled with another vegetable, not Chinese long eggplant, this mislabelling of the cases resulted in the score of four instead of five.

Table 4.8							
Chinese Long Eggplant Quality Scores of Samples observed and photographed on							
August 28th 2013							
Sample #	Product Size Consistency Score	Product Shape Score	Product Colour Score	Product Damage Score	Product Appeal Score	Packaging Score	Overall Quality Score
2027	2	2	4	5	4	4	21
2028	4	3	3	4	3	5	22
2029	5	5	5	5	5	5	30
2031	3	4	5	4	4	4	24
2033	3	3	5	4	4	4	23
2034	4	2	3	3	2	1	15
Note: Scores (1-Unacceptable 2-Poor 3-Good 4-Great 5-Excellent) Note: Samples 2030 and 2032 were observed and prices were collected but photographs could not be collected and therefore product quality scores could not be derived for those samples.							Out of 30



Figure 4.8.1 Ontario Chinese Long Eggplant Quality Photo (Sample 2027)



Figure 4.8.2 Dominican Republic Chinese Long Eggplant Quality Photo (Sample 2028)



Figure 4.8.3 Honduras Chinese Long Eggplant Quality Photo (Sample 2029)



Figure 4.8.4 Ontario Chinese Long Eggplant Quality Photo (Sample 2031)



Figure 4.8.5 Ontario Chinese Long Eggplant Quality Photo (Sample 2033)



Figure 4.8.6 Ontario Chinese Long Eggplant Quality Photo (Sample 2034)

Figure 4.8 Chinese Long Eggplants Observed and Photographed on August 28th 2013



Figure 4.9.1 Ontario Chinese Long Eggplant Quality Photo (Sample 2025)



Figure 4.9.2 Ontario Chinese Long Eggplant Quality Photo (Sample 2016)



Figure 4.9.3 Ontario Chinese Long Eggplant Quality Photo (Sample 2048)



Figure 4.9.4 Ontario Chinese Long Eggplant Quality Photo (Sample 2049)



Figure 4.9.5 Ontario Chinese Long Eggplant Quality Photo (Sample 2061)



Figure 4.9.6 Ontario Chinese Long Eggplant Quality Photo (Sample 2064)

Figure 4.9 Various samples of Ontario Grown Chinese Long Eggplants Observed at the Ontario Food Terminal over the 2013 Ontario Eggplant Growing Season.

The two samples in Figures 4.8.4 and 4.8.5 have consistently-sized eggplants within the case, although they are relatively different sizes when compared case to case. This shows that the eggplants are being properly sorted and graded into cases prior to sale by the producer. The reasoning as to why the sample in Figure 4.8.1 has a higher variability in sizing of the eggplants is unknown and is not consistent with this producer's cases. This effort towards proper packaging, grading and the high quality of the eggplants themselves is evidence that this producer fits into the category of professional ECV producer as opposed to a traditional vegetable producer who is also growing ECV's. Figure 4.8.2 shows a characteristic sample of Dominican Republic-grown Chinese long eggplant; the consistent size, good colour and limited damage were common characteristics of the Dominican Republic-grown eggplants observed over the observation period. The Dominican Republic and Honduras-grown produce was always properly cased in waxed cardboard bushel boxes with proper labeling; points were only deducted if the cases had been damaged in transit or mislabeled as to which type of produce was in the box.

Figure 4.9 provides more examples of Ontario-grown Chinese long eggplant observed over the course of the observation period, starting with the earliest observed samples and moving through to the samples observed late in the fall. Figures 4.9.2 and 4.9.6 show two samples produced by the same professional ECV grower as those in Figure 4.8.1-4-5. The four remaining samples in Figure 4.9 were produced by traditional vegetable producers, with samples 2025 and 2048 produced by the same grower and samples 2061 and 2049 producer by another grower. Note the increased curvature of the eggplants over the duration of the growing season with little to no curve to the eggplants in Figures 4.9.1 and 2, slight curvature in Figures 4.9.3 and 4 and more pronounced curvature in Figure 4.9.5 and 6. The two most significant differences between the professionally-grown eggplants and the traditionally-grown eggplants are the consistency of

size and the packaging type, although the samples in Figure 4.9.3-4-5 all have inferior colour and shape characteristics to those in Figure 4.9.1-2-6.

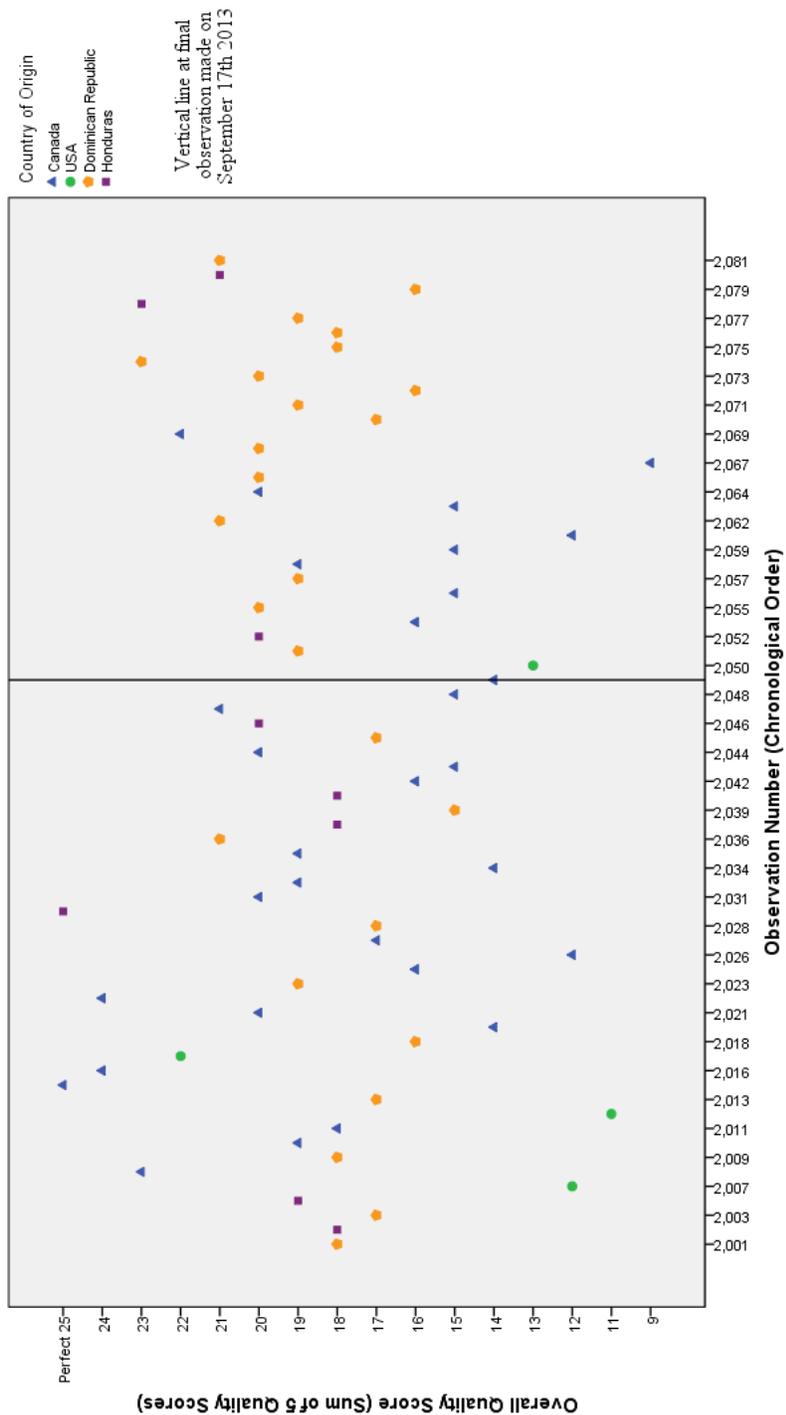


Figure 4.10 Quality Scores for Chinese Long Eggplant Observed Displayed for Wholesale at the Ontario Food Terminal between July 1st and November 31st 2013

As shown in Figure 4.10, Ontario-grown Chinese long eggplant samples represented the majority of the highest scoring samples on the quality score in the period prior to September 17th 2013, with many of the Ontario samples scoring 19 points or more for fruit quality. In comparison, the Dominican Republic-grown Chinese long eggplant scored between 16 and 18 points in that same period. There were also a subset of Ontario-grown Chinese long eggplant samples that scored in the 12-16 point range during that time period; these were the same samples that were inconsistently priced over that same period. After the September 17th observation period, the average fruit quality score of the Dominican Republic-grown Chinese long eggplant increased, with samples commonly scoring 19 points or higher in the remaining observation periods. In this second period, Ontario-grown Chinese long eggplant remained segregated into two groups, with some samples scoring 19 points and higher and another group of samples scoring 15 points or less.

Honduras-grown Chinese long eggplant scored consistently higher on the quality score than the Dominican Republic-grown Chinese long eggplant in the same observation period. This is problematic, as the Honduras grown Chinese long eggplant was consistently priced lower than the Dominican Republic-grown Chinese long eggplant and yet was not preferred by buyers. Conversely, USA-grown Chinese long eggplant scored consistently lower on the fruit quality score than the Dominican Republic-grown Chinese long eggplant and Ontario-grown Chinese long eggplant, and sold for prices lower than Dominican Republic Chinese long eggplant and for similar prices to Ontario-grown Chinese long eggplant.

From photographs collected of each observation, five eggplants of average size from each case were measured, both in length and width. These were used to develop a length-to-width ratio for each fruit; the five ratios from each case were then averaged to create the average fruit

length-to-width ratio. For the peak period of the season from August 13th to September 17th 2013 (marked with a vertical line in Figure 4.11), the majority of Ontario-grown Chinese long eggplant had length-to-width ratios of between 6 to 1 and 8 to 1. During that same period, Dominican Republic-grown Chinese long eggplant had a ratio of between 4 to 1 and 5 to 1. After September 17th, the Dominican Republic-grown Chinese long eggplants were on average between 5 to 1 and 6 to 1, with one cluster of Ontario-grown Chinese long eggplant having similar ratios and a second cluster having much larger ratios of around 9 to 1.

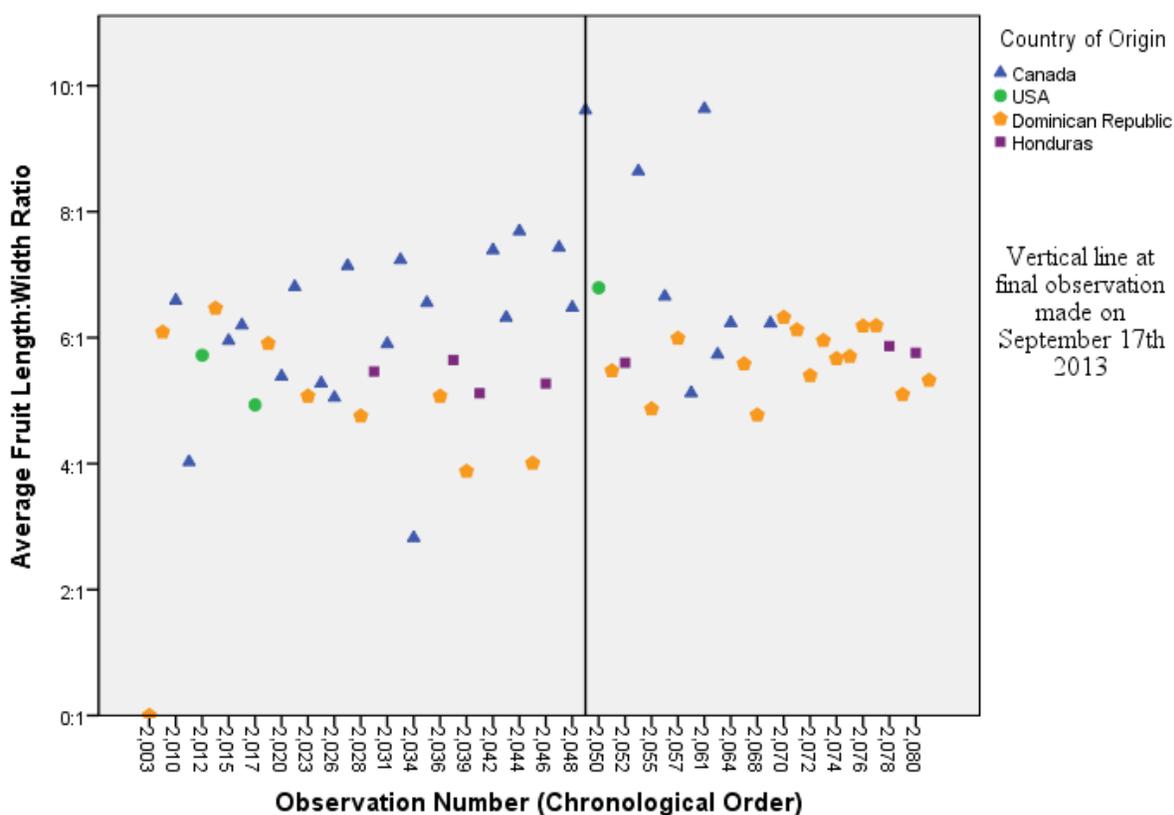


Figure 4.11 Chinese long eggplant fruit size ratio observed at the Ontario Food Terminal (July 1st to November 31st 2013)

Honduras and USA-grown Chinese long eggplant had a ratio of between 5 to 1 and 6 to 1 throughout the entire observation period. This ratio had a significant influence on wholesale price, with ratios below 4 to 1 and above 8 to 1 receiving much lower prices than samples with ratios between 5 to 1 and 7 to 1. Figure 4.12 shows the relationship between this length-to-width

ratio and wholesale price. There does not appear to be a direct correlation between fruit size ratio and wholesale price, as samples with ratios between 4.5 to 1 and 6.5 to 1 had prices ranging between \$20 and \$40 per bushel. A Pearson's correlation test of the data shows a significant correlation (-0.333, Sig=0.01) Pearson's correlation tests require both variables to be interval level measurements, random samples, normally distributed (Table 4.8) and independent, which all hold true for the variables Wholesale Price and Average Fruit Length to Width Ratio.

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Wholesale Price (\$/Bushel)	.185	60	.000	.929	60	.002
Average Fruit Length:Width Ratio	.138	60	.006	.891	60	.000

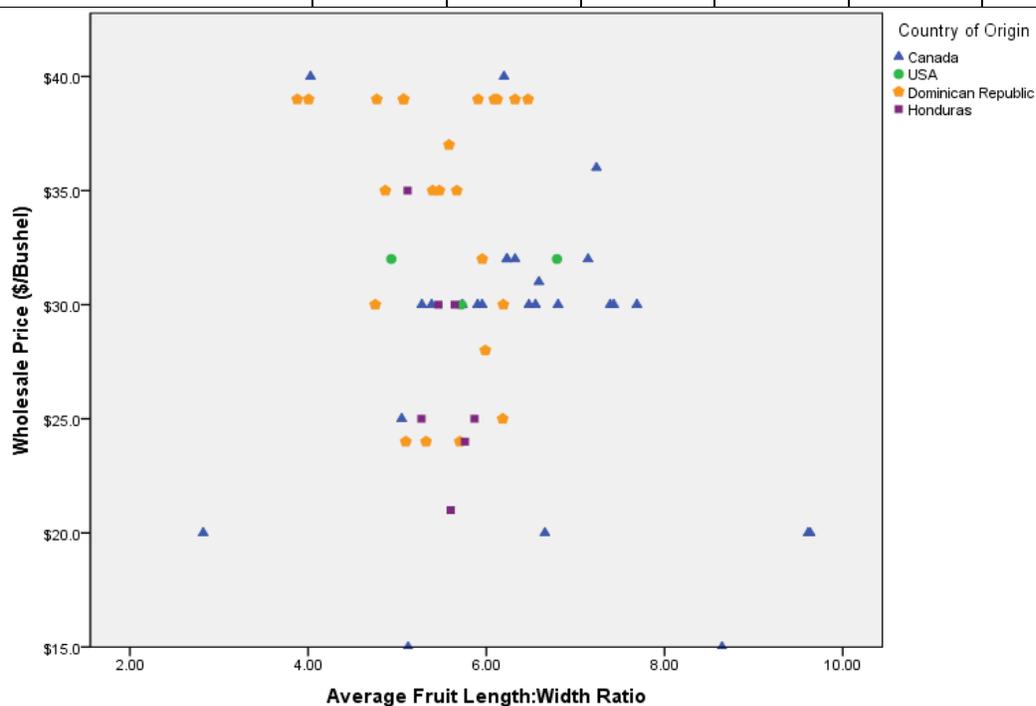


Figure 4.12 Wholesale Price and Fruit Size Ration of Observed Chinese Long Eggplant at the Ontario Food Terminal (July 1st to November 31st 2013)

4.3.6 *Qualitative Interviews Observations on Product Quality*

Specifications are used as a formal metric for describing and ensuring produce quality, but different actors in the value chain describe quality in different ways. Consumers generally assess ECV quality based on flavour and texture as well as the external appearance of the produce, while producers and buyers of produce may describe quality in terms of the marketability of the product.

These value chain participants may not specifically agree on a definition, especially a written standardized definition of quality, but all the value chain partners agree that quality produce sells and inferior quality produce sits. A supermarket produce buyer explained simply that “between a grade A and a grade B with grade A being better than grade B they will be ready to pay more for grade A”, in reference to consumer purchasing trends observed over a national retail chain environment. The same buyer continued to explain that sales volumes of ECV’s in the GTA were tied directly to the product quality. “It’s a function of quality, especially in these ethnic commodities. Even though if you are selling at 79 [lower than competitor price of 99], if it is not at a quality that the customer is expecting or used to, then it may not drive us the tonnage.” They continued explaining that, “even if the Florida okra is the cheapest in town, if the quality is not good enough, we will not be able to move half of the inventory compared to a quality case or any quality product for that matter”, which reinforces the primary driving force in the produce production and marketing industry as described in the literature review as being consistently high quality produce.

When asked which of the three ECV’s being studied- okra, Chinese long eggplant and Indian round eggplant - were the hardest to source in terms of meeting volume demand and quality demands, the supermarket produce buyer replied that, “volume-wise, I think all three

have a challenge depending on what's happening weather wise," and that "quality-wise, I think of all three, Indian eggplant is the most challenged one, versus anything else." The produce buyer had several theories as to why the Indian eggplant was the most difficult to source with consistently high quality, although further research is required to characterize the supply and value chain structure of Indian round eggplant in the GTA.

The supermarket produce buyer also emphasized the importance of post-harvest handling to produce quality. Stating that, "okra is also a challenging commodity, unless you are harvesting in the right stage and you have a proper post-harvest treatment," inferring that consistently high quality okra could be produced without significant challenges if proper harvest and post-harvest practices were followed. They continued, in reference to all commodities not simply okra, that, "you have to have the right harvest, right post-harvest practices and the transport is very key in terms of making sure they're in good condition on arrival and a good shelf life on the product." They confirmed that the majority of the okra they purchase for the Ontario market was being sourced from the same Nicaraguan supply as observed at the OFT, due to its consistently high quality. When an OFT wholesaler was interviewed, who consistently had USA-grown okra for sale in their stall, they explained that the okra supply was the most difficult to secure consistently high quality. As they explained,

The Florida okra is inconsistent, you'll have a beautiful day the next day will storm, sometimes it will rain all day it becomes hard, and even if you do a pre-cooling it doesn't stay too long.-Wholesaler

They continued explaining that, "the shelf life is sometimes just on the way. It gets spoiled or I keep it 2 days and it gets spoiled. It could be anything, but okra is one of the hardest to get consistent quality." There continues to be a market at the OFT for the inconsistent quality USA-grown okra even when the higher quality Nicaragua-grown okra was commonly available

at the same time. This is likely due to the much higher price per case of the Nicaraguan okra, which has a longer travel distance and includes air freight which is significantly more expensive than trucking. It would appear that the USA-grown okra's quality is commonly good enough to meet many buyers' requirements even if it does not meet the specifications of the major retail chains which will instead pay the higher cost for the more consistent quality product.

A commercial scale Ontario grower interviewed confirmed the importance of harvest timing with the eggplants that they had previously grown, stating that,

We've got lots of peppers and tomatoes coming on. As soon as we get busy it seems that we quit picking the eggplant and once you quit picking then it sort of goes downhill quick-Producer

The quality of the eggplants decreased when they are not consistently harvested. A similar sentiment was observed amongst several growers and Ontario buyers of ECV's, in that ECV production was not their primary focus and therefore, when time became limiting in the peak production season, their other crops took precedence over the ECV crops and as a result the quality of the ECV's dropped dramatically.

Returning to the concept of quality, another wholesale buyer interviewed expressed that the most important aspect of quality to their company was freshness; they stated "Most importantly, fresh for sure," although the definition of fresh was more difficult to pinpoint as there is no definite number of days from field to market that defines fresh. Instead it is most commonly defined by the overall appeal and characteristics of the product. Fresh has become a blanket term used to describe product that appears similar to the way it would if it were to have been harvested very recently and is therefore devoid of any markings or characteristics that may suggest it has been harvested for a significant length of time. Some other definitions of quality are much more easily quantified and defined, qualities such as cleanliness, free from damage,

colour and size. One wholesaler interviewed expressed some of the reasons why they prefer the quality of some Ontario-grown Chinese long eggplants over their imported Dominican Republic-grown counterparts,

Dominican problems is that in some years the weather changes so much and that if it rains too much you get all of the Chinese, all of the vegetables, muddy, so it's very hard for everyone to get, good looking good tasting eggplants, right? It's not easy, we like the local one a bit more for sure, cheap and good size.-Wholesaler

In this description the wholesaler also included two additional qualities tied to the Chinese long eggplants, flavour and price. Defining the taste quality of a Chinese long eggplant is difficult to complete objectively as taste is a subjective experience of individuals, although work at VRIC is attempting, through the use of trained tasting panels and community tasting events, to test the taste preferences of Ontario ECV consumers and determine their preferences amongst imported and locally-grown samples. Price is also a characteristic included in the quality of a product, as seen with the okra at the OFT. There remain two distinct categories of okra available for purchase due primarily to the price difference between the two supplies. It is unclear if the lower price of the USA-grown okra is a positive quality to some buyers or the high price of the Nicaraguan-grown okra is a negative quality.

4.4 Post-Harvest Handling Characteristics of Wholesale Ethno-cultural Vegetables in the GTA

A common theme amongst the interviews with value chain participants around ECV quality was the importance of proper post-harvest handling in ensuring the quality of the final product. This section investigates these characteristics, first quantitatively with a comparison amongst the different supplies and then qualitatively from the perspective of the value chain participants.

4.4.1 Post-Harvest Handling Characteristics of Okra and Wholesale Marketability

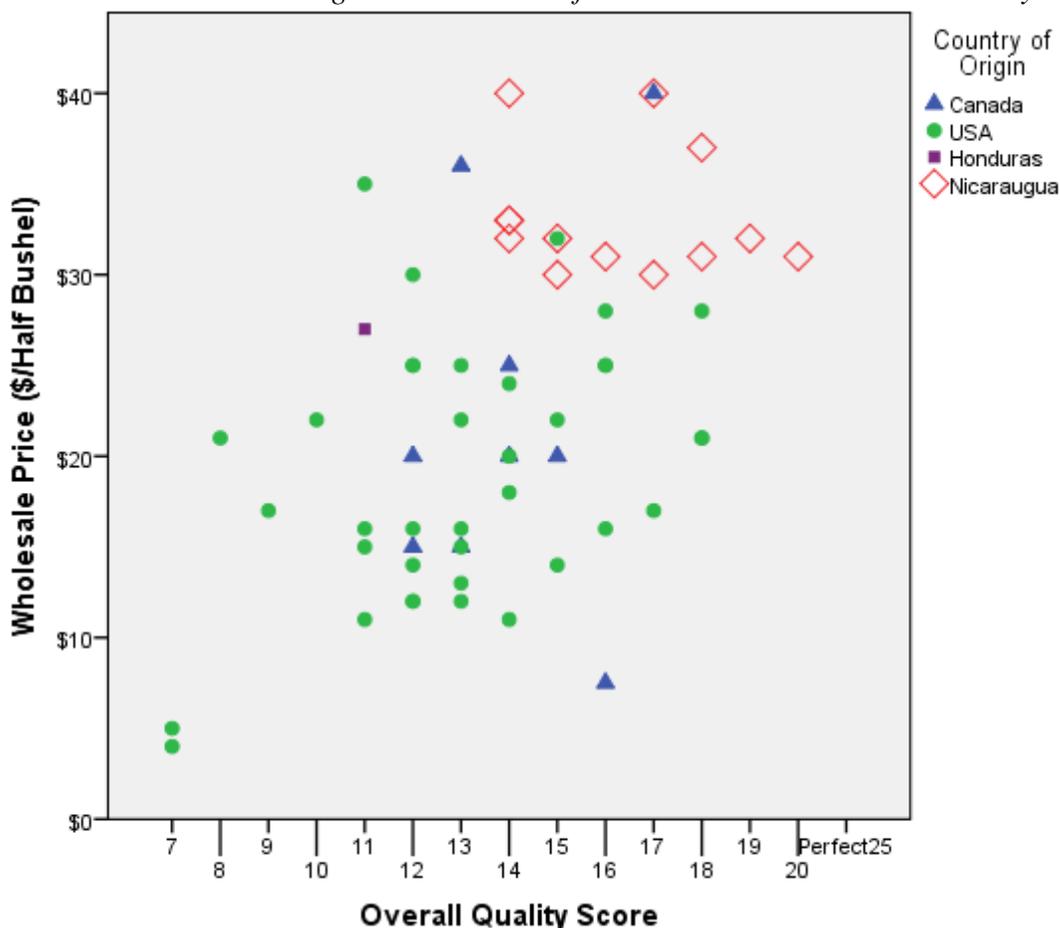


Figure 4.13 Quality Scores and Prices of Okra samples observed at the Ontario Food Terminal (July 1st to November 31st 2013)

Figure 4.13 shows a comparison of the prices received by different sources of okra at the OFT and reveals that product quality plays a significant role in determining the wholesale price of okra. All observed okra samples that were priced at or greater than \$30 per half bushel received a quality score of at least 11 points, although the majority of the okra sampled received a quality score of greater than 11 points. The Nicaraguan-grown okra was all priced at a minimum of \$30 per half bushel and received quality scores of no lower than 14 points. The largest concentration of USA-grown okra samples have quality scores of between 11 and 13 points and have wholesale prices of between \$11 and \$16 per half bushel. That means that the Nicaraguan-grown okra has a consistently higher quality score and consistently higher price than

USA-grown okra. Even though individual samples of Canadian and USA-grown okra scored higher than 14 and as high as 18 on the quality score, this quality was not consistent and therefore the prices did not consistently reach as high as \$30 per half bushel. When the price and quality score data is filtered to only the observations between July 30th and September 30th (Figure 4.14), when Ontario grown okra was available at the market, the trends noted above become even more pronounced. The price differential between USA and Nicaragua-grown okra increases and the price trends for both supplies becomes more consistent. We also begin to see a small cluster of Ontario-grown okra priced around \$20/half bushel and with a quality score of around 14 points, although there remains a large spread of Ontario-grown okra samples with a significant degree of separation in terms of both price and quality.

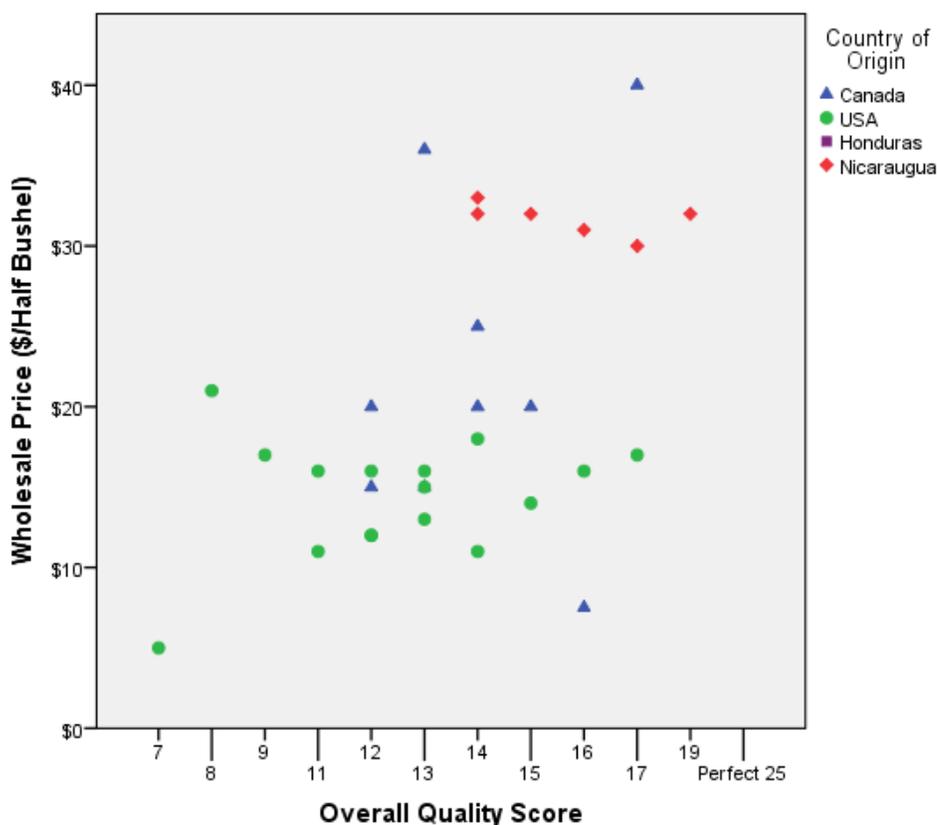


Figure 4.14 In Season Quality Scores and Prices of Ontario-grown and Imported Okra at the Ontario Food Terminal (July 30th and September 17th 2013)

4.4.2 Post-Harvest Handling Characteristics of Chinese long eggplant and Wholesale Marketability

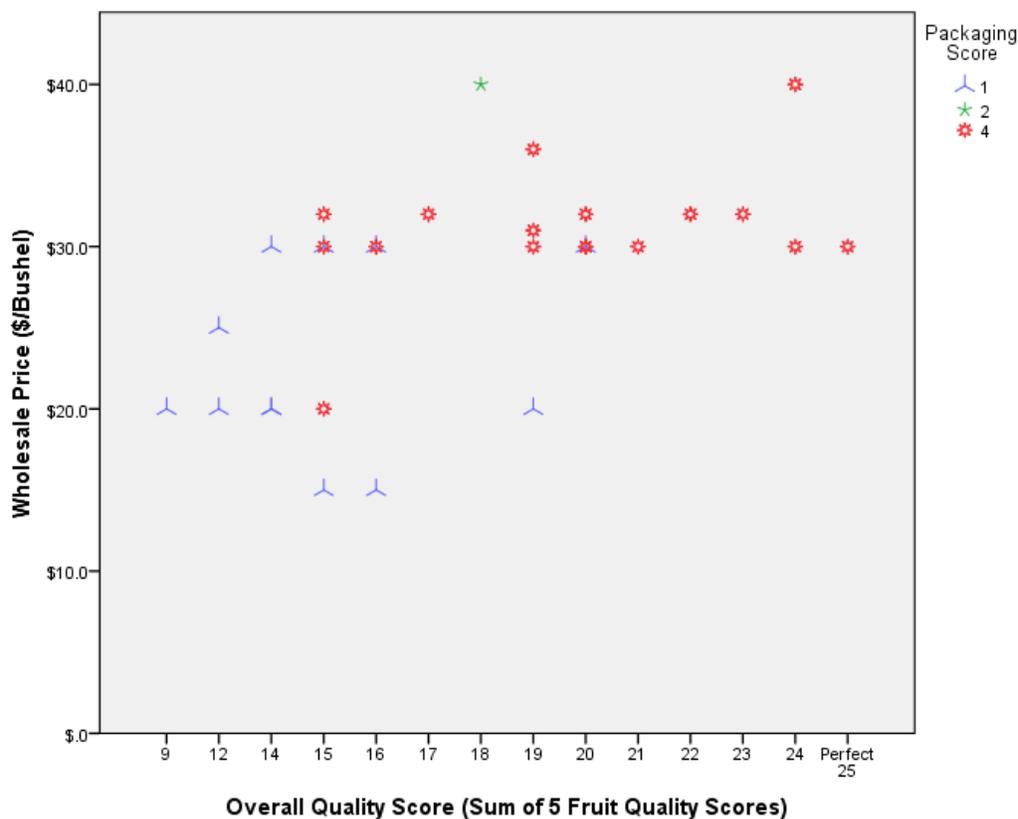


Figure 4.15 Ontario-grown Chinese Long Eggplant Product Quality Score and Wholesale Price at the Ontario Food Terminal (July 1st to November 31st 2013)

In Figures 4.10 and 4.11, Ontario-grown Chinese long eggplant was visibly split into two separate clusters based on wholesale prices and quality. Figure 4.15 shows the Ontario-grown Chinese long eggplant categorized by its packing score with its fruit quality score and wholesale price. No Ontario-grown Chinese long eggplant that received a packing score of 1 ever had an observed wholesale price of above \$30 per bushel. Only one observation of Ontario-grown Chinese long eggplant that received a packing score of 4 had a wholesale price of less than \$30 per bushel, and that observation was a unique case size and was the only observation of Chinese long eggplant from that supplier. All other samples observed with packing score of greater than 1

and fruit quality score of greater than 15 had a wholesale price of at least \$30. The majority of samples with a packing score of 1 had a fruit quality score of less than 15 and a retail price of less than \$30 per bushell.

In locally-produced Chinese long eggplant, high packing scores were an indicator of higher quality scores. In Table 4.10 a Spearman correlation between packing score and overall quality score shows a statistically significant and positive correlation (0.636, Sig=0.000) between these two factors.

The correlation between quality and packing scores was not universal across all measures of quality; Table 4.10 shows binary correlations of all the individual quality scores and the packing scores for locally-produced Chinese long eggplants. There are significant correlations between several of the scores including between packing score and the appeal, colour and shape scores. The appeal score is significantly correlated to all the other scores at the 0.05 level or greater which would be expected as the appeal score was established as an overall measure that could be impacted by positive or negative attributes in any of the other categories. The fruit size consistency score was the least correlated with the other scores with only one significant correlation at the 0.05 level with the fruit shape score. The fruit colour and fruit shape scores were also significantly correlated at the 0.01 level.

Table 4.10								
Spearman Correlations between Chinese Long Eggplant Quality Scores for Locally Produced Samples								
			Packaging Score	Appeal Score	Damage Score	Fruit Colour Score	Fruit Shape Score	Fruit Size Consistency Score
Spearman's Correlation	Packaging Score	Correlation Coefficient		.677**	.202	.714**	.516**	.118

		Sig. (2-tailed)		.000	.285	.000	.003	.536
		N		30	30	30	30	30
Appeal Score		Correlation Coefficient			.384*	.856**	.795**	.430*
		Sig. (2-tailed)			.036	.000	.000	.018
		N			30	30	30	30
Damage Score		Correlation Coefficient				.251	.225	.323
		Sig. (2-tailed)				.181	.233	.082
		N				30	30	30
Fruit Colour Score		Correlation Coefficient					.584**	.284
		Sig. (2-tailed)					.001	.129
		N					30	30
Fruit Shape Score		Correlation Coefficient						.407*
		Sig. (2-tailed)						.025
		N						30
** . Correlation is significant at the 0.01 level (2-tailed).								
* . Correlation is significant at the 0.05 level (2-tailed).								

These correlations between the various quality scores would suggest that samples that received higher scores in one category would be more likely to score higher scores in the other categories. This could be interpreted as the influence of management on the quality of the produce as superior management should produce products with superior quality scores in all or most of the categories.

4.4.3 Qualitative Interview Observations on Post-Harvest Handling

The importance of the post-harvest handling in ECV's was brought forward by every stakeholder interviewed. The processes completed between the harvest of the crop and shipping the packed produce to the market has been found to be critical to product quality and ensuing

marketability of the ECV's at the wholesale level. One local eggplant grower explained the process through which the eggplants were handled on their farm as follows,

We harvest, we cut them all with snips, ... they are handpicked, in the field, put into the bins but they are very gentle with them, and then, I have rags and towels, ... to wipe them off and set them in [to cases], so like I was saying before I wouldn't be surprised if I was spending well over a dollar to do that maybe a dollar fifty per case just in packing cost.-Producer

This process can represent a significant percentage of the cost of producing these crops and the introduction of specialized equipment could be an avenue for reducing these costs the same farmer explained their experience with mechanized post-harvest handling of eggplants.

If I try and put it through our washer [designed for tomatoes and peppers] well it was fine here, by the time it got to market it was all scratched. So then we started wiping by hand with clothes. We just found that we weren't making enough money by the time we packaged them. We wiped each one individually, which I'm sure that's what they [foreign producers] do but we had to pick them up out of the bins. If I were to get back into it, I would probably setup its own packing line strictly for eggplant, tender like they are- Producer

The produce buyers had a good understanding of the post-harvest processes that the produce they were buying was going through prior to it arriving at their facilities. One wholesaler explained the process as it was completed by their supplier of produce in the Dominican Republic as,

They harvest it from the field, then bring it in the bins, then take it to their warehouse and they go through washing process, precooling and then they pack it in the boxes there, then it gets shipped out.-Wholesaler

In most cases the post-harvest handling process included transporting the product from the fields to a handling facility of some kind, washing and drying the product, grading and packing the product into the final cases and then cooling the product down to the appropriate temperature for shipment. One grower explained the need for proper cooling as such, "They need okra to be cooled down to 3-4 degrees, so it is required that when they handle the product from the coolers

to the trucks and out, in and out, that it doesn't damage the quality of the okra.” The grading step of the process has a direct impact on the quality of the final product, and whether the shipment will meet written specifications, a supermarket produce buyer explained that “they are mostly graded based on the sizing, scarring or not, and you know the size specifications that we have diameter, spec size and length.” The final quality of the produce is primarily determined through decisions made at three stages: harvest, post-harvest handling including, washing, grading, packing and cooling and through the maintenance of the cold chain through transport. These processes have a significant impact on the marketability of these crops. When asked if there would be a premium on the market for those supplies that have been graded, the supermarket produce buyer replied, “Yes absolutely”.

4.4.4 Qualitative Interviews Observations on Transport and Distribution

After post-harvest handling, the next stage in the handling of these produce items is transportation and distribution where the produce is transported from its area of production to its location of sale and finally to the end consumer. The time frames for this process can last from less than 24 hours for Ontario-grown produce to as long 11 days for Honduras-grown produce. The most direct and fastest shipping times for imported ECV's are most commonly those brought in from the United States. The timeline for okra being purchased from Florida was described by one supermarket produce buyer as “Day one they pick, I'm assuming that by day two they are on the truck and let's say 3 and a half days they are here,” which makes the total time close to five days. Similarly, the same buyer explained the timeline from California.

California, trucking let's say would be team truck around three and a half or four days, team truck, and most of the full loads will be team truck to get it faster, and in California about two days, so it will be around 6 days in Toronto- Retailer

The use of two drivers per truck to reduce transit time on the cross-continental trucking run from 6 to 4 days was explained in more detail by the same buyer.

These kinds of commodities and the transports who are engaged in it and the wholesalers and the growers engaged in these kinds of commodities, they would pay an extra \$1000 and get a team truck and get it faster, in half, versus let's say 6 days, versus three and a half, four days, almost two days difference. That's a lot of time in these kinds of commodities that may fetch 22\$ versus 18\$ for the case and if you have 22 pallets you get your 1000 bucks back - Retailer

Another method that growers, shippers and wholesalers use to reduce the transit time of some products to reach the Toronto market is the use of air freight to move produce from its location of origin into a major produce marketing and transportation hub and then truck the produce from that hub to Toronto. This was described by multiple stakeholders in reference to Dominican Republic and Nicaraguan-grown crops. For Nicaraguan-grown okra the timeline was explained by the supermarket produce buyer as "Day one it's harvested night or early morning, then it gets shipped out on the same day, by air to Miami, so that's day two in Miami, end of the day two you put it on a truck, so day five, six it will be here". This means that with these two timelines in place the Nicaraguan and USA-grown okra can reach their destinations at approximately the same time from harvest as opposed to a much longer time from Nicaragua if the produce would need to be trucked or shipped into the USA before being trucked to Canada.

The timelines and methods of transport for produce from the Dominican Republic to Ontario were the most diverse, with some buyers choosing to fly produce directly from the Dominican Republic to Toronto. As one wholesaler stated,

There are lots of flights going back and forth [to Dominican Republic] so when you realize you are going to be in need of XYZ in so many quantities, you just make a phone call, get it packed up and it will be here in the second day. - Wholesaler

Another wholesaler chose instead to ship Dominican Republic produce by boat to Miami and then truck the produce from there. "Yes, usually Saturday they are on the ship [Dominican Republic to USA] until Monday, I think Monday night they go to Miami, then Tuesday morning

we get a truck and Wednesday night they get here so that is only five days,” although in this case there would be a collection period prior to loading the ship of up to four days making the total time from field to market closer to nine or ten days. This collection period was explained by the wholesaler who chose to fly produce because, “filling up a trailer [shipping container] is a lot harder than a smaller container off the airline.” Therefore, there would not be the same collection time required to fill an entire shipping container, as a single supplier can much more easily fill an airline container in a shorter period of time. The final option described by the supermarket produce buyer was to again pool a larger amount of produce in the Dominican Republic and then fly the produce to Miami, rather than send it by boat to reduce the transit time as described, “let’s say the majority of the cases get flown into Miami it will be around fourth day in Miami because they kind of pool it first for a couple of days in Dominican Republic, so it will be around fourth day in Miami, and then three days or so by truck, six, seven days [total] to Toronto”. This reduces the time from Dominican Republic to Toronto for an entire truck load of produce from the nine or ten days required with boat transport to six or seven days with a short flight which, similarly to hiring a team truck for trans-continental trucking, will cost more but the additional days of shelf life at market and increased freshness will recover that cost.

The longest timeline described by any of the stakeholders interviewed was that of produce arriving from Honduras; in this case, produce would need to be pooled in Honduras in order to fill a container and then shipped by boat to Miami, similarly to the Dominican Republic. However, there are not as many flights or boats travelling between Miami and Honduras, as described by a wholesaler who commonly purchased imported ECV. “Whereas Honduras, we don’t have that access [flights] so it has to be through boat which comes only once a week, so if you miss that boat you are out of luck”. This view was shared by the supermarket produce buyer

who explained “Honduras is mostly boat. Honduras, by the time it reaches Toronto, it could be 11 days”.

In comparison when asked about the timeline for Ontario-grown ECV’s one wholesaler replied, “the [Ontario] eggplant is very fresh here, usually the next day, usually they send us midnight and I mean the next morning we just send out you know, so it didn’t stay here long.” With the eggplants being picked one day, trucked only a couple of hours to Toronto and delivered to the wholesaler in the early morning, they are generally sold before the end of the day and potentially reaching the end consumer in 24-48 hours.

The supermarket produce buyer explained that not only was decreasing the transit time important in their system to increase the freshness of the produce that they have available in their stores but also the frequency at which they order and distribute fresh lots of produce. They explained that the “expectation is that the wholesaler or the grower or the importer, whoever, is giving us a fresher lot on each day [that they deliver product]”. They explained this expectation as, “they [ECV’s] are shelf life challenged so we want our inbound to our distribution centers [DC’s] in Ontario...we ship out to Ontario stores to and from these two DC's... We want our inbound to be as fresh as possible, so normally we get it in to three or four days per week”. This cycle of purchasing and shipping of product for delivery three or four days a week, via centralized distribution centers and just on time delivery, is the framework that has been developed by supermarket chains to provide the freshest, highest quality produce possible.

4.5 Analysis of the Wholesale Ethno-cultural Vegetable Value Chain Structure in the GTA

The value chain structure of the ECV market in the greater Toronto area is defined by the market power of the retail grocery chains, primarily Loblaw’s, Sobeys and Metro and to a lesser degree other relatively new entrants to the Ontario market including Walmart, Target and the

expanding influence of regional chains such as Longo's and ethnic supermarkets such as Oceans, Sunny and Galleria markets. These major buyers exert influence through the entire value chain determining the specifications that are required of produce, setting the retail prices of produce and controlling the majority of the demand for fresh produce. Figure 4.16 shows the value chain used by these retailers to source the ethno-cultural vegetables required by their stores, as well as the transportation method used to transport the produce between each of the links in the value chain.

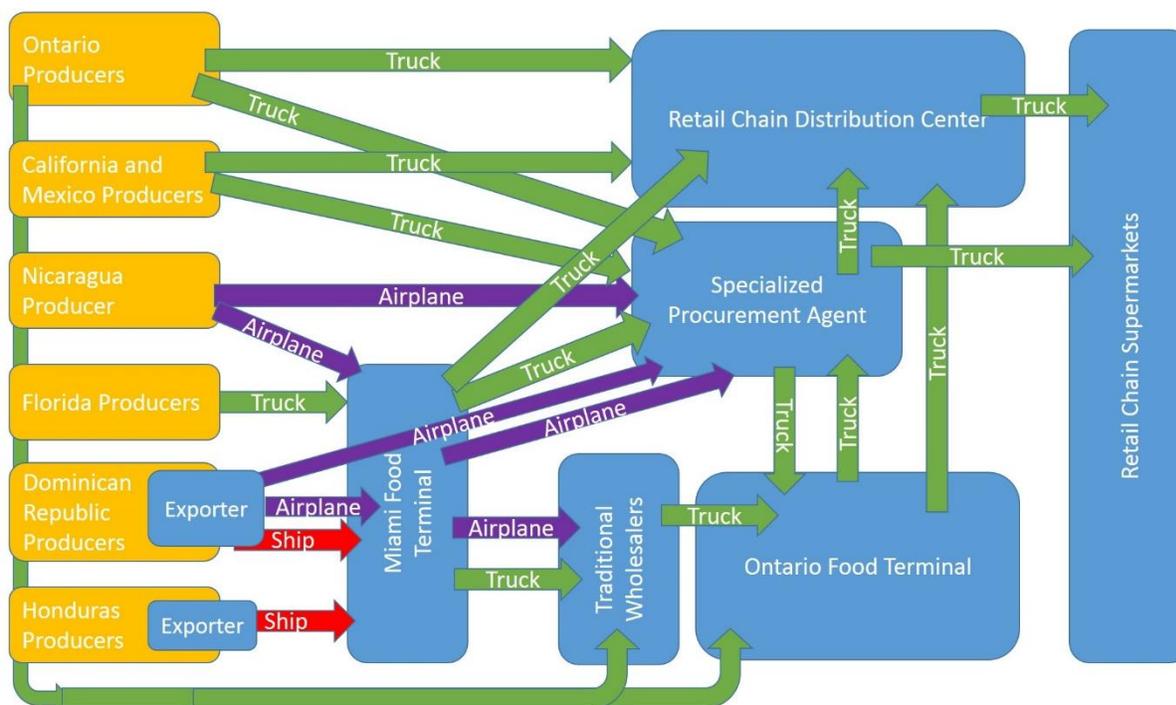


Figure 4.16 Ethno-cultural Vegetable Value Chain as observed in 2013 Ontario Production Season

The city of Miami and the food terminal located there became a central location in many of the imported product value chains, with the majority of produce grown in the Dominican Republic, Nicaragua and all the produce grown in Honduras and within Florida passing through Miami before being trucked or potentially flown to Toronto. Some produce was also flown

directly to Toronto from either Dominican Republic or Nicaragua. The small amount of Chinese long eggplant observed being brought in from California was trucked directly to Toronto, and although it was not observed at the OFT, Mexican-grown ECV's are also trucked directly to Toronto. The method of transport from production region to market plays a key role in the time line from harvest to sale and therefore the quality of the produce at market as described in 4.4.4 Qualitative Interviews Observations on Transportation and Distribution. The role of value chain actors in Miami on the ECV market in Toronto is significant and may take many different forms, with some buyers describing relationships with partners in Miami as brokers and others as specialized procurement agents and yet others only mentioning Miami as a transportation hub with no interaction with firms there other than transporters. The role of exporters or brokers is more clearly defined in Honduras and the Dominican Republic, where transportation needs to be arranged to Miami or flights to Toronto; therefore, the role of the exporter in accumulating product and arranging transport is more defined. In Nicaragua it would be expected that there would be need for an exporter as with the other countries shipping produce into the USA and then on to Canada but in this case the large okra producer in Nicaragua has taken these capabilities into their firm and arranges their own transportation and export of their product. Similarly, larger producers in California arrange their own transport and export into Canada requiring no wholesale or broker firm to arrange the sale.

In Ontario the interactions between local producers, traditional wholesalers, specialized procurement agents and retail buyers becomes complicated, with local producers interacting with all three major types of buyers and potentially selling directly at the OFTs' farmers market.

The most complicated of relationships is between retail chains and the specialized procurement agents. Specialized procurement agents may be purchasing produce, directly from

producers, from other wholesale markets such as the market in Miami or from other wholesalers in the GTA. They, in turn, sell produce via the OFT, receive orders and contracts to supply produce to retail chain distribution, provide produce to the food service industry and in some cases may deliver produce directly to retail supermarket stores, bypassing the retailers distribution centers entirely. At the same time, retail produce buyers are likely to be purchasing from all of the same supply avenues as procurement agents, including the procurement agents themselves, and are only selling through one significant venue, a network of retail supermarkets scattered across the province under multiple-branded banners.

A wholesaler interviewed expressed the situation in this way, “all of the supermarkets, they just set a standard to have this [ECV’s-Chinese long eggplant], that every week, right. If you can’t keep that, yeah, they will switch to some other people who have a very regular supply.” This setting of a standard by supermarkets, that fresh high quality ECV’s will be consistently available at specific stores on an ongoing basis, is one of the driving forces behind the development and growth of the ECV value chain in Toronto. The relationship between retailers and the firms from which they are buying is therefore a defining relationship within the value chain. Retail buyers are buying from a large diversity of different seller types and origins as explained in the following quote, “buying from the terminal, buying from wholesalers or importers, importers/wholesalers in the United States and also from the farmers themselves directly”. The choice of suppliers and value chains between these various options appears to be based on the ability of any one chain to consistently deliver produce that meets the specifications laid out by the retailer for a given product. “That’s why some retailers, like us, might be working with some of the wholesalers or shippers, and may not be with the others, because they may not be grading it as per the spec [specification] all the time.”- Retailer

Therefore, the consistency and accuracy of grading plays a direct role in maintaining supply relationships with retail buyers; in the commodities studied, it was noted that there was not significant competition between firms that could consistently supply produce that met the specification. In this new and developing market there are was a greater degree of searching between supply options to find the highest quality and no real competition amongst high quality supplies, as would be the case for more established and common produce items such as tomatoes, peppers or cucumbers. The retail produce buyer when interviewed described this trend as an area of growth as opposed to a commodity with limited availability.

This is a program we are building towards or gearing towards. We can go in way ahead of the season, they can plan, we share with the growers our plan, in terms of what we need every week, how many times we need, whatever specs, and whatever the ad activity or whatever that we do within that time frame - Retailer

The use of the term 'program' was noted amongst all of the modern wholesale and retail buyers interviewed. The term was used in place of contract or market and would suggest that the marketing of these ECV commodities is seen as a joint venture between the retailer and value chain for the duration of a period of time. The concept appears to be that a retail buyer works with a grower and potentially a wholesaler or importer to establish a program for a given commodity over a given period of time, generally tied to a production season. Through this process the specifications are set and adjusted as necessary, the price establishment process is determined and the volumes and timelines for production are established. This program structure could be formal or informal with legal contracts or verbal agreements and many options for payment structures and price determination were described.

It could be a weekly pricing negotiation, every week get on the phone here's my prices, this is the market, this is what I need to be paying, or they need me to be paying. Or it could be a contract saying you know what, I'm going to be doing this for ten weeks and this is my bare minimum cost that I could service you at-Retail Produce Buyer

I[the producer] can do a three month program but I[the producer] can do only a four week contract, because I[the producer] want to do a four week contract and evaluate the market conditions and come back again, that can be done-Retail Produce Buyer

If you want to deal with setting a price for a whole year or we will sell it and then we will make the returns every week or two weeks we can do it that way, that's not a problem –Wholesaler 1

All of the produce buyers interviewed were open to multiple ways of determining a fair market price for these produce items. There were many options given as to scheduling of negotiations and determining a price in order to ensure that the producer felt comfortable with the price that they would receive. This could be a bias in that the buyers would say these types of responses to a researcher and use other techniques or require other situations when dealing with an actual producer but it appears to be in line with the perspective that the limited availability of high quality produce in these categories would make the buyers more willing to work with potential suppliers in these types of situations. The supermarket produce buyer explained that “depending on the market conditions, depending on the comfort level of the buyer and the grower or the wholesaler”, different frameworks would be used to establish the prices on produce programs, the inclusion of both market conditions and comfort level. Again, this suggests a relational value chain structure where trust and relationships are of key importance within the bounds of market conditions. The same buyer went on to say,

It's an ongoing working relationship, we do understand the growing conditions, they [growers] do understand, most of the growers, do understand the retail scenario and they try to work with us and we do try to work with them - Retailer

This mutual understanding is developed through communication and information sharing between firms over a period of time as they work together in the value chain. The significance of existing relationships and long standing business transactions and trade were brought forward by all of the value chain participants interviewed. One wholesale buyer at the OFT said, “these are all long-term relationships so we know them for a long time, so they know, we know each

other”. Of their relationships with suppliers in the US and Dominican Republic, another wholesaler said “we have a long relationship with them because we buy [other crops] from them, for a long time, long long long time, so later we try to get the vegetables”. This was also a relatively common occurrence with producers growing new items and selling to their existing buyers, and buyers working with existing suppliers to source other commodities. At times the descriptions of these relationships were so casual that some interviewees did not recognize or were unable to easily describe the role or title of their value chain partners; they were simply a firm that they worked with to get a specific commodity. They were not simply growers or exporters or brokers; they were a contact, a connection, a relationship. For example, a wholesaler described their partner firm in the Dominican Republic as “I want to say pretty much a broker, who, um, collects or buys from all those small growers and combines it and sends it to me”, and their partner in Florida as, “we have one guy there who works with all the growers collecting”. These casual and complex relationships between firms were not only between wholesalers and their suppliers but also with their customers.

We have what we call jobbers, like, people who they come buy [produce] for a few restaurants and then deliver to them. They buy from me and deliver to the individual restaurants. That’s what they do for a living- Wholesaler

The described role of buying from a wholesaler and delivering produce to multiple smaller buyers such as restaurants would generally fit the description of a small produce distributor but, when asked if they dealt with many distributors the wholesaler in question replied that no they did not sell too many distributors. This relational interaction with the wholesaler’s customers appears to have made it difficult to define specific roles to specific individuals or firms with which they interact. These interactions are relatively complex and reliant on a long history of interactions and cannot be easily defined and segmented.

The role of brokers or exporters in the value chain was complex and highly variable. Most wholesalers had a broker of some sort working with them in the countries from which they were sourcing produce. Generally, in the Dominican Republic, Honduras and the United States, most commonly in Florida, these brokers worked to secure supplies of multiple produce items in their region in appropriate volumes for the Canadian wholesalers and ensured that they were properly packed and shipped to Canada. This role was at times called; a broker, an exporter, a collector or a wholesaler. Some of the Canadian wholesalers were also working directly with larger producers in these countries if they were able to source multiple produce items from the same farm. One wholesaler said, “If you’re a grower that grows ten items that I want, I will go and work directly with [the grower] for whatever you can give me”. Therefore the value chain for ECV’s coming into Toronto from the Dominican Republic could be as simple as a large produce grower exporting directly to a retail chain or as complex as many small independent growers selling to a broker who ships the product to a wholesaler in Miami where it is purchased by a wholesaler in Toronto and sold to a distributor who in turn sells it to independent stores and restaurants. Both of these value chains are likely relational and reliant on long term trust and communication to maintain and both are capable of supplying relatively high quality produce to the end consumer.

Figure 4.17 shows the types of value chain structures in place between the various firms in the okra value chain as observed in the GTA. The figure shows the dominance of a market based structure around the importation of Florida grown okra, as there is little communication of standards or management practices between growers in Florida and buyers in Toronto. This market is tied primarily to weather conditions, competition amongst growers, and supply and demand. The Nicaraguan okra value chain incorporates more characteristics of a relational value

chain, as one large producer in Nicaragua works with a few buyers in the Toronto market. Greater communication of standards and price negotiations are present in this value chain, giving it characteristics of a relational value chain structure; the increased competencies of the producer give it some characteristics of a producer-driven market value chain.

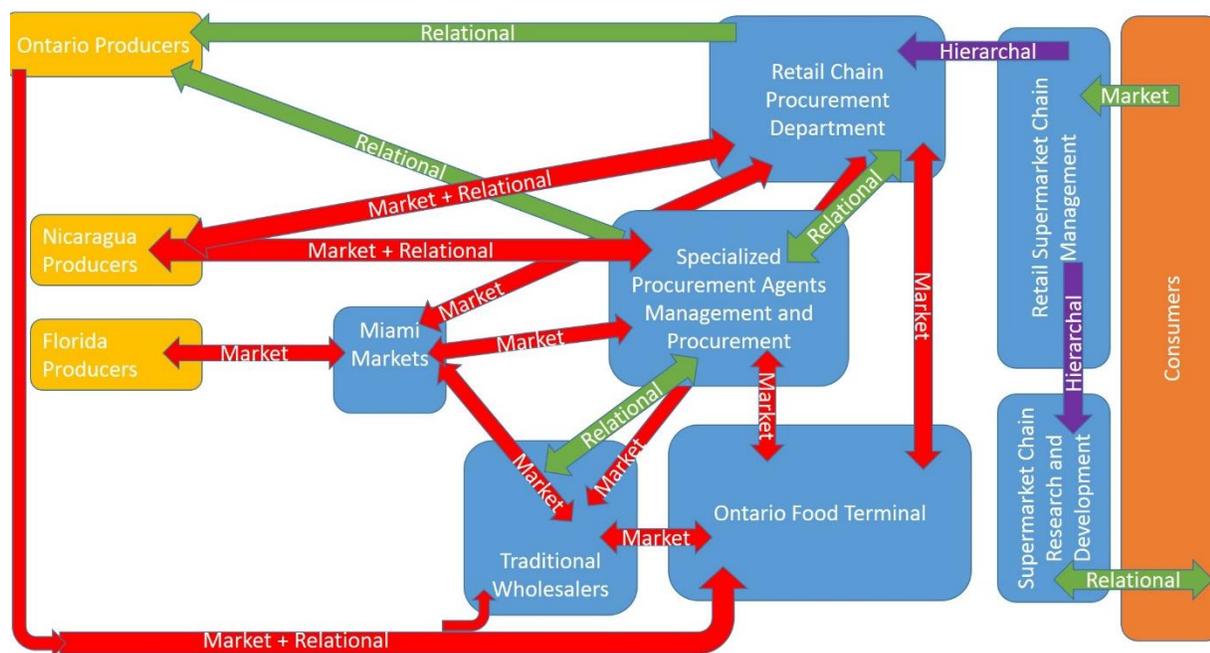


Figure 4.17 Okra Value Chain Governance Structure in the GTA

The relationships between Ontario producers and buyers take two distinct forms with okra. The first is a wholesale market relationship between traditional vegetable growers and traditional wholesalers; these relationships are based on a producer having a product to sell and a wholesaler attempting to market the product. There is little to no communication of governance or specifications between these value chain participants. The second value chain structure existing between Ontario okra producers and Ontario produce buyers is between alternative local growers who are looking to expand their production into a professional ECV production scale, working with retail buyers and modern wholesalers to develop a sustainable market for Ontario-

grown okra. This relationship includes the regular communication of complex standards between the firms and the building of long-term trust-based relationships that define relational value chain structure.

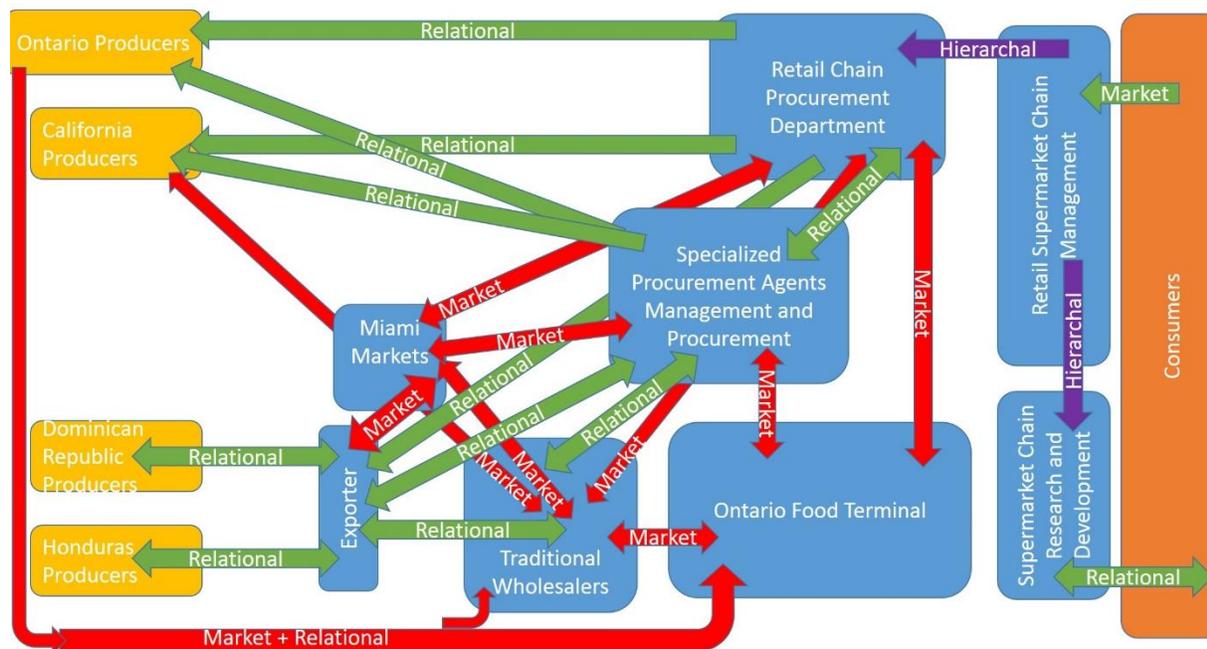


Figure 4.18 Chinese long eggplant Value Chain Governance Structure in the GTA

The value chain governance structure shown in Figure 4.18 shows the comparatively relational structure of Chinese long eggplant value chains compared to the more market-based value chains for okra in Figure 4.17. Chinese long eggplant import value chains differ from those of okra imports in that the relationships between producers, exporters, wholesalers and retailers are potentially more complex. The traditional wholesalers in the GTA are the most likely to source Chinese long eggplant through market-based value chains, although they are the least likely of the wholesalers to have a consistent supply of Chinese long eggplant. Similar to okra, the relationship between traditional vegetable growers with Chinese long eggplant to sell and traditional wholesalers remains the same, a simple market-based value chain. Also similar to

okra, the relationship between local alternative growers and retailers or modern wholesalers looking to develop long-term relationships and communicate specifications exists in the form of relational value chains.

The most significant professional Chinese long eggplant producer in Ontario observed during the research appears to work within a value chain, most similar to the Nicaraguan okra grower. With some market structure characteristics and some characteristics of a relational value chain structure. Although the experience and knowledge of the producer allows the firm to produce high quality products with little outside governance, there is a need for further governance and communication with a buyer to improve upon packaging, labeling and other post-harvest handling practices in order for the producer to reach the required specifications and compete directly with imports. Even with established long-term overseas relationships between producers and exporters in Dominican Republic and Honduras, continued communication and governance between the partner firms means that the value chain structure remains relational in these cases. Even large producers in California participate in significant communication and support through the value chain in order to maintain product quality and meet the specifications.

4.6 Ethno-cultural Vegetable Product Specifications

One common theme amongst the literature relating to the transformation of value chain structures is the increasing importance of product specifications. Each of the value chain participants interviewed had a different perspective on the use and influence of specifications on their actions. A supermarket produce buyer interviewed began the conversation on specifications with the assertion that, “we do have product specifications for most of the commodities that we buy”. They continued by explaining that the specifications were based on “ideal scenarios of growing and post-harvest practices and transport and cold chain” for each of the crops. These

standards were developed internally by the supermarket chain and consisted of specifications on the identification and packaging of the product, preferred crop varieties, labeling requirements, specific temperature ranges for each step in the cold chain from field to delivery, product tolerances, minimum quality standards, descriptions of potential defects and an inspection methodology. These specification documents include detailed descriptions of expectations and allowances for each quality of the specified crop.

The same supermarket produce buyer went on to explain that there was some degree of flexibility built into the specifications, in the form of tolerances. Tolerances were described as the percentage of a given product that would be accepted with characteristics that did not meet the standard and to what extent a specific standard could be tolerated. For example, if the standard length for an okra pod was 4-5 inches and the tolerance was 5%, only 5% of pods in a case could have a pod length that was less than 4 or greater than 5 inches. Or, in another example, there could be a hard limit that no cases would be accepted with pods greater than 5 and a half inches. The produce buyer explained that, “our tolerances are already on the spec sheets, that’s already built in”, so these tolerances are in themselves a part of the specification.

Further flexibility of the specifications could also be achieved as described “Those specifications are monitored and adjusted up or down, not up, downwards meaning we would agree to more leniency” in various cases, including temporarily after significant weather events where damage or various characteristics that would not normally meet the specification would be accepted until the crop recovered and the specification could be returned to normal. A second way in which specifications were adjusted was described when different production regions were each producing the same crop and significant differences in specific measurements of crop quality were noted; unique specifications would be developed for each of the supply regions with

slightly different specifications. The example of Chinese long eggplant was used, in that eggplants grown in different regions had different sizes and colours at their respective peak in quality; therefore the standard for preferred size would be specified for each region in order to receive the highest quality and most consistent product possible from each region.

The supermarket produce buyer used this as an example of how the retailer could work with local producers to increase the local production of these ethno-cultural vegetables. He explained that if local growers could produce a consistently-sized and high quality product, the specifications could be adapted for the region if one or more characteristic of the local product did not meet the existing specification which were developed for existing import supplies.

When asked if there were any specifications that could not be modified, the supermarket produce buyer explained that, yes, there were some things that could not be modified and said “labeling, we will not adjust anything in labeling, case weight, we will not adjust the case weight”. These specifications are related solely to management decisions made by the producers and are not impacted by unforeseen circumstances such as weather, soil conditions or plant genetics; and therefore, they are the most easily controlled and cannot be modified. In a similar way, food safety verification systems are nearly entirely dependent on management and therefore there is very little leniency in the specifications as to the requirements for food safety verification. Although the supermarket produce buyer explained that there was some leniency in how the producer achieved the compliance, stating that, “we would like to go with Global Food Safety Initiative certification whether it is SQF whether it is Primus GAP, Global GAP, or Canada GAP, whatever the case may be as long as they can be accredited to GFSI” In general the supermarket produce buyer had the most positive interactions with the concept of specifications of all the value chain participants interviewed, which is likely due to the fact that

the specifications under consideration were owned and developed by the supermarket chain for which this respondent was purchasing produce.

When other value chain participants were asked about the role of product specifications and their involvement in the value chain, the reactions were a mixture of positive and negative connotations. The value chain participant with the greatest negative connotations associated with product specifications was a wholesale produce buyer interviewed at the OFT; when asked if they had written in-house specifications for ECV's they responded that, “no it's not written, you are probably better off checking with any chain stores. They do have it written, it's like a novel”. When asked if they used the supermarket chain specifications, they explained that “you're dealing with offshore people and even if you give them specification it's going to be a lot tougher. They are not going to be able to come up with what you want”. This perspective of specifications being fixed and limiting to the availability of produce was shared to some degree by most members of the value chain, and led to many of the value chain participants aiming to get as close to the specification as possible but accepting whatever produce was closest to meeting the specifications. Or as a wholesale produce buyer stated, “if you look for just that specification then you won't find product”.

When producers were asked about specifications, they were the most likely to refer to specific requirements as they applied to the crops they produced. They also most commonly described the requirements in an exclusive manner, in that the buyers did not want certain characteristics as opposed to buyers, who more frequently described standards as to what characteristics they want to see in produce that they were purchasing. One local okra producer, when asked about product specifications, said that, “size had to be four inches, cannot be four and a half or three and a half has to be four. So within half an inch, within three and a half and

four and a half range and that size is only there for three to four hours in the warmer days” The size of the okra pods were the most significant specification in growers’ description of working with retail chain specifications. An eggplant grower interviewed had a similar perspective, listing the things that were not included in the specification,

They don't want any scarring, you know that all goes into number twos, we will pull them out, and they don't want odd shaped, or any, you know they want nice clean stuff, and if it's picked in its... you gotta try to pick it when it's a little cooler out too, first thing in the morning.- Producer

This grower also moved directly from what the specifications required of the product to what the specifications required in terms of management to achieve a product that met the specification. In most cases the specifications are a results-based specification as opposed to a process-based specification system, in that they specify the characteristics of the end product not the required processes to achieve the end product. This allows for producers to use a variety of techniques and processes to achieve the desired result, but also requires the producer to discover the most appropriate techniques and processes without direct guidance from the specification. This appears to be a characteristic of inter-firm communications within this value chain where the requirements are communicated rather than the process. Conversely, intra-firm communications were more commonly described as outlining the process to be followed rather than the desired result.

4.7 Qualitative Interviews Observations on Sourcing and Selling Ethno-cultural Vegetables

When asked about the development of new relationships within the value chain and the reasons why they continued to purchase from their existing suppliers, the participants referred frequently to trust. A supermarket produce buyer explained the different types of firms they purchase ECV's from, explaining that

We do buy from the farmers directly on all these three commodities as of today also we deal with the let's say wholesalers or the brokers in certain scenarios depending on where the product is coming from. - Retailer

They went on to explain that they attempt to keep their sourcing options open by “Buying from the terminal, buying from wholesalers or importers, importers/wholesalers in the United States and also from the farmers themselves directly”

One wholesaler interviewed explained their process of developing a relationship with a new supplier as a trial period through which they could assess the capabilities of the supplier and begin to develop a degree of trust with the supplier.

The best thing to do is bring in smaller shipments for a few times and to see how these guys are doing. Where is the specification; the quality, the temperature so on, and if things are working good, then you gradually increase the volume. - Wholesaler

This process of building a relationship, starting with small volumes to check quality and marketability of produce followed by a slow growth in volume of sales and eventually building into a long standing mutually-beneficial relationship, between producers and buyers was echoed by the majority of value chain participants interviewed.

One wholesaler described their relationship with a local Chinese eggplant grower as growing quickly from an introductory stage to a more significant relationship. “Last year we bought, we were almost the only one customer from [local grower] for the eggplants” moving from the previous year where local Chinese eggplants had been somewhat of a trial crop for both the grower and the wholesaler for the 2013 season. The wholesaler expressed the current relationship with the grower, “[Wholesale buyer] had kind of an honour agreement with [local grower], that we would take all of the eggplants, the whole year, all of them, so at a fixed rate, from the beginning to the end right”. This relationship was not actualized during the growing season as there was a high demand for the high-quality local Chinese eggplant grown by this

local grower and there were many other wholesalers ready and willing to purchase the eggplants. Over the 2013 growing season, this local ECV grower's produce was recorded for sale through four different wholesalers in the GTA. The wholesaler that had started establishing a relationship in the 2012 season and hoped to secure the entire 2013 crop was optimistic that they might be able to secure the entire 2014 crop from this producer through further relationship building, stating "we want to buy the whole package, you know, all of them, maybe next year". One grower shared their experience with developing relationships with buyers distinguishing their experience with supplying a major retail chain and smaller buyers such as independent stores and restaurants.

Some [to a retail chain] there are two to three other vendors as well. Some of them I'm not going to share, because they are smaller vendor and they easily switch loyalties. In the case of [the retail chain] it's a bigger one and takes longer to get in, it took me about almost 4 years to get into [the retail chain] as a vendor. - Wholesaler

The growers concern over losing smaller vendors to other local competitors was significant in that it would be expected that relationships with smaller vendors would be based more strongly on a history of transactions and trust and therefore they would be the least likely to switch suppliers. In this case it would appear that potentially these clients are very price sensitive and would willingly try switching to another supply in order to reduce their costs. The much longer process of establishing a grower-buyer relationship with a major retail grocery chain is expected. As for a small-scale local producer growing only a very small fraction of the chains requirements, it would be expected that it would be difficult to develop a relationship. However, the grower expressed that the buyers are "are working with me, for now, to make it easier for me". This openness of major retail chains to work with suppliers and develop long term relationships in order to secure a supply of high quality produce is strong evidence of a relational value chain structure existing within the ECV value chain in the GTA.

4.8 Qualitative Interviews Observations on the Future of Local Production of Ethno-cultural Vegetables

When asked about their perspective on the future development of ECV production in Ontario, many of the wholesale and retail buyers shared the same view. They were willing to work with a committed producer in order to replace their imported supply with a comparable local supply of ECV's and they were flexible on the terms and conditions. But they were all clear that they needed a committed producer. They were not willing to purchase whatever locally - produced ECV's were available on the market in order to build a demand for locally-grown ECV's, as they would not be able to resell those products that did not meet the specifications and requirements of their customers or stores.

One wholesaler explained that, "I don't do much local produce, I don't remember getting any of it from anybody direct". However, they continued by saying "I'm always looking for a local grower that has some kind of program." This emphasis on a producer with a program was echoed in several interviews. The same wholesaler explained further that what they needed in order to work with a local supplier of ECV's was an agreement that,

For the next three months or four months whatever, it is Indian eggplant, I'm producing a 100 boxes a week. I need your support let's work together, you know he'll do his part, bring them to me, then I'll make the marketing. I'm willing to do that no problem. - Wholesaler

The wholesaler continued, explaining that three months was not a minimum number of months that they would be willing to work with a local producer but that the length of the program could be developed with the producer. The supermarket produce buyer had a more active approach to developing a local supply of these ECV's, although they shared many of the same concerns and requirements in order to work with a local producer. They explained that

they had been in active discussion with interested producers in the province for up to three years and that,

So far my conclusion though is, there is a wide vacuum between the interest and seeing product on the floor, or seeing product in the field, or, hey, we talked 2 years ago here's what we can come up with, a five acre program we're going to show you in these three particular commodities - Retailer

The supermarket produce buyer concluded the discussion of establishing connections and production programs with local growers by reiterating that “for the local growers the spec that I have in the books should not inhibit, or say, well, we can't ever hit the spec so let's not worry about it, that should not be the way of approaching it,” and that “if we were not changing our specs we would not be buying here.” This simple and specific comment from the produce buyer showed the overall willingness of the firm to adapt their preferences in search of the highest quality and most profitable products.

4.9 Summary of Results

The combined quantitative and qualitative results of the completed research provide a detailed understanding of the current state of the ECV value chain in the GTA during the observation period. The contribution of the quantitative results towards the understanding of the state of supply of okra, Chinese long eggplant and Indian round eggplant provided insight into the existing value chains and a way of comparing the profitability and market preference for the qualitative quality scores attributed to the samples. The quality measurements collected for the observed samples provided a more complete understanding of the characteristics of the products traded within the value chain and the status of the ECV market in the GTA. Finally the incorporation of the qualitative interviews and the insight they provided developed further

understanding of the causes of the characteristics observed of each of the supplies. These results are further analyzed and interpreted in the following chapters.

Chapter 5 Discussion

This chapter will further analyze the broader influences of value chain structure theory, food regime theory and food policies and their manifestation within the ECV market in the GTA as visible in the preceding results. ECV production and marketing in Ontario is based within a complex structure of value chains and markets which exert influence over the production and marketing of ECV's at every stage. Starting from the results described in the previous chapter and working within the current theoretical framework described in the literature review, these results will be further interpreted in the following chapter.

5.1 The Evolution of Value Chains and the Dominance of Supermarkets

Dolan and Humphrey (2000) discuss the evolution of retailing, pointing to supermarkets' use of private brands to compete with food manufacturers and integrated logistics systems used to control their value chains as central signs of this evolution. They also posit that a sign of supermarket dominance is oligopolistic competition (Dolan & Humphrey, 2000); all of these characteristics can be readily observed in the GTA with three major supermarket companies controlling the majority of retail food sales and the importance of private brand products in the marketing strategies of these supermarkets. Particularly dominant is Loblaws, Canada's largest food retailer with several of Canada's leading food brands. This would suggest that the evolution of retailing described by Dolan and Humphrey (2000) in the UK is also well established in Canada. They describe how the early growth of supermarkets was primarily at the cost of smaller independent retailers but that eventually they reached a saturation point and competition between the oligopoly commenced. This is also visible in Canada where direct competition between the three large retailers is significant.

5.1.1 Inter-chain Retail Grocery Competition

Dolan and Humphrey (2000) explain that fresh fruits and vegetables are the primary point of competition between these brands: firstly, due to the fact that higher income customers purchase a greater proportion of fresh fruits and vegetables; secondly, that there are very few branded fruits and vegetables (and therefore the quality of un-branded produce is attributed to the supermarket brand itself); and thirdly that produce is one of two product categories for which middle to high income customers will switch grocery stores. This has resulted in the redesign of grocery stores to put the produce at the front of the store and the increase of the produce area in the store. These trends are all replicated in the greater Toronto area market and have a specific impact on ethno-cultural vegetables. As Adekunle et al. (2012) showed, there is significant market demand and relatively high income consumers within the ethnic communities to which these products are commonly sold; therefore, competition amongst retailers for these crops should also be high.

5.1.2 Produce Quality and Brand Recognition

Dolan and Humphrey (2000) explain the various ways that retail brands use fruits and vegetables to position themselves as quality, consistency, variety, processing, product combinations, packaging, reliability of supply and price. They state that, from the perspective of the supermarkets, quality is loosely defined by which produce consumers purchase and which they leave on the shelf. They are also looking for consistency, consistency in product shape and appearance across a purchase order of cases as well as over a time period or season. They even look to maintain as consistent a supply and visual characteristic of the produce as possible when switching suppliers during different seasons, if at all possible. Both quality and consistency came up in interviews with produce buyers as the most sought after characteristics of ECV's, over and above price, packaging, origin or any other characteristic.

Processing of produce items into ready to use forms, such as fruit trays, pre-wrapped baking potatoes, pre-peeled and portioned vegetables, is also a growing practice in GTA supermarkets. However, due to the highly perishable nature of okra and eggplants, this was not seen to be underway or a goal of the value chain at this point in time, as it would be difficult to ensure the visual appeal of the product after processing. Packaging, conversely, is an area where product development and differentiation is being explored, with some of the interviewed value chain participants beginning to sell ECV's on branded film-wrapped trays. Dolan and Humphrey (2000, p.155) noted that "price is not the main focus of competitive strategies," which, in interviews with GTA produce buyers, was also noted; price was an area where they could be flexible and negotiate within the bounds of the market prices for alternatives. Their driving factor in decision making about the sourcing of ECV's was always quality and consistency, with all other factors playing a secondary role.

5.1.3 Supermarkets as Decision Makers

Dolan and Humphrey (2000, p.156) go on to explain that, "it was clear from interviews with importers that supermarket buyers play the decisive role in determining which products will be stocked." This was also noted in interviews with GTA wholesale produce buyers. When asked if they had their own product standards for specific ECV crops, they simply referred to copies of the private retailer standards, most commonly those of the largest retailer Loblaw's. Thus, the independent traditional and modern wholesalers are in effect operating with the same standards and demands of the dominant retailers.

Dolan and Humphrey (2000) discuss how supermarkets will purchase produce from a number of different importers and wholesalers, sometimes even for the same product, but that most wholesalers rely on sales to a single chain of supermarkets for the majority of their sales.

These trends are also visible within the GTA ECV value chain. Retailers will, if required, switch between a selection of wholesale companies or farms to source the highest quality and most competitively priced ECV's at a given time of year. This trend, of very limited buyers and many competing suppliers, appears to be stronger in more ubiquitous crops such as tomatoes and cucumbers, where there are a greater number of competing supplies from which to choose. The niche nature of the ECV crops means that, with only a relatively few sources of supply, buyers are more likely to stay with a single supplier and help them improve their product quality, efficiency and consistency. There are few alternatives and the alternatives may be too different in quality and visual characteristics, for the brand to easily switch to a different supply. This can be used to the benefit of local ECV producers who are able to develop a quality product for the market, as retailers may see it in their best interest to develop that value chain further to increase quantity, quality and length of productive season in order to extend the competitive advantage that the product would offer them in the marketplace.

5.1.4 Buyer Driven Supply Chains and Supermarket Produce Buyers

Dolan and Humphrey (2000) discuss the differences between producer-driven and buyer-driven supply chains. Producer-driven supply chains are defined by producers with specialized technology, investment in capital, and a degree of market power and governance. Alternatively, buyer-driven supply chains are controlled by powerful brands with large market share and strict product requirements. As with most fresh fruit and vegetable value chains, the GTA ECV value chain is primarily a buyer-driven supply chain with Loblaws, and to a lesser degree Sobeys and Metro, driving the chain. The market share and brand image control exerted by these players is significant, although not directly tied to ECV's but more generally to produce. There is some evidence of wholesale companies making an attempt at branding ECV produce at the consumer level but they are still tied to the demands of the retailer in order to have access to their market

currently. There is one example of a potentially producer-driven chain in okra where one producer in Nicaragua has invested in superior packaging, superior post-harvest handling and the highest quality standards of any of the okra supplies noted during the 2013 Ontario production season. This one large producer of okra may be operating in something closer to a producer driven value chain with greater market power, as they are providing product to a larger geographic area and greater number of retail chains than other okra producers and therefore individual retailers have less power over their market success. Interestingly this producer has not attempted to develop a consumer brand for their product and therefore the positive brand development of the high quality produce continues to, by default, be attributed to the retailers by consumers. Therefore, the result is a hybrid value chain driven in tandem by the producer and buyer. Within this value chain there is little room for a wholesaler to enter into the center and receive any additional margin, or exert any control over the supply chain. It was noted that frequently the retailer was able to work directly with the producer in this case and cut out all wholesalers, importers and exporters due to the additional capabilities held by both the producer and the retailer.

5.2 Impact of Value Chain Structural Changes on Producers

5.2.1 Organisational Capabilities

Dolan and Humphrey (2000, p.161) state that, “good management along the chain is essential to produce good quality produce and prevent later deterioration.” They also explain that this involves both internal management within the firm as well as management of relations with other participants in the value chain, including suppliers, transporters and other firms. This holds true for Ontario ECV growers who need to establish working relationships with suppliers of appropriate seeds - critical for meeting product requirements on ECV’s, as well as other production inputs, such as pest and disease management products, fertilizers and various season

extension equipment. These all require strong management skills, along with the internal management of the firm, including training of staff for proper management of the crops, proper harvest technique, proper timing of harvest and many other day-to-day operational tasks required to achieve the highest quality product and deliver it to market.

5.2.2 Post-Harvest Handling

Another aspect of the producer's roll in the value chain that has evolved during this process is the requirement for proper post-harvest handling. Dolan and Humphrey (2000) express three reasons behind the importance of post-harvest handling: quality requirements, cost savings of processing at the source versus at the destination, and capturing higher value added prices. These three reasons are all visible within the ECV market in Ontario. Produce quality at the wholesale market was closely related to the degree of post-harvest handling completed at the source, combined with the type and length of transport. Okra from Nicaragua had a higher degree of post-harvest handling at the source than Florida-grown okra and differed only slightly in its time to market, and the higher price at market reflected the higher quality grade due to the superior post-harvest handling. Similarly, Ontario-grown okra received lower prices and was of a lower quality grade due to the lack of post-harvest handling, and improper harvest technique and scheduling. Samples of properly-timed harvest Ontario-grown okra had significantly higher quality than Ontario okra available on the wholesale market, despite a lack of complex post-harvest handling on this local alternatively-grown okra. Therefore, it would be noted that okra post-harvest handling is responsible primarily for extension of shelf-life through the transport period and okra quality is primarily determined at the time of harvest.

Conversely, for Chinese eggplant, quality is determined both at time of harvest and through post-harvest handling where the produce is washed, graded and packed; each add to the

overall quality and appearance of the shipped product. Of all the Chinese long eggplant supplies recorded during the 2013 production season, the import supplies had very similar degrees of post-harvest handling; the differences in quality noted between regions of supply were attributed primarily to transport duration and type. Ontario-produced Chinese long eggplant differed in post-harvest handling in that the produce grown and marketed by professional ECV growers was similar to the imported supplies, and superior to produce grown and marketed by traditional vegetable producers or local alternative growers. This resulted in a notable difference in product quality at market between these types of producers. Surprisingly, the traditional vegetable producers clearly understood the importance of post-harvest handling as they had all invested extensively in handling facilities for other crops that they produce, and understood that their primary crops' harvests which had not undergone proper post-harvest handling would not receive a competitive price at market. At the same time these producers were harvesting and shipping ECV's with little to no post-harvest handling and were surprised when they did not receive a competitive price at market.

The second and third reasons given by Dolan and Humphrey (2000) as to the investment in post-harvest practices on farm are both related to economic incentives, the first being a push from the rest of the value chain for processing to be done on farm, and the second being a pull from farm owners attempting to increase their profitability through marketing a more value added product.

5.2.3 Labour Costs

Dolan and Humphrey (2000) give three specific push factors relating to the UK supermarket and African vegetable exporter value chain. The first is that African labour is cheaper than UK labour. Second, only the highest graded product is shipped to the UK. Third,

the processed product is of a higher value and therefore more cost effective to ship to the UK. This can be seen to some degree in the Ontario ECV value chain, with labour being cheaper in all of the export supply nations (US, Dominican Republic, Nicaragua, Honduras and Mexico) than in Canada.

Shipping costs also represent a significant proportion of the wholesale cost of the produce in these value chains, so shipping only high grade product is also a strong incentive. The effort by producers to ship a value-added product is somewhat less important with ECV's, where the focus at this point is instead on shipping the highest quality product with good post-harvest handling to extend shelf life. Any effort to increase the value through specialized packaging or ready-to-eat products is occurring locally in Toronto by modern wholesalers as opposed to by the producer. There is potential for Ontario producers to attempt to access this value-added market as there is currently little to no competition in this sector. However, the high cost of labour in Canada may make this economically infeasible.

5.2.4 Logistics

Logistics is also an area of investment for many exporting vegetable producers, as retailers aim to reduce the time from field to store; in order to provide the freshest highest quality produce, they have shifted to a limited inventory system. In interviews with wholesalers and retailers, it became evident that ECV's are being delivered between two and three times per week to most buyers. This requires a continuous process of ordering, purchasing, picking, packing, shipping and distributing by all actors in the chain. Dolan and Humphrey (2000, p.163) explain that, "the profits of supermarkets have been realised to a large extent by substantial investment in IT systems that track ordering and sales, identify their customer base, and organise storage, delivery and transport." They continue to explain that this has provided them with a competitive

advantage over smaller companies that are without the means to invest in these systems and without access to the scale of data in order to fully utilize from such an investment. This was clearly the case within the GTA ECV value chain where the largest actors spoke most often about delivery dates, scheduling, ordering, forecasting of demand, and other logistical events. In contrast the smaller wholesalers who discussed, instead, the requirements of supply and demand and their constant effort to deal with the market situation, were currently experiencing, for example being short on supply, having low demand, and severe price competition with other suppliers or wholesalers. These actors spoke much less frequently about forecasting and scheduling, although they spoke positively of these ideas to the extent that they were possible to achieve.

5.3 Value Chain Structure and Governance

5.3.1 Retail Chain Store Value Chain

Dolan and Humphrey (2000, p.164) explain the importance and power of innovation in the supermarket value chain; they state that, “suppliers who assume responsibility for product and packaging innovation greatly increase their value to the supermarkets and minimise their risk of substitution.” This demand for innovation can be broadly applied to the entire ECV market as the three major supermarket chains in the GTA attempt to capture a greater proportion of the ethnic community’s grocery budget. Fresh, high quality ECV’s are a direct way for supermarket brands to innovate and differentiate themselves from their competitors. Suppliers who are able to supply these innovative products locally, - a second innovation as brands attempt to establish themselves as sustainable and attract consumers who prefer local products - will have greater market security.

Dolan and Humphrey (2000, p.165) discuss the result for small and medium scale African exporters who have not been able to invest in quality assurance, post-harvest handling, logistics and product development. They explain that these operators “exploit favorable short-term market conditions” and that “the quality of their supplies has been variable” and that due to this they “remain largely dependent on arms-length marketing relationships” supplying “bulk produce to wholesale markets, which is now only marginally profitable” (Dolan and Humphrey, 2000, P.165) This situation is very similar to the traditional vegetable producers and traditional wholesalers attempts at producing and selling ECV’s in Ontario; they produce and handle product only during the peak of the production season. Their product is of a highly variable quality, is marketed in bulk via wholesale markets and traditional wholesale firms, and is at most marginally profitable for the producer and wholesaler due to the low market price.

5.3.2 Independent and Specialty Supply Chains

Hingley et al. (2010) also discuss the value chain for ECV’s in the UK and incorporate a wider variety of supply chains and retail outlets than Dolan and Humphrey (2000), who focused exclusively on the supply chains of major retail chains, Hingley et al. (2010) also include the value chains of independent and speciality grocery stores, small independent produce stands and convenience stores. These alternative supply chains have been shown to be significant players in the market for ECV’s in the GTA, including community-based ethnic stores and independent retailers as well as small to medium grocery chains. These retail outlets share some of their supply chain with the major retailers but differ in their purchasing methods and relationships to varying degrees. They purchase a greater proportion of their produce from wholesale spot markets, via either modern or traditional wholesale firms. They do not commonly work directly with foreign producers, although they are more likely to purchase from local alternative growers. Their purchases are based on quality and price primarily with less significance given to

consistency, as their marketing is not based on brand development but instead on customer service and community membership.

5.3.3 Regional Supermarket Value Chain

In the GTA there are a growing number of regional grocery chains with multiple locations in the GTA but few or no stores outside the GTA. These chains source produce through both conventional wholesale and modern wholesale firms and are also less likely to work directly with producers or exporters outside of Canada than the national chains. They may be more able to work with local producers due to their lower demand but may also require additional competencies from the producers, as they are less able to complete those competencies in house as effectively as the largest national chains. Therefore, they are most likely to work with professional ECV growers than local alternative growers.

Hingley et al. (2010, p.81) also explore the impact of local production on the marketing of ECV's in the UK, stating that "consumers recognize the origins and traceability of foods and often attempt to buy more local and regional produce"; they also include that "consumers require local and regional products to meet their high standards, especially related to freshness and quality." In interviews with buyers within the GTA ECV value chain, these sentiments were generally shared; interviewees commonly felt that there was a positive impact from local versus imported product although they stressed that it was only true for product that met the same requirements as the imported product and that the benefit from the product being local versus being fresher than the competition was difficult or impossible to separate.

5.3.4 Food Service Value Chain

In their discussion of the food service value chain, Hingley et al. (2000, p.82) express that "the sheer size, diversity and range of potential food service customers looking for fresh produce, in summary, represents both a significant deterrent and a major benefit." This holds true in the

GTA with the vast number and scale of different food service businesses, even professional wholesale firms, appear to underestimate their impact on the market. When one wholesaler asked if any restaurants purchase from their stall stated that there were very few. When this wholesaler was asked in a follow-up question whether there were distributors who purchased products on behalf of restaurants, he also replied “no, it was not common”. Later in the same interview he explained a type of buyer that they called “jobbers”. These were buyers who made their living purchasing wholesale produce at the food terminal for resale to independent shops and restaurants around the city. This would fit the common definition of a distributor servicing the food service industry but due to the informal nature of the transactions and scale, they were not recognized as such and therefore their impact on the wholesalers business was not directly considered as the impact of the larger more formal purchases from even small retail chains. Conversely, in the GTA there are also large-scale food service firms, which are much more influential and most similarly structured to the major retail brands or modern wholesale firms with complex IT systems and modern purchasing tendencies. This is an area into which further research is required.

5.4 Ontario ECV Producer Types and their Interaction with the GTA ECV Value Chain

Hingley et al. (2010, p.85) found that local horticultural producers in the UK preferred “consolidated routes offered by wholesalers, distributors, prepackers and processors” as their primary route to market. Ontario ECV producers, especially those in the traditional vegetable producer category, were of a similar point of view, preferring to have one primary route to market through a consistent simple relationship either directly with a retail chain or through a modern wholesaler. As would be expected, the local alternative growers differed most from this model, choosing instead to market their products directly through farmers’ markets, on farm

sales (stores, markets, drop-in purchases), alternative sales systems such as community shared agriculture systems and/or directly marketing to small independent retailers and restaurants with a focus on developing personal relationships with their customers. Amongst the professional ECV producers there was a mixture of the two practices, with less emphasis on direct to consumer sales but a continued effort to diversifying their buyer pool and developing relationships with their buyers, who may be wholesalers (traditional and/or modern), retailers (national and regional chains, independent and specialty stores), distributors or small independent food service businesses.

5.4.1 Value Chain derived Limiting Factors to Ontario ECV Production

Hingley et al. (2010) express several reasons for the limited uptake of ECV production amongst existing vegetables producers, including a lack of information about how to produce and handle high quality ECV's, concerns over the economic viability of local production with competition from low cost imports, and concerns over the availability and cost of specialised equipment. Many of these same concerns were shared by Ontario's traditional vegetable producers who are established in the production of other vegetables and have at times experimented unsuccessfully with the production and marketing of ECV's in the past. Many of these producers also echoed the concerns of the UK producers, in that consumers would be unwilling to pay more for locally-produced ECV compared to cheaper imports, although evidence would suggest that if the local ECV's were of a higher quality consumers would be willing to pay more for them. Hingley et al. (2010, p.87) also point out that the majority of the producers involved in their research were predominantly white and that the majority of the buyers of ECV's were Asian, and therefore "the channels were fragmented by both language and culture". This also holds true to some extent with Ontario's traditional vegetable producers who are primarily of European descent and a greater percentage of the ECV wholesale buyers in the

GTA are not of European descent. Although this did appear to be the case, it did not appear to result in any significant cultural or language barrier between the buyers and farmers who commonly traded in crops other than ECV's. There was also a significant number of European buyers trading in ECV's and non-European vegetable producers growing traditional European vegetables.

The professional ECV growers group had a more distinct bias of ethnicity, with the majority being of Asian descent; a large diversity of cultural backgrounds could be found amongst the local alternative growers of ECV's in the GTA. These growers faced significantly different challenges in the production of ECV's which were not discussed by Hingley et al. (2010), the most significant issue being access to appropriate seed for the production of the true to type ECV's demanded by consumers. Other issues faced by these producers in their attempts to increase their production of ECV's were: access to land, access to skilled cost effective labour, and access to capital for investment in season extension, packaging and post-harvest handling facilities, and land. Almost all of the local alternative growers interviewed had off-farm jobs that supported their farming enterprises and were unable to secure enough capital to expand their farming enterprises to a size where they could receive a livelihood from the farm without additional income. Some of the professional ECV growers made their entire income from agriculture, although ECV's generally accounted for less than 50% of their production.

Hingley et al. (2010, p.87) also discuss the perspective of wholesalers at the Birmingham Wholesale Market as to local produce and speciality produce such as ECVs. They found that there was limited interest in local produce in general from the wholesalers, who preferred to source produce from suppliers who could supply year-round. They also stated that the wholesalers "prefer simple business transactions, and local growers do not offer them, according

to their past experiences”. This sentiment of looking for streamlined transactions and simple relationships was echoed amongst traditional wholesalers at the OFT. These traditional wholesalers also appeared to have a long memory of past issues when dealing with local producers or products, citing previous experiences of low quality product being dumped onto the market or other issues. Hingley et al. (2010) also described the types of transactions that occurred at the Birmingham Wholesale Market, which coincide well with the types of transactions completed at the OFT. The majority of produce is being purchased by small family-owned food service companies and “very little produce goes to distributors or grocery wholesalers; they buy directly from growers and use the wholesale market only if they have a shortfall of a particular product”(Hingley et al., 2010, p.87). This is also the case in Toronto where it is uncommon for national retail chains to purchase produce at the market, although several of the vendors (approximately 30%) are modern wholesalers who purchase directly from producers and sell to retail chains, as well as at the food terminal to a smaller degree. In their discussions with retailers and distributors Hingley et al. (2010) found that direct purchasing from farms was the growth trend for purchasing of produce, which aligns with the findings of Dolan and Humphrey (2000) and the findings in the GTA. Hingley et al. (2010, p.89) also stated that, “retailers and food service operators expressed interest in buying local and regional fresh produce in the future, citing freshness and support of local supply networks as reasons.” The GTA ECV retailers interviewed agreed with these principles, although they were clear to specify that the driving force behind the choice of any one particular supply of ECV’s was the quality of the produce first and foremost. With these ECV’s being short shelf-life products, freshness ties directly to quality and can provide a substantial competitive advantage to local producers.

Hingley et al. (2010, p.90) conclude that, “the fresh produce industry is thus a two tier system; the best products go to supermarkets, whereas the poorer quality or production overruns are sold through wholesalers.” The evidence in the GTA appears to at least partially uphold this statement in that only the highest quality of produce is purchased by supermarkets and that inferior quality produce is only marketable via wholesalers, but there is also a significant amount of high quality produce being distributed by modern wholesalers in the GTA. Simply knowing that a farm’s produce will be marketed via a wholesaler does not mean that the quality standard is lower; in fact, in order to achieve a competitive price the quality must be equivalent to the supermarket chain standards, even on the wholesale market.

5.5 Firm Structure and Import Supplies of ECV’s in the GTA

Gereffi et al. (2005) discuss the concept of vertical integration and disintegration of companies in their paper and the reasons behind these decisions. These concepts come into play in the GTA ECV market as differences between the structure of foreign suppliers of ECV’s and the different types of ECV producers in Ontario. The Nicaraguan okra supplier is the best example of vertical integration as this supplier owns multiple farms; his company owns post-harvest packing and a grading facility as well as their own marketing capabilities. This is a similar level of vertical integration to several of the Ontario traditional vegetable producers interviewed, and is a relatively limited degree of vertical integration as these firms do not commonly own their own input manufacturers, further processing or retail sales firms. However some of these Ontario firms also included trucking capabilities.

The value chains in the Dominican Republic and Honduras have a relatively smaller degree of vertical integration, as farms are individually owned and operated and packing facilities are commonly owned by independent exporters. Vertical disintegration is not simply

the lack of vertical integration but the conscious disintegration of a firm into separate firms, or annexation of a capability from a firm into a separate firm. Within the GTA ECV value chain, this can be seen, as some regional scale retail chains have disintegrated their entire produce purchasing and distribution departments to specialized modern wholesale firms.

5.5.1 Value Adding in the ECV Value Chain

Gereffi et al. (2005) introduce the concept of value added products, defined as processes where technology and labour are applied to a product to transform it into a more marketable form; in the ECV value chain this value adding process takes the form of proper post-harvest handling and is a key area in which Ontario ECV producers need to invest in order to achieve strong market prices. Post-harvest handling includes the cleaning, grading, packing and cooling of produce and requires specialized equipment and labour; it represents a significant percentage of the production cost of ECV crops in Ontario due to the high cost of labour. The primary focus of the Gereffi et al. (2005) paper was governance and structures of value chains, with markets, networks and hierarchical structures. Through the research period it was determined that for ECV's in the GTA the value chain is structured as a relational network as are most produce crops, although some traditional vegetable producers in Ontario appear to function within a much more simplified market structure for some common and standardized crops such as field tomatoes and peppers. This does not appear to be the case for any ECV's currently.

5.5.2 Mutual Inter-firm Dependence and ECV's

Relational network value chains are defined by Gereffi et al. (2005) as having mutual dependence, high asset specificity, and are managed primarily through complex relationships. Mutual dependence between producers, wholesalers, retailers and consumers leads to the development of a relational network value chain structure. Producers are dependent on a limited number of retailers to access customers on a commercial scale. Wholesalers are dependent on

producers to supply a consistent high quality product that they can market and on their customers to continue to purchase from them and not switch to a competitor. Retailers are dependent on producers to supply high quality produce in order to attract discerning consumers to their stores; and thus out-compete their competitors. This is especially true for ECV's as they are a way of attracting a specific ethnic group of consumers to their stores, if a store loses a high quality supply of okra that store may lose an entire population of Indian consumers who were attracted to the store by high quality okra.

This trend is less visible with traditional vegetables where losing a single variety of produce would not likely cause the loss of an entire population demographic. As stores begin to carry a wider variety of ECV's, their dependence on one particular ECV will decrease, in which case if a supply of okra was lost but bitter melon and Indian eggplant were maintained, it is less likely that a significant portion of Indian consumers would be lost, as an example. Consumers are also mutually dependent on retailers to varying degrees, with the prevalence of food deserts in some areas of the GTA. Many consumers only have one viable source of produce which may be a major retail chain, independent corner store or potentially a food bank. Some consumers are able to break their dependence on retail chains and purchase produce from farmers markets or directly from farmers but with Canada's short production season and long winters the vast majority of consumers rely on chain stores for their produce for the majority of their purchases. This chain of mutual dependence amongst actors in the retail food chain is strong evidence that the ECV value chain in the GTA can be characterized as a relational network.

5.5.3 Asset Specificity and ECV's

Asset specificity for the ECV value chain is primarily centered on production and post-harvest handling, with asset specificity being the degree to which investments made towards a

specific transaction or market are valuable to that transaction versus potential alternative transactions. At the farm level there are a number of transaction-specific assets including seeds for particular ECV's preferred by specific ethnic consumers, specialized crop-specific post-harvest handling equipment and the investment of an area of land to the production of a crop for a production cycle. This investment can be significant for some crops, such as with ginseng which takes several years to reach maturity, although most of the ECV's studied have the same annual production cycles as other vegetable crops grown in Ontario. Similarly, seed investments are expected with any vegetable crop that might be grown and therefore the asset specificity is not significantly higher for ECV's than with other vegetable crops. Post-harvest handling equipment can be highly asset-specific as the shape, size and other physical attributes of a produce item determine how it can be mechanically handled without damaging the produce. For example, a mechanical washing system designed for washing Italian eggplants will damage Chinese eggplants due to their long thin shape and thinner skins than Italian eggplants. All of the remaining value chain actors, from the after the post-harvest handling facility to the consumer, have very low asset specificity.

Transportation companies are able to transport a wide variety of products and even those specializing in temperature-controlled transport of food products have a nearly unlimited set of potential alternatives to transport asides from a specific lot of ECV's. Therefore, the market for produce transport is a simple market as opposed to a relational network. Wholesalers and retailers also have limited asset specificity associated with ECV's, as their warehouses and overhead costs can be applied to the sale of a wide range of produce products and are not specifically tied to the marketing of ECV's. Although their physical assets may not be tied to ECV's, other types of assets may be tied more directly to the marketing of ECV's including time

invested in establishing supply relationships, reputation, customer loyalty and even pre-planned promotions or sales. These investments are crop specific and lead to the asset specificity that makes the GTA ECV value chain a relational network structure.

5.5.4 Inter-firm Relationships and the roles of Trust and Governance

Value chain participants in the GTA ECV value chain all expressed their relationships with buyers and suppliers as complex relationships built over time through repeated transactions and recurrent bi-lateral communication. These types of relationships are characteristic of relational network value chain structure as described by Gereffi et al. (2005). They explain that relational networks include highly competent suppliers with a large amount of tacit knowledge, which requires communication between partners and which is achieved through frequent communication and visits. The degree of communication described by wholesale buyers and retail chain buyers was high, with telephone and email communication occurring commonly on a weekly to daily basis during the harvest period and face-to-face meetings occurring as costs allowed, with local meetings occurring more frequently than onsite meetings in foreign countries. There was usually discussion of such things as trial periods, allowing for reputation building and trust to develop in these relationships. The modern wholesale buyers most commonly proclaimed the trust required with their suppliers in order to know that the produce they would receive would be of the quality expected. This was less common with retail buyers; although still present, retail buyers relied more firmly on communication and data analysis to determine their interactions with producers, as opposed to trust.

5.5.5 Evolving value chain Structures and the onset of Modular Networks

The other potential value chain structure that could be in place in the GTA ECV value chain is a modular network value chain, as described by Gereffi et al. (2005). Modular networks rely upon codification of complex specifications for products. Codification and standards are

playing an important role in the value chain governance of the ECV value chain in the GTA. Leading retail chains have developed detailed specification documents outlining the product requirements that they expect from producers in order to purchase their crops. According to Gereffi et al. (2005, p.86), these specifications reduce the “buyer’s need for direct monitoring and control” and was noted in interviews with chain store and modern wholesale buyers who communicate their concerns about product quality back to the producers by referencing the standard. Depending on the type of produce buyer, the flexibility around the standard was different; wholesale buyers expressed that if they firmly stuck with the requirements of the standards expected, they would not be able to consistently source the quantity of produce they required. Consequently, they would work with the producer that was able to most closely meet the requirements of the standard with the fewest deviations and still be able to fill their demand. Conversely, retail chain buyers were much less likely to accept produce that did not meet specific requirements within the standard. Some requirements were said to have larger degrees of flexibility and some requirements were firm and could not be ignored. Retail buyers expressed that they would work directly with producers to adjust the standard based on the best quality product that the producer or producers in a specific region would be able to produce. For example, the standard for Chinese long eggplant would include colour requirements, length and width of the fruit and many other standards. In this case, the retail buyer understood that Chinese long eggplant grown in California commonly grew longer and had a lighter purple colour than Chinese long eggplants sourced from other regions; therefore, the standard was modified for California-grown Chinese long eggplant. This process of modification of the standard could also be due to a specific weather or climate condition where a specific requirement would not be able to be met and a temporary change would be made to the specification. These standardized

product specifications are an example of the products being codified that could lead to a modular network value chain structure, but the specifications are not fixed and require inter-firm communication to achieve agreeable modifications or expanded tolerances. Therefore this would suggest that, at this point in time, the ECV's value chain in the GTA remains a relational network.

There is a second characteristic of modular network value chain structures and that is a low cost of switching transaction partners; simple market structures have almost zero costs for switching partners, as opposed to the high level of inter-firm cooperation and invested time in developing relationships. Costs of changing partners in relational value chains is relatively high. The reduction in cost of changing suppliers is based on the simplicity of sharing codified specifications so that a new supplier simply needs to meet the specification and then they can become a new supplier of the product. In the case of ECV's, it is clear that, for a new supplier entering the market, it is not as simple as meeting the specification requirements; it appears that the majority of producers require special modifications and conditions to be able to meet the requirements especially with Chinese long eggplant. A supplier that is able to clearly surpass the minimum product specifications in all categories would be able to access the market with little extra effort involved from the perspective of inter-firm communication and governance. This is more commonly the case with okra where producers are more able to grade okra and select only the product that meets the specifications, due to its small size and high production capacity. The larger eggplants cannot be graded as strictly, as the production volumes are lower and the number of pieces per container are lower than in okra.

It is therefore found that the okra value chain in the GTA is more likely to take on the structure of a modular network; the Chinese long eggplant value chain continues to take on the

structure of a relational network, although both value chains exhibit characteristics of both network structures. Gereffi et al. (2005) also discussed the real world applications of these value chain structures with reference to the UK-African produce value chains. They explain how UK supermarkets shifted from purchasing from wholesalers to purchasing directly from importers or African exporters and how this developed into a complex relational value chain with onsite inspections and a high degree of complex inter-firm governance. This relational value chain included, “suppliers and buyers worked together on product development, logistics, quality, and the like” (Gereffi et al., 2005, p.93). They continue to explain the evolution of these value chains and structures. As retailers attempt to reduce their number of suppliers and suppliers take on more responsibility internally, the requirement for inter-firm governance is reduced and these value chains begin to become increasingly modular. This would explain the current state of the ECV value chain in the GTA as being primarily relational with some early signs of a shift towards the development of a modular value chain.

5.5.6 Ethnic and Personal Ties in the GTA ECV Value Chain

A common reference is that relational value chains are tied together by family ties, ethnic ties and physical proximity and Gereffi et al. (2005) agree that these can be contributing factors to the development, maintenance and stability of relational value chains but Gereffi et al. (2005) state that these factors are not required within relational value chains and that they can form without these factors. Chueng and Gomez (2009) address this question directly as they explore the role of family ties in Asian food businesses and their value chains. They found that the role of family in inter-firm relations and governance was limited and that the primary role of family within these businesses was in internal hiring as opposed to inter-firm relations. These trends are mirrored in the GTA ECV value chain. Family ties do not appear to play a significant role in the structure of the value chain, although the ethnicity and social proximity of value chain

participants and decision makers were significant. A significant portion of the relationships within the value chain structure were not based on family, ethnic or social ties but simply based on business relationships. Chueng and Gomez (2009) found that internal employment of family within businesses was the most prominent role of family in the value chain; this was also noted in the Ontario ECV value chain, although primarily found amongst producers and specifically the local alternative grower group, and to a lesser degree the professional ECV producer group. It was found that family, social and ethnic ties played a role in developing trust and reputation in the creation of new relations and the maintenance of long standing relations but were not enough to exclusively maintain a relation. These relations needed to be supported by constant communication, effort to meet objectives and consistent inter-firm governance.

5.6 Product Specifications and ECV Marketing in the GTA

Berdegue et al. (2005) also discuss the concept of standards and codification of specifications specifically from the point of view of supermarket retailers in Central America and their privately-held standards. They explain that the standards are central to the efforts of the retailers to provide consistent and high quality produce in order to differentiate themselves from traditional produce vendors. This shows how the trends in grocery retail are occurring in similar partners in various regions including Europe, North America and Central America. Berdegue et al. (2005, p.258) explain that “the concept of fruit and vegetable ‘quality’ among retailers and consumers is restricted to the cosmetic and flavor characteristics of the FFV [fresh fruit and vegetables].” This is also true of the product specifications produced by chain store retailers in the GTA.

5.6.1 Visual Characteristics

Product specifications focus almost exclusively on the physical appearance of the produce. Specifications include specific measurements for optimal fruit size specific to individual crop varieties and, at times, growing region. Specifications also list the desired colours of crops in broad terms as well as if any particular patterns or markings are acceptable, such as streaked skin. Specifications also list potential visual blemishes that are not acceptable above specified percentage thresholds on the fruits; these visual blemishes could include bruises, scars, insect damage, decay, cracks, mud, dust, dirt, and wrinkling of the skin. These visual characteristics represent the base of all the standards described by value chain actors interviewed.

5.6.2 Physical Characteristics

In addition to these external visual indicators of quality, there were several other indicators of produce quality included, such as maturity, texture, scent, flavour, temperature, weight, internal colour, and toughness. These indicators are all also physical characteristics of the produce that are used by the retailers to assess produce quality. These standards also include requirements for packaging, labeling, food safety verification, handling methods, storage temperature; these are not directly related to the produce quality but to the inter-firm governance between the retail buyer and the producer and supplier of the produce. Related to the inter-firm governance implications of the specifications is an included inspection process and scoring system for determining the percentage of a shipment which falls within a specific tolerance range and any potential dockages related to missed tolerances.

5.6.3 Limitations of Product Specifications

There are many other qualities of produce that are not included in these specifications, such as nutritional content and other characteristics such as sustainability, that are not taken into account in this process. These specifications are tied directly to the saleability of the produce.

Therefore, they focus on maintaining consistent product so that the customer can expect the same product to be available from week to week and continue to purchase the product based on their previous experiences purchasing the product. It again ties into trust and reputation, this time being built between the retailer and the customer. Berdegue et al. (2009) go on to explain in more detail the reasoning behind the introduction of private standards in Central American supermarkets; they explain that they were used to differentiate the quality of produce available from retail chains from the quality available from traditional sources. At the same time the retailers were working to reduce the difference in price that they charged for produce compared to the smaller independent sellers with relatively low overhead costs. This is reminiscent of the differences between diverse supplies of ECV's arriving in the GTA; for okra, there are high quality, high price supplies (Nicaragua) and low quality, low price supplies (Florida). Retailers are looking to find a supply that is high quality and lower price. With the advantage of a very short transport distance, local Ontario growers should be able to provide a high quality product at a much lower price than those that require expensive, long distance, temperature-controlled transport.

5.6.4 Supermarket Produce Purchasing Programs

Reardon et al. (2003) also investigate the expansion of the supermarket model around the world, looking for common trends as to how it took hold and how it impacts the rest of the value chain. They found that there were many commonalities between the processes implemented by supermarkets in regions around the world. They also explain these processes from the perspective of the supermarket buyers who are in charge of filling the shelves with goods to sell. As a result of strong competition and relatively low average profit margins across an entire supermarket's product selection, there are pressures applied to buyers from managers. The primary response from buyers is to reduce "purchase and transaction costs and raising product

quality” (Reardon et al., 2003, p.1145). These are directly applicable to ECV buyers whose primary goal is always product quality followed by reducing costs if quality can be maintained; this was evident from the interviews completed with buyers in the GTA. Reardon et al. (2003) also explain how these pressures result in the development of the modern procurement systems such as direct purchasing from producers with additional capabilities, specialized procurement agents and centralized distribution as traditional wholesale markets cannot assure the required quality and the transaction costs are too high as there are too many actors handling the product, with each taking their own profit margins. Reardon et al. (2003) reinforce the importance of centralized distribution in the expansion process and note that commonly, distribution centers are first adopted for shelf-stable goods and then later for fresh produce. It is clear that in Europe and North America almost all retail chains have adopted centralized distribution of produce. They also reiterate the importance of specialized wholesalers as they “cut transaction and search costs, and enforce private standards and contracts on behalf of the supermarkets” (Reardon et al., 2003, p.1145). This is important, as the modern wholesalers interviewed in the GTA all expressed that the standards that they utilized for purchasing were those developed by their customers, the retail chains, and most commonly were those developed by the market leading retailer, in this case Loblaw's. Interestingly, Reardon et al. (2003) note that in many areas where supermarkets are still expanding, such as Central America, Africa and Asia, the modern wholesalers who are providing produce for the expanding retail chains are also exporters working directly with retailers elsewhere in the world, such as Europe and North America.

This has also meant that the produce standards between these companies and regions have converged, as a wholesaler exporting product to retail chains abroad and also providing product to local retail chains will prefer to apply the same standards and procedures to product

going to both markets, in order to reduce their internal costs. This can also be applied to Ontario producers as standards for ECV's in Ontario will be very similar and likely equivalent to those in other markets, meaning that the product that meets the requirement for sale via local retailers would also meet the requirements for potential export to other markets and some modern wholesalers may also be capable of acting as exporters. This is not the case currently with any wholesalers interviewed in the GTA, who all work as importers and wholesalers exclusively. Reardon et al. (2003) go on to describe the increasing prevalence of contracts for produce suppliers which traditionally have been free of contracts; it was found that in the GTA buyers are not currently looking to establish contracts for ECV's, at least with Ontario producers. There may be existing contracts in some cases with more established producers in Mexico or Nicaragua, as they are still working to establish more consistent quality supplies, so the relational value chain model is still dominant. Reardon et al. (2003) conclude with a reference to capacity development stating that development strategy needs to recognize the importance of supermarkets in produce marketing and that these changes in the value chain will impact farmers. Though Reardon et al. (2003) are applying this statement to development agencies working with small holder farms in developing nations, it would also apply to public policy in Ontario.

5.7 Power and Influence in the ECV Value Chain

Gibbon (2003) builds on the work done by Dolan and Humphrey (2000) and digs deeper into the concepts of buyer-driven value chains established by Gereffi et al, stating that retailers use their power within buyer-driven value chains to not only source products but also to “reshape their own portfolios of functional activities” (2003, p.616). He explains that retailers commonly seek to externalize management requirements onto their value chain. Gibbon (2003) lists six

functions that are commonly externalized: sales data analysis, demand forecasting, and procurement by category rather than product, management of inventory, quality assurance and new product development. In the GTA, it was found that many of these could be seen within the produce value chain with some having greater impact on ECV's and others to a lesser degree implemented on ECV's.

5.7.1 Externalized Capabilities and Responsibilities

Two functions that have been externalized into the ECV value chain are inventory management and quality assurance; these have been almost entirely off-loaded onto producers. Retailers do spot checks of quality assurance but require producers to do the primary quality assurance; retailers are now also holding the most limited volume of inventory possible. The task of inventory management has shifted to the producers, although it is not in the form of traditional inventory but just-in-time production management. Buyers are submitting orders to producers for two to three deliveries of produce per week and they are expecting that each subsequent delivery is picked specifically for that shipment. Therefore, the inventory being managed is of plants growing in the field, not picked and packed product sitting in a storage facility. Two capabilities that have not been externalized by the retail buyers interviewed were analysis of sales data and forecasting of demand. These functions continue to be completed in-house by the retailers who have access to the greatest quantity and detail of data. However, this process is to some extent collaborative with the growers or other members of the value chain but primarily controlled by the retailer. The remaining two functions are less clear; these two functions are category procurement and new product development. In some cases they have been externalized to some extent, in others they remain in-house. Category procurement of ECV's in the GTA is very limited as the category is expanding rapidly and there are significant limitations on the availability of high quality suppliers. Therefore, as there is little choice for suppliers of the high

quality ECV's that retailers seek, they would prefer to work directly with each of those suppliers than work through one wholesaler and risk receiving lower quality ECV's as a result.

5.7.2 ECV's and New Product Development

In essence ECV's are themselves new products being developed for the market, therefore product development within ECV's is limited. There is a mixture of innovation and development of new ECV's and ECV products from retailers and modern wholesalers. This does not appear to be intentional off-loading by the retailers but a proactive attempt by wholesalers to get ahead. Gibbon (2003, p.616) goes on to explain, "those actors who can move into roles embracing some of the functions that lead firms seek to offload, and/or otherwise provide these firms with greater flexibility, can attain significant levels of upgrading."

When this perspective is applied to ECV growers in Ontario, it is clear that they must fulfill at least the same degree of off-loading that existing value chain partners and growers in other regions have achieved, which is to say that quality assurance and the logistics of managing consistent delivery of products to centralized distribution are required in order to compete. Additional advantages would be available to Ontario growers who could specialize in the production of several different ECV's, as well as to those who could develop production systems for new ECV's for which there is a demand in the GTA.

It is most likely that in order for a producer to be able to reach these additional objectives they would most likely be of the same ethnicity as the ECV's they are producing, as they would have the greatest understanding of the quality requirements, production systems and demand for those crops within their culture. From this perspective, many of the local alternative growers of ECV's interviewed fit this description and with support could develop into professional ECV producers capable of supplying retailers. Ontario's traditional vegetable growers are likely able

to meet the quality and logistical requirements of supplying retailers as they commonly have experience in these aspects of the produce value chain from other crops that they could apply to ECV's. They are less likely to be able to address the requirements of developing new crops and a relatively large variety of crops, as they may not have the experience with these crops and ethnicities that would be beneficial. Gibbon (2003) also reiterates the role of supermarkets in the direct monitoring of producers, which is a characteristic of relational value chain structure and was observed with local alternative growers who were attempting to supply retailers at an exploratory level and who were inspected directly by the retailers. All producers interviewed at a commercial scale were working with third-party, food safety verification schemes as opposed to direct monitoring by the retailer. This is the preferred verification method as the producer can provide verification to a number of different buyers with one verification process as opposed to individual oversight by each buyer.

5.8 The Third Food Regime and ECV Value Chains

Taking a broader look at the food system than the direct value chain structure, we come to the concepts of Food Regime Theory. McMichael (2009) describes the evolution of food regimes and introduces the potential of a 3rd food regime, and Burch and Lawrence (2009) go further to describe the third food regime in more detail. McMichael (2009, p.149) quotes LeHeron 1993 as stating “the global fresh fruit and vegetable industry is perhaps the harbinger of a third food regime. In this investment nexus, transnational organizations have been prominent from the beginning...” From the evidence shown in the value chain structures and the dominance of major retailers in the food systems which have developed since 1993, it is clear that the third food regime is now established in contrast to Friedmann's concerns in 2009 that “we have not seen the full scale (hegemonic) establishment of a food regime, with ‘implicit rules’ (framed by

social forces) imprinted in the production and consumption of traded foods” (McMicheal, 2009, p.148).

It is now evident that the nearly global dominance of branded retail supermarkets in the food retail sector is full scale; within the GTA the dominance of national and regional supermarket chains is significant. Whether the food regime is hegemonic, meaning socially and politically dominant, is more difficult to determine as corporations are not directly politically active. They are politically and socially influential, with corporate lobbying being a major influence on public policy in Canada and the United States. Their economic influence over the value chain also provides them with a degree of social and political influence over the actors in the value chain, which indirectly influences the political system. For example, a farmer whose produce is purchased exclusively by one large chain supermarket is more likely to socially and politically support the success of that supermarket in order to protect their own livelihood. Dominant supermarkets also exert political and social influence over their customers, as many consumers have very limited interaction with raw unprocessed food outside the grocery store. They may have limited interaction with food production through a garden, a farmers’ market or *pick your own* for a limited selection of produce but the vast majority of their interactions with food are mediated by corporations, either grocery stores including ethnic retail stores or various forms of food service companies. The choices made by these corporations act as a selection bias for their entire customer base. When retailers determined that they could improve profit margins and become more competitive by importing off-season produce from other climates, they changed the expectations of consumers socially and politically. It became socially acceptable to eat strawberries in January in Ontario. In fact it became socially acceptable for consumers to

expect grocery stores to stock fresh strawberries in January in Ontario. These decisions made by corporations have indirect hegemonic impacts throughout the political and social spectrum.

I would argue that there are also implicit rules developed by the retailers that are applicable to ECV's, including the private standards and quality characteristics being based almost solely on visual appeal as opposed to nutritional value and flavour. The impact of corporate control over the food retailing sector and the resulting market power held by these relatively few firms result in their hegemonic influence on global food systems.

5.9 Limitations

There were several limitations observed of the methodology described in Chapter three and as executed in the completion of this thesis. They are described and discussed below.

5.9.1 Quantitative Methods Limitations

An assessment of the availability of a product on the wholesale market could be improved with a higher frequency of observations than one observation per week, as fresh produce is commonly received by wholesale firms 2-4 times per week. In order to address this issue the observation day was not fixed to a specific day but rotated amongst the days of the week on which the wholesale market was open with greater prevalence given to the most active days of the week. Observation time was also selected to be during the peak period of activity at the market, as it would be expected that the largest selection would be available at the market during its peak period of activity.

The market observation methodology used does not capture product that is not displayed on the sales floors of the OFT or product that does not pass through the OFT. These limitations are due to the limitations on time and knowledge of the wholesale market; time did not allow for each vendor that did not have the products displayed to be asked if they had any that were not on

display. This act of asking for a product that was not displayed could have a negative impact on the results of the study as vendors could become less willing to work with the researcher in the future, as they may feel that on a previous observation their time was wasted by the researcher. Secondly, the act of asking every vendor at the market for a specific product may have a positive impact on the likelihood of a vendor to carry that product and therefore skew the results. Finally, it would be impossible to sample every supply of a produce item entering the city for sale as there are many small-scale producers and many small wholesalers in the city and no mandatory centralized recording of these transactions exists in Ontario. The OFT was chosen as a subset of the market that could be systematically sampled, and due to its large number of participants represents a significant presence in the GTA produce market.

The market observation methodology used does not capture the total volume of product marketed as, based on the previous limitations, the OFT market could not be sampled on a short enough time scale to capture all of the product passing through the OFT. This would only represent a subset of the volume being traded in the city and therefore would be of limited use. The market observation methodology was developed in order to gain an understanding of the relative characteristics of the various supplies of ECV's available for comparison amongst supplies and over time, not to collect absolute values or attributes.

The use of photographic post-observation analysis for collecting measurements of size and qualities such as colour is less accurate than other in-situ tests or measurements of these characteristics. The use of this technique was chosen to reduce the time and cost of sampling the observations; other methods would have required purchasing large amounts of produce for lab analysis which would have severely limited the number of observations that could be collected.

Instead, the chosen observation method was developed to provide relative comparative data amongst the samples rather than absolute values for comparison to other data sets.

Similar to the previous limitation, only the top layer of produce in the case was photographed and only one case per observation was analysed. Whenever possible a case that had not been opened or modified by the seller was chosen for analysis; therefore it was expected that the cases being packed would each be treated equally by the supplier and that no preference would be given to the produce packed on top of the case versus elsewhere in the case. Therefore, the photographs should provide a representative sample of the lot supplied by the producer.

The final limitation of the quantitative methods is that only one coder was used to develop the quality grades from the photographs of the produce; multiple different coders could have been used in order to increase inter-coder reliability and to ensure that coder bias was minimalized. Many of the observations of quality included in the quality scales as coded were learned by the researcher during the market observation and interview process. This knowledge of ECV quality and specifications would be difficult to pass on to an external coder who had not gone through the observation and interview process.

5.9.2 Qualitative Methods Limitations

The most significant limitation to the qualitative interview methodology was the limited number of interviews that were completed; many of the participants in the value chain that were contacted to participate in the interviews did not reply to requests for interviews. Those participants who were willing to participate required multiple attempts and in some cases multiple meetings with the researcher in order to develop a rapport and understand the objectives of the research before they were willing to participate in the research. The interviews were scheduled to be completed during the market observation period in order for the observations

from both methods to be related to the same market conditions. The interview period was extended beyond the market observation period to complete interviews for which contacts had been made and respondents were willing to participate.

As with the quantitative data, only one coder was used to code the interview transcripts based on the coding scheme developed. This could have been improved by having external coders code the transcripts based on the same coding scheme.

5.10 Summary of Discussion

The application of value chain structure and governance theory to the trade of ECV's in the GTA reveals the roll that decisions made by key members of the value chain can impact the entire value chain. The role of various firms in the chain can explain many of the purchasing and marketing decisions made by these firms and can provide great insight into the future of the ECV market in the GTA.

Chapter 6 Conclusions

The following chapter brings forth the most significant findings of the research conducted and outlines the contributions made to the understanding of ECV marketing and production in Ontario. It begins with a consolidation of the findings pertaining to the structure of the ECV value chain in Ontario and continues with findings related to product specifications and the current state of Ontario production of the studied ECV's. The chapter concludes by revisiting the research objectives and goal of this thesis with brief commentary as to the results of each objective and progress made towards the goal.

6.1 Market Structure

This research has found that the marketing of ethno-cultural vegetables in the Greater Toronto Area is completed via a mixture of traditional wholesalers and modern produce distributors working within a series of relational, market and hybrid value chain structures. The greatest potential for growth and development was found to be within the relational value chains that exist and the development of further chains.

6.1.1 Traditional Wholesalers

There are several traditional wholesalers who continue to operate in the GTA and purchase ECV's for resale. Their businesses are characterized by their level of complexity, with products being purchased for delivery to their warehouses and then sold to customers on a day-to-day basis. These businesses may offer limited additional operations such as repacking, transportation, and product development, but focus their primary attention on volume sales of products that can be sold with little to no handling requirements. These businesses function primarily within a market-based value chain structure where price is the primary determining factor in purchasing decisions. These companies service primarily small independent retailers

and small local distributors who sell to individual restaurants and corner markets. These firms are the least likely to invest in the development of a local value chain of ECV's.

6.1.2 Modern Wholesalers

Several produce wholesalers in the GTA have taken on more additional capabilities, investing in distribution centers, repacking and grading facilities, logistics, transportation and product development. These companies receive a greater percentage of purchases from larger retail chains, and food service providers but commonly continue to market their products at the food terminal to small independent businesses as well. Their additional capabilities allow them to access markets that they would not otherwise access directly. These firms operate within a primarily relational-network structure value chain especially when purchasing Chinese long eggplant with potentially hybrid type market structure when sourcing okra. Competition between these companies is high with branding and marketing being used extensively. This competition provides an opportunity for local producers to supply a quality product and receive support in the form of a relational value chain.

6.1.3 Direct Purchasing by Retailers

The large retail chains also commonly purchase ECV's directly from larger foreign producers or exporters and at times local producers as well. The chains have all of the capability of the modern wholesalers within their organizations and are capable of receiving the product at their distribution centers but have very limited flexibility as to their purchasing requirements once established, as they must supply the large chains of stores with the uniform product in order to maintain brand image and trust. Retail produce buyers operate in the same types of value chain structures as the wholesalers within the GTA, with the potential for market development coming in the form of a relational value chain structure.

6.1.4 Transforming Supply Chains into Value Chains

The transactions associated with traditional wholesalers and traditional vegetable producers are most characteristic of supply chains, where actors work independently producing and delivering products without the addition of value along the chain. The majority of ECV transactions in the GTA were found to be part of value chains as opposed to supply chains, where each actor in the chain introduces new value to the product in some way. This was observed in several high quality ECV value chains in Ontario, including those value chains that included the professional ECV producers and their partners. This was also observed in the relational value chain structure of the Dominican Republic-grown Chinese long eggplant and Nicaraguan-grown okra. However the market structure of the USA-grown okra would be more characteristic of a supply chain. A continued evolution of ECV supply chains between Ontario producers and consumers into robust value chains would support the overall development of ECV production in the province.

6.2 Product Requirements

It has been found that, in order for locally produced ethno-cultural vegetables to receive competitive prices within the GTA market, they must meet all quality requirements set by large retail chain buyers. This research has determined the key quality characteristics required by retail buyers for Chinese long eggplant and okra.

6.2.1 Chinese Long Eggplant Quality Requirements

Market preference for Chinese long eggplant is for eggplants with a diameter of 40-60 mm and a length of 20 to 28 cm of a uniform shape, with deep purple colour bright green calyx, free of scarring, smooth slightly shiny firm skin and a nearly straight shape. They should be packed in volume filled bushel boxes of 30-35lbs; boxes should be waxed fiberboard with a

polyethylene liner, labeled with the country of origin, product name, weight, supplier and grade. Additional labels of food safety standards are beneficial. The product needs to be clean, fresh and arrive undamaged. The product should be stored at between 9 and 12 degrees Celsius and transported at 10 degrees Celsius, chilling damage occurs at 5 degrees Celsius, with 90-95% humidity. These requirements have various degrees of freedom, with some being more easily adjusted than others in order to maintain a consistent supply. Various actors in the chain have varying requirements for food safety and traceability, with retailers having the highest and most specific requirements, modern wholesalers requiring some form of certification and traditional wholesalers having the lowest requirements.

6.2.2 Okra Quality Requirements

For okra, food safety and traceability requirements are the same as with Chinese long eggplant with retailers having the strictest requirements. For product specification, firstly, okra pods are to be 6 -12 centimeters in length and 12-24 mm in width. Okra pods should be bright green, free of scaring, dirt and insect damage. The highest demand is for okra with 5 or 6 ribs although more is also acceptable for some buyers. Pods should be straight and firm; the tip should snap cleanly if pressed with the thumb and should not bend. Okra should be stored at 6 to 10 degrees Celsius and a humidity of 90-95% chilling damage occurs at 5 degrees Celsius. Okra should be volume packed in half bushel containers weighing 15 lbs, these containers may be wood, plastic board or fiberboard, and all box types require ventilation holes. Containers should be labeled with the country of origin, product name, weight, supplier and grade, additional labels of food safety standards are beneficial.

6.3 Current state of Ontario-Grown Ethno-cultural Vegetables

There were three distinct types of producers of ECVs in Ontario over the study period. The first group, professional ECV producers, can be characterized as those producers for which ECVs are their primary focus within their production system and who grow at a commercial scale with the potential to supply retail chain stores. The second group, traditional vegetable producers, consists of producers who grow other vegetables, such as tomatoes, peppers, cucumbers and other more traditional varieties of eggplants at a commercial scale, and experiment with ethno-cultural vegetables as a secondary crop. The third group of producers, local alternative growers, are those who grow a large variety of crops in small volumes, commonly on less than 10 acres of land for the local market and who practice almost entirely direct to consumer marketing practices.

The research found that the ECV quality produced by traditional vegetable producers during the study period did not meet the requirements listed above and therefore did not achieve competitive prices on the market. This may have led to producers being discouraged by these crops as they were not able to make a profitable margin on these crops. The quality of the produce grown by the traditional vegetable growers commonly did not meet the expectations of the market. The most common issues with these crops were product that was too large and mature, product that had not been properly graded for consistent size, and product that was not the desired colour or shape. At times eggplants with similar shapes and or colours to Chinese long eggplant and Indian round eggplant were marketed at the OFT farmers market despite not being the appropriate colour or shape for these ECV eggplants. This shows the lack of understanding and knowledge of these crops, amongst traditional vegetable producers.

All of the Ontario-grown produce appeared to be fresh and most samples were free from scars, dirt and decay. The highest quality produce was found to be produced by the local

alternative growers who commonly had more experience with growing and marketing ECV's than the traditional vegetable producers. All of the Ontario producers had sub-standard packaging scores for their ECV's, although there was a difference between the professional ECV producers who had the closest packaging to the written standards and whose packaging allowed them to access traditional wholesalers and the majority of modern wholesalers at least on a trial basis. The remaining Ontario producers had wide range of packaging methods from wooden bushel baskets to a variety of unmarked cardboard flats and boxes; these packaging types had little to no labeling and were commonly not the equivalent size of the market standard.

During the study period, only a very small number of professional ECV producers were identified that produced Chinese long eggplant or okra. One significant producer of Chinese long eggplant represented a significant portion of the Chinese long eggplant market samples; he was also interviewed. Several of the wholesalers interviewed also purchased product from this supplier. It was noted that several other types of ECV's that are more established in the GTA market, specifically Asian greens and Indian red carrot, have a greater number of professional producers growing specifically those ethnic crops. These other professional ECV producers did not express any interest in producing eggplants or okra as they have established production and market for their other crops. They are not looking for new crops or further diversification as they commonly produce a wide range of Asian greens and traditional greens or ethnic root crops and traditional root crops.

There appears to be opportunity for more professional ECV producers in the province as it has been shown that they are capable of producing a high quality product that is competitive on quality and price with imports, and fresher due to the shorter transport distance. With some

further investment in appropriate packaging and post-harvest handling there is potential to compete directly with imports.

Where will new professional ECV producers come from? Local alternative ECV growers have the potential to scale up their operations and begin production on a professional level, which may require support from government. There is also the potential for traditional vegetable producers to shift their production into ECV's. This would require a significant investment from these producers to learn about these crops and commit to the production of a high quality product. The current trend of secondary production of these crops, where they do not receive the attention required in order to meet high quality standards, is leading to inferior quality product being sold on the market for a discounted price.

This trend of inferior quality product being dumped into the market at a discounted price is having ramifications throughout this relational value chain with some wholesalers developing a negative view of locally-produced ECV's due to this practice. These wholesalers are working to earn their customers trust and continued business by consistently providing them with high quality product at a fair market price. With discounted low-quality product being introduced into the market, the average price of the product is drawn down as well as causing the wholesalers sourcing imported high quality product to reduce their price and cut their profit margins. In okra, this can also be seen in the quantity and price of mid-grade quality American okra entering the market over the summer period, drawing down the price of the high quality Nicaraguan during this period and the price recovering during the off season when US okra is less abundant. It would appear to be possible for local okra to match or surpass the quality of Nicaraguan okra at a price much closer to the US okra during the production season, as approximately half of the

wholesale price of Nicaraguan okra is in the transport of the product which would be much lower or even negligible for local product.

For professional ECV producers, the relational nature of this value chain is also very important as they work to establish long-term relationships with buyers and develop the trust necessary in these networks, by consistently supplying the high quality product expected by the market and ensuring that there is continuous effort to increase the quality of the product, packaging and interactions. Ensuring that an active line of communication is maintained between producers and buyers is also a necessity in these relational transactions. These communication channels are important for planning the season prior to planting and during harvest season, as well as the distribution of information during the growing season about weather or other factors that may have an impact on the quantity or quality of product available for marketing in the short or long term. The buyers also have the opportunity to use this communication as an opportunity to express information about sales and demand for the product, as well as observations about the quality of the product from retailers and customers.

It was noted that some of the traditional vegetable producers are currently working within a market that is much more similar to a simple market structure with limited communication between buyers and sellers, limited influence from long-term relationships and a greater focus on product specifications and prices. For those producers who are established in a market similar to this, it would appear that it would be more difficult for them to enter the ECV market in the GTA as the crops are not as readily traded through that type of market. Without the support of a relational value chain it would be difficult for these producers to meet even the lower quality standards of USA-grown okra and compete on price alone where Canadian farms have an inherent disadvantage due to climate and labour costs.

This research has shown that there is potential for the development of more locally produced ECV's within the province. The analysis of the ECV marketing and value chain structure has presented only one significant barrier to entry for local producers looking to supply the wholesale market, which is proper harvest and post-harvest procedures. Aside from this major finding, there are no restrictions specific to ECV sales that were noted. Individual producers may be limited by access to land, access to labour or a lack of knowledge of these crops, but there do not appear to be any structural limitations within the value chain limiting the ability of Ontario producers to access the ECV market.

6.4 Research Objectives Revisited

In order to achieve the research goal, the following section outlines the conclusions of each of these research objectives.

6.4.1 Assess the wholesale availability of okra, Chinese long eggplant and Indian round eggplant at the Ontario Food Terminal wholesale market.

Okra and Chinese long eggplant were found to be commonly available at the Ontario Food Terminal from multiple unique supplies. Indian round eggplant was found to be available on a regular basis but only from one consistent supply; further research into the supply of Indian round eggplant into the GTA is required to better understand its current state of supply.

6.4.2 Assess the quality and market characteristics of the imported and local supplies of okra, Chinese long eggplant and Indian round eggplant observed at the Ontario Food Terminal

Quality scores were successfully developed for all observed samples of ECV's and analysis was complete for each country of origin for okra and Chinese long eggplant in order to assess the general quality characteristics of each type of supply. Limited observed samples of Indian round eggplant did not allow for this analysis to be completed.

6.4.3 Investigate the inter-firm relationships among wholesale firms, retailers and producers in order to develop an understanding of the value chain structure of ECV's in the GTA.

The inter-firm relationships amongst ECV value chain participants were investigated, allowing for the descriptions of the unique value chains present amongst the observed products and various countries of origin.

6.4.4 Investigate potential ways to increase the marketability of locally produced okra, Chinese long eggplant and Indian round eggplant.

There are several potential ways of increasing marketability of locally-produced ECV's. The most promising of these potential solutions is the investment into post-harvest handling procedures amongst Ontario ECV producers and the potential support of small scale alternative ECV growers to expand their production to wholesale viable quantities.

6.4.5 Determine the role that private product specifications play in the marketing of ethno-cultural vegetables in the GTA.

The role of private product specifications in the marketing of ECV's in the GTA was found to be of central importance, as decision making amongst the majority of wholesale produce buyers is based primarily on meeting these private standards of quality.

6.5 Research Goal Revisited

The research goal as stated was to better understand the current state of supply of okra, Chinese long eggplant and Indian round eggplant in the Greater Toronto Area, and investigate the potential to increase large-scale local production of these crops and, in turn improve the availability of high-quality fresh culturally-appropriate foods in the GTA. The preceding chapters contribute to improving the understanding of the supply of ECV's in the GTA, specifically okra and Chinese long eggplants, as well as exploring avenues for future research and investment into increasing local production of ECV's. These results have the potential to

positively influence the local production of ECV's at a wholesale level in Ontario and therefore improve the availability of high quality ECV's in the GTA.

Chapter 7 Recommendations

7.1 For Ontario Vegetable Producers

Local vegetable growers need to commit to the production of ECV's experimentation. Small areas of ECV's has resulted in the production of low-quality product that does not meet market requirements and therefore is not profitable. Producers who make ECV production a priority are more likely to ensure that the produce they send to market is of the highest quality and will therefore sell for a competitive price and be profitable.

Producers who have committed a greater percentage of their production to ECV's also need to invest in proper post-harvest handling procedures in order to ensure that the quality they are producing in the field can be transferred to the supermarket shelves in the GTA.

7.2 For Wholesalers

Wholesalers looking to increase the local production of high quality ECV's need to provide feedback to local producers about their products, including both positive and negative attributes of the produce, grading, shelf-life, packaging and labeling of the product as well as their customers' reactions to the producers of ECV's.

Wholesalers should continue to purchase the best locally-available ECV's produced to encourage the expansion of those producers and show that there is a viable market for the ECV's in the GTA.

7.3 For Retailers

Retailers looking to buy locally-produced ECV's need to act as a knowledge source for local producers in order to help the producers develop proper harvest and post-harvest handling procedures, and deliver the high-quality produce expected by the retailers.

Retailers need to continue to provide feedback to producers about the quality of produce they receive and start to help diagnose and resolve issues that may be causing quality issues with the product.

Retailers need to make their quality specifications for ECV's known to local producers and express their willingness to adjust those specifications as needed for local conditions.

7.4 For Ontario Food Terminal

The Ontario Food Terminal staff and regulations need to encourage and support local producers selling in the farmers' market to provide proper labeling of all their products to ensure product traceability.

An effort should be made to help small local producers to bring their products to market in packaging that meets industry specifications; the use of bushel baskets by some producers is potentially limiting their ability to sell produce to some buyers.

The Ontario Food Terminal should continue to allow researchers to access the market environment and gather research data. If the terminal does not already collect data on the volumes of individual produce items being brought into the market on a daily basis, this data could be collected and made available to researchers.

The Ontario Food Terminal is uniquely positioned as a meeting place between the whole produce market and local producers. It could act as an educational hub for producers looking to expand into the wholesale market, providing guidance about product specifications and providing opportunities for wholesale produce buyers to meet with local producers.

The Ontario Food Terminal should host a winter meeting of ECV producers and wholesale ECV buyers to encourage the start of planning discussions prior to the start of the

production season in order to encourage partnerships and planning between producers and buyers.

7.5 For Government

Small-scale local, alternative growers focusing on the production of ECV's need the support of government institutions, including Farm Credit Canada, to expand their productive capabilities and increase their ECV production to a viable wholesale scale.

The Ontario government should continue to invest in extension services pertaining to the production and post-harvest handling of ECV's for all scales of vegetable producers in the province.

The Ontario government should invest in research and development pertaining to post harvest handling procedures in ECV's in order to develop cost effective processes to be implemented by farmers.

7.6 For Further Research at the University Level

The role of ethnicity in the ECV wholesale value chain could be studied from a food justice perspective, including the cultural ties of the individuals involved in different scales of distribution networks as well as the impact of food deserts in the availability of ECV's in various areas of the GTA.

The interaction between major wholesale food hubs, particularly Toronto and Miami, and the impact of Miami wholesale firms on the ECV value chain structures and ECV availability in Toronto should be better studied.

The potential for Ontario ECV producers to export product to markets outside Ontario, including Quebec, the Canadian Prairie Provinces and the north eastern United states, should be investigated.

7.7 For Further Research at the Public Private Partnership Level

The World Crops project at Vineland Research and Innovation Center should be continued in order to provide evidence-based information to local producers about agronomic ECV production issues, post-harvest-handling best practices for ECV's and economic viability information such as locally-developed cost of production figures and local ECV wholesale prices and demand figures.

Vineland Research and Innovation Center should continue their extension work providing a single point of contact for producers interested in information about ECV's.

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Appendix A Key Informant Producer Interview Outline

An Investigation of the Market Supply Chain of Okra and Eggplant in the Greater Toronto Area.

Key Informant Producer Interview Outline

Verification of Consent Process

Consent to interview:	Received	Denied
Consent to digital audio recording:	Received	Denied
Consent to collecting photographs:	Received	Denied
Media Release if include people:	Received	Denied

Introduction/Operations:

How are you involved in the production of okra and/or asian eggplants in Ontario?

Can you describe some of the history of your company?

When did it start?

How many employees do you currently employ?

How big is your operation in terms of locations and sales volume?

What other types of products do you handle/sell/produce?

What other functions does your company include?

Greenhouse/Processing/Transportation/Wholesale/Warehousing/Other?

If you wholesale, are you also involved with imported produce?

Production:

Who are your seed suppliers and what was the process of this selection? Is there one supplier that you make more business with and why?

What challenges/barriers do you come across when growing ethnic vegetables?

Where do you go to find information about producing ethnic vegetables?

What is the biggest limiting factor in your production of okra/asian eggplants?

How do you determine the quantity of okra and eggplant to produce?

What are the advantages of growing okra/Asian eggplants?

How often do you harvest okra and eggplant, typically?

Who is responsible for the production management decisions? Did this person grow ethnic crops before? Were there any challenges for this person to get used to this new type of production?

Do you have an idea of your cost of production? How do you calculate it? Were you a participant in the study completed by Ahmed Bilal and Saneliso Mhlanga earlier this year on production costs? Would you like to be part of it? (if Yes, I will ask Sane to get in touch with you)

Handling:

How do you handle the crop at harvest and after harvest? What conditions are these vegetables stored in? Temperature? Humidity? Light level? Airflow?

What other types of specialty vegetables do you handle/sell?

How does handling okra and eggplants differ from these other produce? Any advantages/disadvantages?

Sales:

How do you sell your Okra or Eggplant? By the case, skid, container?

How do you market your Okra or Eggplant compared to other produce you have in your portfolio?

What type and size of businesses do you sell your okra and eggplants to?

Distributors?

Restaurants?

Food Service?

Retailers?

Processors?

How do you set your price for okra and eggplants?

What requirements do your clients have for the product they buy from you in terms of packaging, certifications, quality standards, price?

Are these requirements easy to meet? If not which is the most challenging?

How do you manage competition with other producers in the ethnic vegetable market?

Future Perspective:

Is there anything else that you would like to share about the marketing of okra and eggplant in Ontario?

Is there anyone you recommend I should talk to for my research? Would you mind connecting me with your suppliers or customers?

Are you aware of the research being completed at Vineland Research and Innovation Centre on okra, Asian eggplants and other world crops?

Is there anything that you would like to ask me about the research that is being completed?

Would you be interested in participating in a small group discussion on the future of marketing Ontario okra and eggplants?

Would you be interested in receiving updates on the results of the research when they are available?

Appendix B Key Informant Wholesaler Interview Outline

An Investigation of the Market Supply Chain of Okra and Eggplant in the Greater Toronto Area.

Key Informant Wholesaler Interview Outline

Verification of Consent Process

Consent to interview:	Received	Denied
Consent to digital audio recording:	Received	Denied
Consent to collecting photographs:	Received	Denied
Media Release if include people:	Received	Denied

Introduction/Operations:

How are you involved in the distribution or marketing of okra and/or asian eggplants in Ontario?

Do you handle imported and locally produced product or only one of these categories?

Can you describe some of the history of your company?

When did it start?

How many employees do you currently employ?

How big is your operation in terms of locations and sales volume?

What other types of products do you handle/sell/produce?

What other functions does your company include?

Greenhouse/Processing/Transportation/Wholesale/Warehousing/Other?

Purchasing:

Who are your suppliers and what was the process of this selection? Is there one supplier that you make more business with and why?

What challenges/barriers do you come across when sourcing ethnic vegetables?

If you purchase imported okra/eggplants where are your primary suppliers located?

What is the biggest limiting factor in the supply of imported okra/eggplants?

What is the biggest limiting factor in the supply of locally produced okra/asian eggplants?

How do you determine the quantity of okra and eggplant to purchase?

Do you have any specifications for your suppliers for them to sell you okra or eggplants? How did you establish them?

What are the advantages in sourcing imported okra/Asian eggplants?

What are the advantages in sourcing locally produced okra/Asian eggplants?

How often do you purchase okra and eggplant, typically? How large a quantity?

Who is responsible for the procurement? Did this person work with ethnic crops before? Were there any challenges for this person to get into this new category of produce?

What is your process to establish pricing?

Handling:

What conditions are these vegetables stored in? Temperature? Humidity? Light level? Airflow?

What other types of specialty vegetables do you handle/sell?

How does handling okra and eggplants differ to these other produce? Any advantages/disadvantages?

Sales:

How do you sell your Okra or Eggplant? By the case, skid, container?

How do you market your Okra or Eggplant compared to other produce you have in your portfolio?

What type and size of businesses do you sell your okra and eggplants to?

Distributors?

Restaurants?

Food Service?

Retailers?

Processors?

What requirements do your clients have for the product they buy from you in terms of packaging, certifications, quality standards, price?

Are these requirements easy to meet? If not which is the most challenging?

How do you manage competition with other distributors in the ethnic vegetable market?

Future Perspective:

Is there anything else that you would like to share about the marketing of okra and eggplant in Ontario?

Are you aware of the research being completed at Vineland Research and Innovation Centre on okra, Asian eggplants and other world crops?

Is there anything that you would like to ask me about the research that is being completed?

Would you be interested in participating in a small group discussion on the future of marketing Ontario okra and eggplants?

Would you be interested in receiving updates on the results of the research when they are available?

Appendix C Key Informant Retailer Interview Outline

An Investigation of the Market Supply Chain of Okra and Eggplant in the Greater Toronto Area.

Key Informant Retailer Interview Outline

Verification of Consent Process

Consent to interview:	Received	Denied
Consent to digital audio recording:	Received	Denied
Consent to collecting photographs:	Received	Denied
Media Release if include people:	Received	Denied

Introduction/Operations:

How are you involved in the distribution or marketing of okra and/or asian eggplants in Ontario?

Do you handle imported and locally produced product or only one of these categories?

Can you describe some of the history of your company?

When did it start?

How many employees do you currently employ?

How big is your operation in terms of locations and sales volume?

What other types of produce do you handle/sell/produce?

What other functions does your company include?

Greenhouse/Processing/Transportation/Wholesale/Warehousing/Other?

Purchasing:

Who are your suppliers and what was the process of this selection? Is there one supplier that you make more business with and why?

What challenges/barriers do you come across when sourcing ethnic vegetables?

If you purchase imported okra/eggplants where are your primary suppliers located?

What is the biggest limiting factor in the supply of imported okra/eggplants?

What is the biggest limiting factor in the supply of locally produced okra/asian eggplants?

How do you determine the quantity of okra and eggplant to produce or purchase?

Do you have any specifications for your suppliers for them to sell you okra or eggplants? How did you establish them?

What are the advantages in sourcing imported okra/Asian eggplants?

What are the advantages in sourcing locally produced okra/Asian eggplants?

How often do you purchase okra and eggplant, typically?

Who is responsible for the procurement? Did this person work with ethnic crops before? Were there any challenges for this person to get into this new category of produce?

What is your process to establish pricing?

Handling:

What conditions are these vegetables stored in? Temperature? Humidity? Light level? Airflow?

What other types of specialty vegetables do you handle/sell?

How does handling okra and eggplants differ from these other produce? Any advantages/disadvantages?

Sales:

How do you sell your Okra or Eggplant? Packaged, loose, by the case?

What do you know about the consumers you sell your okra and eggplants to?

Age?

Ethnicity?

Gender?

Income level?

Others?

What expectations do your clients have for the product they buy from you in terms of packaging, certifications, quality standards, price?

How do you manage competition with other retailers in the ethnic vegetable market?

Future Perspective:

Is there anything else that you would like to share about the marketing of okra and eggplant in Ontario?

Is there anyone you recommend I should talk to for my research? Would you mind connecting me with your suppliers or customers?

Are you aware of the research being completed at Vineland Research and Innovation Centre on okra, Asian eggplants and other world crops?

Is there anything that you would like to ask me about the research that is being completed?

Would you be interested in participating in a small group discussion on the future of marketing Ontario okra and eggplants?

Would you be interested in receiving updates on the results of the research when they are available?