

**Group Preferences for Rural Amenities  
and Farmland Preservation  
in the Niagara Fruit Belt**

by

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A thesis  
presented to the University of Waterloo  
in fulfilment of the  
thesis requirement for the degree of  
Master of Arts  
in  
Geography

**Waterloo, Ontario, Canada, 2005**  
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## **Abstract**

During the production of agricultural commodities, an agricultural landscape is simultaneously being produced. In many regions, agriculture is no longer valued for just the production of food and fibre but also for the social, cultural and environmental amenities associated with the landscape. The paradigm of multifunctional agriculture has become concerned with the joint production of agricultural products and these rural amenities. The loss of agricultural land especially in areas around the urban-rural fringe has greatly affected the demand for these rural amenities. In response, governments and volunteer organizations have developed programs to preserve farmland. The Niagara Region is home to some of the best fruit growing land in Canada but has a long history of fighting to maintain its farmland. Drawing from the multifunctional paradigm, this study analyzes the preference for different rural amenities and farmland preservation in this unique region. Survey and interviews conducted with both the non-farm population and farmers indicated that demand exists for maintaining rural amenities and for farmland preservation. Consideration of these preferences will enhance the development of farmland preservation in the Niagara Fruit Belt.

## **Acknowledgements**

The development and completion of this thesis would not have been possible without the support and input of several individuals. First, I would like to thank my supervisor, Judie Cukier for providing me with guidance throughout the process. She patiently waited while I struggled with my research topic and devoted time to ensure that I completed my thesis.

I would also like to thank Brent Doberstein for reviewing the thesis and providing me with many helpful comments. In addition, I would like to thank my readers, Clare Mitchell and Peter Hall, for their time and interest.

Last of all, I would like to thank my wife, Brenda Prins, for having the patience to put up with me throughout the thesis writing process. I am thankful for the many hours she put into reviewing the thesis and giving me input. Completing the thesis would have been much more difficult without her support and interest.

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## **Chapter 1 – Introduction**

### **1.1 Introduction**

Agriculture holds immense value in our society because of the wide range of goods that it produces. Traditionally, the primary function of agriculture has been to provide humans with food produce and fibre. The rural economy depended on the ability of farmland to provide these products on a yearly basis. However, recent changes to the industry have challenged this conventional view of agriculture. The globalization of the agricultural economy, technological changes to agricultural production, changing expectations of an increasingly urban population, demographic changes to the rural population, and the changing expectations of farm employment are just some of the changes that have altered the view of the agricultural landscape (Durand and Van Huylenbroeck, 2003). The agricultural landscape is no longer regarded strictly as a productive space but also as a consumptive space.

What has emerged is a new conceptual paradigm referred to as multifunctional agriculture. Multifunctional agriculture is based on the premise that agriculture provides a wide range of functions including the production of market and non-market goods (Batie, 2003; Durand and Van Huylenbroeck, 2003). Demand for market goods extends beyond traditional goods to include recreational goods, unique localized goods (organic foods), and higher quality goods. Non-market goods provided by farmland include environmental services, maintenance of rural communities, urban growth management, and aesthetic services. As locations become increasingly urban, demand for these more specialized functions of agriculture land grows.

It is no surprise that as demand for agricultural functions has increased so has concern over the loss of farmland. Farmland loss can be attributed to a number of reasons but is usually blamed on ever-increasing urbanization. Growing cities have located suburbs, commercial areas, and industrial complexes on rural lands. Much of the loss of farmland has occurred in area that is commonly referred to as the urban-rural fringe (Friedberger, 2000; Sullivan, 1994). The growth of urbanization in the urban-rural fringe can be linked to a number of different causes including the change in housing preferences (larger lot size), increased automobile usage, and changing demographics (Bradshaw and Muller, 1998; Heimlich and Anderson, 2001; Sullivan et al., 2004). The loss of farmland has raised the level of concern among the public, farmers, and governments over the future of the agricultural landscape.

Farmland preservation methods have emerged as the concern over the loss of farmland has grown. The demand for farmland preservation paralleled the rise of the environmental movement in the 1960s and 1970s (Bunce, 1998; Lehman, 1995). However, it was not until the 1970s that real responses to farmland loss were developed in North America (Alterman, 1997). Governments posted studies regarding the loss of farmland and then were quickly pressured by public groups into developing methods to prevent future loss (Bunce, 1998; Fursueth and Pierce, 1982). Initially, the rationale for farmland preservation was based on protecting the productive function of agriculture land but now the rationale encompasses the full range of different functions.

Farmland preservation methods are a reflection of the changing preference for the multifunctional attributes of farmland. Governments of industrialized countries are concerned about the effects of farmland loss and have looked to farmland preservation as

way to slow the expansive growth of cities (Alterman, 1997). Regulatory methods contain strict guidelines that govern the farmland use while voluntary methods use various incentive tools to encourage land owners to preserve farmland. Some of the methods provide compensation to the landowners in exchange for their development rights to the land. The following types of methods have been used for protecting farmland:

- Agricultural conservation easements
- Agricultural districts
- Agricultural protection zoning
- Preferential or differential assessment of farmland
- Right-to-Farm
- Urban Growth Boundaries  
(Hellerstein et al., 2002)

The effectiveness of farmland preservation methods depends largely on regulatory approval and the support of the local communities.

It is well understood that different motivations exist for restricting urban development on farmland (Bunce, 1998; Kline and Wichelns, 1998). The motivations play an important role in the formation and the management of farmland preservation programs (Nickerson and Hellerstein, 2003). The motivations can generally be classified into the following categories:

- Orderly development (i.e. rural planning)
- Maintaining agricultural production
- Supporting the agricultural economy
- Protecting environmental services
- Providing rural amenities  
(Hellerstein et al., 2002)

Many of the above motivations are found in farmland preservation programs throughout North America. (Nickerson and Hellerstein, 2003).

The farm and the non-farm population have different expectations and preferences for the agricultural landscape. Logan and Molotoch (1987: 226) validate this when they write:

Real estate interests want to develop open lands and realize speculative values through an active real estate market. In this context, farmers and other established residents who hold land tend to want development so as to realize the exchange value of their property while newcomers, on the other hand, are often interested in farmland preservation to protect the rural way of life they sought in moving into the area in the first place.

Not only do group differences exist in the demand for farmland preservation but also in demand for certain landscape qualities. Additional challenges also complicate the face of the farmland preservation debate. The debate is complicated by the growing complexity of the economic systems, changing farm dynamics, and a reliance on off-farm income (Durand and Van Huylenbroeck, 2003). The growing sociological distance between consumers and agriculture also appears to be having a role. As consumers are demanding even more from farmland, a perception has emerged that there has become a larger gap between the urban and rural lifestyle (Schlöpfer and Hanley, 2003).

Much debate exists in farmland preservation research about the different preferences for the agricultural landscape. The diverse range of interests and goals that are expressed by the non-farm population, farmers, and government complicates the debate. Although farmland preservation has been on the agenda since the 1950s in the Niagara Region, farmland preservation strategies have been slow to develop. However, in 2005, legislation from the provincial government has provided direction on how to protect the land. Despite the emergence of this legislation, no real research reveals the preferences that the farm and non-farm population have for the agricultural landscape and farmland preservation. Understanding the preferences and concerns of these groups will

help to establish the need for preservation and help guide the direction of farmland preservation methods. The application of an effective farmland preservation strategy will prevent future farmland from being lost to competing uses.

The Niagara Region is a unique agricultural area in Canada that is able to produce tender fruit and grapes. The presence of the Niagara Escarpment, good quality soils, and unique climatic conditions make this an ideal place to grow specialized crops. Even though these crop types are considered unique to Ontario and Canada, the Region faces increasing pressure from urban land uses.

## **1.2 Research Goal**

The goal of the research is to identify the agricultural landscape preferences of both the farm and non-farm populations within four municipalities in the Niagara Region: the Town of Lincoln, the Town of the Niagara-on-the-Lake, the Town of Pelham, and City of St. Catharines. The stated preferences by these two groups would help determine if there is support for a permanent form of farmland preservation in these areas. The specific objectives are to:

- Identify the preferences placed on the tender fruit and grape landscape with a specific focus on the non-market goods supplied by farmland.
- Determine if the preferences placed on farmland translate into support for farmland preservation programs among government officials, farmers and the non-farm population of the Region.
- Determine if the goals and expectations of the non-farm population are consistent with the goals and expectations of the regional government, municipal governments, and farmers.
- To generate recommendations that will help guide the development of effective farmland preservation methods in the study area.

### **1.3 Research Methods**

To accomplish these research goals, surveys (N = 750) were delivered to households in four municipalities in the Region of Niagara (Town of Lincoln, Town of Pelham, Town of Niagara-on-the-Lake, and City of St. Catharines). Each of these municipalities contained a substantial amount of tender fruit and grape lands. Interviews (N = 11) were also used to strengthen the research material. Observation and literature were also used to formulate the research structure and provide the necessary background information to the study.

### **1.4 Structure of Thesis**

This thesis is divided into six chapters. A literature review is presented in Chapter Two and contains information from a body of literature on farmland loss and farmland preservation. The first part of the chapter contains information on farmland loss and its larger implications. This is followed by a brief history of farmland preservation along with the development of multifunctional agriculture. The last part of the chapter contains a review of group landscape preferences and how they apply to farmland preservation. Chapter Three presents the methodology used for the literature review, surveys and interviews. Chapter Four introduces and describes the study area. Chapter Five explores the results of the research findings. The results from the interview and surveys are presented in this chapter. The fifth chapter presents a discussion of the results and applies the results to existing research studies. Chapter Six, the final chapter presents the conclusions and a series of recommendation concerning farmland preservation and future research in the Niagara Region.

## **Chapter 2 - Literature Review**

### **2.1 Introduction**

Agriculture is an important industry to Canada that is facing a wide range of challenges on the national and regional scale. One of the challenges has been the loss of farmland. Farmland loss is a complex and widespread issue that has raised concern among the non-farm population, farmers, and government. Farmland loss is a slow process but often results in the permanent removal of farmland from production. Farmland preservation methods have been developed in response to the growing concern over farmland loss. Research on farmland preservation has evolved with the growing concern. Much of the research presented in this chapter will focus on how various groups value the agricultural landscape, especially in the face of farmland loss.

### **2.2 The Agricultural Landscape**

The value various groups place on farmland cannot be fully understood without looking at agriculture on the landscape scale. Typically, agriculture is defined by its productive capabilities rather than from a full landscape perspective. Olson (1999) suggests that looking at agriculture from a landscape perspective is not only appropriate but necessary. He writes, “The landscape is the scale at which the greatest number of factors coalesce, and at which the largest number of functions are influenced (Olson, 1999: 53). The agricultural landscape is a mix of components that interact on a variety of different levels and scales. The components of the landscape are not randomly distributed but are organized in identifiable patterns. Changes to the structure of the landscape affect the overall function of landscape and vice-versa. Thus, the landscape

view of agriculture is needed in order to fully understand how the agricultural landscape is being changed.

Agriculture related activities do not just produce agricultural goods but also produce a landscape. When farmers work and manage their fields they are also simultaneously producing a landscape (Vanslebrouk and Van Huylenbroeck, 2003). The agricultural landscape is highly modified in order to serve a range of different functions. Traditionally, a narrow range of functions connected to agriculture production was identified as part of the agricultural landscape. The production of food and other non-food products were the most important function of the agricultural landscape. However, literature has begun to show that the agricultural landscape is composed of a wide variety of functions (Hall et al, 2004; Hellertstein et al. 2002; Durand and Van Huylenbroek, 2003). All of the agricultural functions can be summarized into two broad categories: market functions and non-market functions. Market functions are functions that conventional markets value and non-market functions are functions that are not valued by conventional markets. Non-market functions include functions that relate to the human environment (i.e. rural way of life) and functions that relate to the natural environment (i.e. soil conservation) (Durand and Van Huylenbroek, 2003). The non-market functions are deemed to be important because they are socially desirable and help to improve the quality of life in an area (Hall et al. 2004; Pfeffer and Lapping, 1994).

### **2.3 Loss of Farmland**

Much of the concern over farmland loss is attributed to urbanization and related development. Alterman (1997) writes that many individuals and governments in industrialized countries are concerned about the expansive growth of cities. Urban



boundaries are expanding along with rural non-farm development that is resulting in additional pressures to productive farmland (Caldwell and Dodds-Weir, 2003). Much of the growth occurred after World War II, when a rapid population increase combined with a decline in the average household size to create more demand for housing (Heimlich and Anderson, 2001). The demand for housing was mostly remedied by designing low-density developments on rural lands. Concern over the loss of the farmland was rooted in these changes (Hellerstein et al, 2002).

Concern over the loss of farmland is focused on the area called the urban-rural fringe. The urban-rural fringe refers to land that is next to older cities (Friedberger, 2000; Sullivan, 1994). The growth in the urban-rural fringe is often referred to as urban sprawl in literature (Heimlich and Andersen, 2001), and has resulted in decreasing population densities in urban centres (Barnard et al., 2003). Growing populations in North America and their preferences for housing locations in the urban-rural fringe indicate this zone will continue to grow in future years (Sullivan et al., 2004).

The rapid growth of housing in the urban-rural fringe not only affects land located in this zone but lands that are located outside formal urban boundaries. Heimlich and Anderson (2001) suggest that stakeholders are concerned with two kinds of growth. Government officials, farmers, and other interest groups are concerned about urban development at the urban-rural fringe of existing cities and the growth of large-lot housing developments that occur beyond the urban-rural fringe. Growth that occurs beyond the urban-rural fringe may just be the start of a longer, more gradual process of changing rural countryside into urban development. These two types of growth have different causes and also different consequences on the agricultural landscape. Barnard

et al. (2003) presents another idea by saying that land outside the urban area can be labelled as an area under the urban influence. Urban influence refers to land that is subject to the economic and social influence of urban areas. Areas under the urban influence begin to place non-agricultural uses ahead of agricultural uses which may lead to a decline in agricultural productivity. As the urban influence grows, there becomes demand for golf courses, gravel pits, farmsteads, rural residential lots, parks, campgrounds, and tourist facilities (Gayler, 2004; Hofmann et al., 2005).

To fully understand the issue of farmland loss in the face of urbanization, it is important to look at the underlying reasons for the expansive urban growth. Growth in the urban-rural fringe can be linked to rising affluence along with lower property values and taxes (Daniels, 1999). Heimlich and Anderson (2001) suggest that the growing population coupled with rising wealth drives demand for low-density development and urban expansion. Bradshaw and Muller (1998) suggest that five factors are responsible for urban related growth.

- *City Location*: Historically, urban areas were located near unique geographical resources (i.e. rivers) but these resources no longer play an important role in city location.
- *Reduced effect of distance*: The rapid increase in automobile usage has allowed people, goods, and services to cover large distances rather easily.
- *Increased city interdependencies*: Urban areas are becoming more closely tied economically and culturally to surrounding urban areas.
- *Residential location*: Residential housing choices are less affected by employment location.
- *Policy*: Policies can be used to effectively limit growth but have not historically been used in this manner.

The above factors show how broader societal changes have affected and will continue to affect urban growth and structure.

Broader societal changes not only affect urban structure but also how the agricultural landscape is structured and how it interacts with society (Bryant and Johnston, 1992). The most obvious way that new developments and changing land uses affect the agricultural landscape is through the permanent removal of farmland from production (Bunce, 1998; Hofmann et al., 2005). Even the partial removal of farmland from an area affects agricultural production. Partial removal of some parcels of land fragment the land base, place additional restrictions on farmers (i.e. minimum distance separation), and add additional costs but may also provide incentives to further invest, intensify farm operations, and increase productivity (Caldwell and Dodds-Weir, 2003, Hall, personal communication, 14 November 2005).

New developments also directly change the interactions between the different components in the agricultural landscape such as forcing new groups together that may have conflicting interests. New developments change the demographic composition of the area to include more non-farm residents. Non-farm residents move into the area and place new demands on farm operations to pursue farm practices that are in keeping with their expectations. The non-farm residents express frustration with many of practices associated with modern farming such as the smell, slow traffic vehicles, pesticide use, and noise (Sullivan et al., 2004). Farmers also express frustration with non-farm residents and cite complaints about litter, trespassing, theft, pets in their fields, air pollution, and the loss of rural character (Barnard et al., 2003; Heimlich and Anderson, 2001; Sullivan et al., 2004).

New developments also change the interaction of the economic components of the agricultural landscape. Economic changes such as higher taxes, higher land values, loss

of farm-support businesses, and declining agricultural returns all challenge the economic viability of farming operations (Caldwell and Dodds-Weir, 2003; Heimlich and Anderson, 2001). Together, all these changes severely affect the ability of the farming operation to be maintained and contribute to what Pfeffer and Lapping (1994) call the *impermanence syndrome*. This term refers to when farmers doubt whether their farm operations could continue in a changing environment. Farmers become reluctant to either invest or even disinvest their farming operation because of agricultural decline and urban expansion. The increased chance of conflict tends to worry farmers because when in conflict with residents, the farmer does not typically win (Nelson, 1999).

Barnard et al. (2003) argues that urbanization brings about three effects on the agricultural landscape. Firstly, as urbanization grows, farmers living in the urban-rural fringe are forced to restrict their activities when non-farm residents oppose the negative effects of modern agriculture. At the same time, urbanization has negative effects on agricultural production including air pollution, loss of agricultural support networks, and vandalism. Secondly, as urbanization pressures increase so do land values, which challenge the economic viability of farming operations. Thirdly, as farmland becomes reduced so does the availability of the benefits (i.e. aesthetic and environmental amenities) that are being demanded by the non-farm population. The first two effects are largely concerned with changes to the farming operations. The effects contribute to the impermanence syndrome as they force farmers to change the way they view the future of their farming operations (Pfeffer and Lapping, 1994). The last effect indicates that the loss of benefits from the agricultural landscape could trigger more demand for farmland preservation.

### *2.3.1 Farmland Loss in Canada*

In 1980, the Canada Land Inventory (CLI) finished mapping the agricultural potential of the soil on approximately 2.6 million square kilometres of the Canadian land base (Wang, 2004). The CLI determined that Canada had about 673 thousand square kilometres of suitable farmland, or 7 percent of the Canadian land base. The CLI uses a seven-class system to divide the Canadian land base by soil quality. (Refer to Appendix A for Class descriptions) High quality farmland is put into Classes 1-3 and is labelled as “dependable agricultural land” (Hoffman, 2001). Land classified as dependable agricultural land amounts to 492 thousand square kilometres, which represents 5 percent of the total land base. Although the CLI ignores several important criteria when evaluating agricultural land such as climate and economics, it still serves as a useful tool for evaluating changes to the Canada agricultural land base (Wang, 2004). Statistics Canada uses the CLI and other data sets (i.e. digitized maps) to estimate the changes in land use in Canada (Hofmann et al., 2005).

The Canadian population grew from 18.2 million in 1961 to 30 million in 2001 (Wang, 2004). During the same time period, the percentage of the total population living in urban centres grew from 70% to 80%. With the expansion of urban centres came changes to housing, transportation, and lifestyle choices (Hofmann et al., 2005). The growth generated the development of suburbs, shopping malls, and transportation corridors all across Canada. These changes caused the amount of land in urban uses to almost double from 15770 square kilometres in 1970 to 30940 square kilometres in 2001 (Hofmann et al., 2005).

Much of the new urban growth in Canada occurred on prime agricultural land because human settlement has historically been located near productive agriculture land in Canada (Wang, 2004). Approximately ninety percent of Canadians live in a small band that parallels the border with the United States. Much of Canada's dependable agricultural land is also located in this band and this has led the amount of land in urban use on dependable agriculture land to increase from 6900 square kilometres in 1971 to 14300 square kilometres in 2001. These figures represent 1.4 percent in 1971 and 2.9 percent in 2001 of the total amount of dependable agricultural land in Canada (Hofmann et al. 2005).

**Table 2.1 Urban land use on Dependable Agricultural Land in Canada**

Year	Urban land use (km <sup>2</sup> )	Urban land use on dependable agricultural land (km <sup>2</sup> )	% of dependable agricultural land
1971	6920	15770	1.4%
1981	9700	21380	2.0%
1991	12210	26160	2.5%
2001	14350	30940	2.9%

Source: Hofmann et al., 2005

Much of the agricultural land loss to urban uses occurs near major urban centres such as the British Columbia's Lower Mainland and Ontario's Golden Horseshoe. The loss of agricultural land is significant throughout Canada, especially in heavily urbanized Ontario where most of Canada's Class 1 agricultural land is located. Ontario contains 27, 625 square kilometres or 56 percent of Canada's Class 1 lands. In 2001, 11 percent of this land was consumed by urban uses in Ontario (Hofmann et al., 2005). Although the losses may seem small they have a far reaching impact on farming operations,

regional economic conditions, and the ability to produce unique fruit crops (Niagara Fruit Belt) (Farmland Preservation Research Project, 2004; Hofmann, et al., 2005)

## **2.4 Farmland Preservation**

The loss of North American farmland, especially on the urban-rural fringe, triggered the development of farmland preservation policies starting in the 1970s (Alterman, 1997; Bunce, 1998; Fursueth and Pierce, 1982). At that time, public attention to farmland loss forced governments on all levels to initiate discussions regarding farmland preservation. Although these concerns are rather recent in North America they have led to the development of policies protecting the agriculture land base. Farmland preservation policies have evolved from policies that solely focused on preserving agricultural production to policies that encompass a range of values demanded by different groups (Hall, et al., 2004). The evolution of the values is reflective of broader social and economic changes occurring within society but also the changing view of the agricultural landscape.

The traditional paradigm for viewing agriculture landscape has moved from one that focused on production to one that recognizes the multifunctional attributes of the agricultural landscape. Literature on farmland preservation now recognizes a wide range of values that are used to motivate farmland preservation policies (Bunce, 1998). The changing view of farmland is addressed throughout the following section. The history of the farmland preservation movement demonstrates how society has changed how it views and values the agricultural landscape. These changing values have important implications for the future of agriculture within the ever-increasing urban landscape.

#### *2.4.1 History of Farmland Preservation*

Farmland preservation policies emerged at the turn of the century in Europe but did not emerge in North America until the 1970s (Bunce, 1998). The stark contrast in the development of agricultural policies between Europe and North America can be attributed to geographical and social differences (Alterman, 1997). In Europe, many of the countries contain high population densities and have geographical, historical and political differences regarding the use of rural lands (Bunce, 1985; 1998). These conditions helped farmland preservation become an issue much earlier in Europe.

The recent emergence of farmland preservation on the political agenda in North America can be attributed to two prevailing views. The first view maintained that there was an endless supply of agriculture land in North America and the second view maintained that technology could solve any agricultural problems. These two prevailing views meant that farmland was treated more like a unlimited commodity than a finite resource (Lehman, 1995). The views on agricultural land can be attributed to the conditions associated with North American agriculture. Compared to Western Europe, North America had very low population density and a significant amount of prime agricultural land. Canada and the United States have 2.1 and 1.6 ha respectively of farmland per person while many of the countries in Western Europe have 0.3 to 0.5 ha of land per person (Alterman, 1997). Furthermore, technological developments after the World War II dramatically increased agricultural production in North America. The use of tractors, fertilizers, and hybrids increased substantially as technology became more affordable and efficient. It was widely viewed that any productivity loss as a result of lost farmland could easily be offset by gains in productivity as a result of increases in



technology. The increases in technology were impressive. For example, in 1940 there were 1.6 million tractors in United States and by 1970 there were over 5 million tractors (Lehman, 1995). The rise in available technology to farmers caused productivity to dramatically increase across the North American continent. North American agriculture produced so much that both the United States and Canada became world leaders in the export of food (Alterman, 1997; Lehman, 1995). These conditions prevented any concern over farmland loss from entering public opinion in North America (Bunce, 1998). It was not until the start of the environmental movement and the publishing of several studies on the disappearance of farmland, that farmland preservation started to become an issue in North America.

#### *2.4.2 The Environmental Movement*

Concern over farmland loss began to appear with the start of the environmental movement (Bunce, 1998; Lehman, 1995). The environmental movement had a broad appeal and was able to draw political support from a wide population including the women's movement, racial and ethnic minorities, and different social classes (Pfeffer and Lapping, 1994). The environmental movement drew increased attention to the relationships between people and the natural landscape. Initially the environmental movement was focused on problems such as chemical contamination, water quality, and wildlands preservation (Lehman, 1995). Much of the concern was focused on problems that had been occurring on publicly held land (Lehman, 1992). However, as the environmental movement matured in the 1970s it began to focus on more complex problems and solutions to the failing relationship between humans and the natural environment. The environmental movement further evolved and began to be concerned

with problems occurring on private lands (Lehman, 1995). Private farmland was a landscape that represented a failing relationship between humans and the environment. Environmentalists quickly took hold of farmland preservation movement because farmland represented a resource that retained natural landscapes, provided for human needs, and connected people with the earth (Bunce, 1998).

#### 2.4.3 *The Beginnings of Farmland Preservation*

Initially, support for farmland preservation came from a few academic studies on soil conservation, urban expansion, and studies questioning the true value of agricultural productivity (Bunce, 1998). A few localities, such as Maryland, started implementing farmland preservation measures to a limited degree (Lehman, 1995). However, it was decade later before the environmentalist movement became more concerned with private lands and farmland preservation. During the 1970s, the government in both Canada and the United States started to conduct studies on farmland conversion rates. Bunce (1998) suggests that these studies fuelled the development of farmland preservation methods. By the end of the 1970s, many localities in North America had begun to implement some form of farmland preservation, such as differential tax assessments<sup>1</sup> (Fursueth and Pierce, 1982).

At the start of the farmland preservation movement, most of the motivations for developing preservation programs were based on concerns over urban development (Lehman, 1995). The motivation for preserving farmland soon gave way to larger concerns over agricultural productivity. Concern emerged that the loss of agriculture land would threaten the North American food supply. It was not until the 1980s that this

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<sup>1</sup> Differential tax assessment is a tax system that lowers property taxes for qualifying farmers. Instead of farms being taxed at market value, farms are taxed at levels that allow agricultural land uses to be maintained.

concern began to diminish as it became evident that both overproduction and global competition were the main threats to agricultural productivity and not farmland loss. As the productionist arguments diminished, additional motivations for protecting farmland began to appear (Bunce, 1998). It is now widely recognized that there are other more complex motivations for preserving farmland including the control of urban sprawl, protection of the rural countryside, protection of ecological services, and protection of aesthetic amenities.

The motivations for farmland preservation come from a wide range of groups with varying and often conflicting perspectives on the value of farmland. However, Bunce (1998) argues that a central theme has emerged from these perspectives. He suggests that farmland acts as a physical symbol which has raised the meaning and significance of the agricultural landscape above the notion that it is just a basic productive resource. The realization that farmland is more than just a basic productive resource has emerged in literature especially in Europe (Batie, 2003). Many of the recent studies on farmland preservation acknowledge that farmland provides multifunctional benefits, such as societal and environmental benefits, that have not traditionally been acknowledged by government policy (Hellerstein et al, 2002).

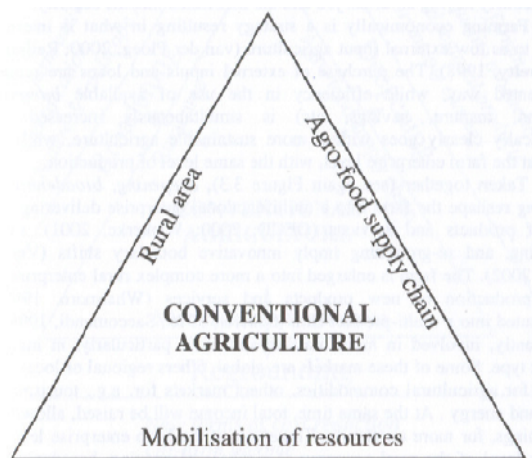
## **2.5 Multifunctional Agriculture**

“Multifunctional agriculture” is the term used to describe a new view of agriculture. In some cases it has also been labeled as “post-productivist” agriculture (Hall et al., 2004). The concept emerged in Europe as domestic agricultural markets faced challenges from market liberalization, growing surpluses, and changing consumer preferences and concerns (Alterman, 1997; Durand and Van Huylenbroeck, 2003).

European agricultural policy that refers to multifunctional agriculture has frequently achieved high levels of public support. The concept of multifunctional agriculture in agricultural policy is also gaining ground in North America especially in the North-Eastern United States (Batie, 2003; Durand and Van Huylenbroeck, 2003; Hall et al. 2004). Although the growth of the concept is slower in North America, it is beginning to emerge in public policies, research, and in demand for market and non-market goods (Batie, 2003).

The shift in perspectives from conventional agriculture to multifunctional agriculture can be understood by looking at how agriculture has been transformed. Van der Ploeg and Roep (2003) explain that multifunctional agriculture has expanded the three aspects of conventional agricultural (Figure 2.1).

**Figure 2.1** *The Agricultural Enterprise*



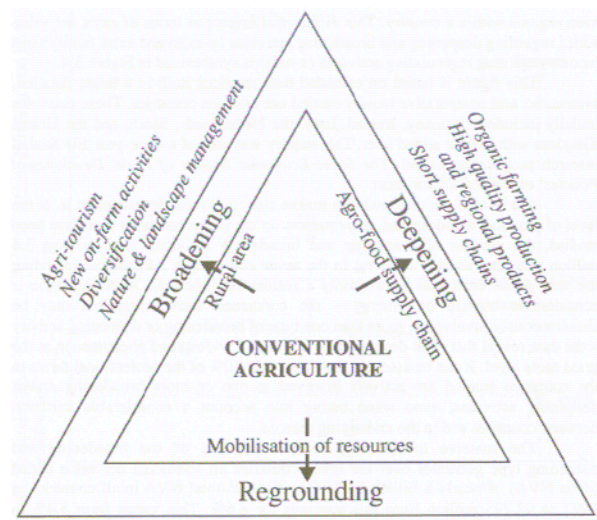
(van der Ploeg and Roep, 2003: 43)

The three aspects in conventional agriculture are 1) production of traditional farm produce, 2) the rural landscape, and 3) the mobilization of resources. Traditional farm produce includes such commodities as milk, vegetables, and grains. The role of traditional agriculture in the rural landscape was to function as part of the local and

regional economy and culture as well as to be an intrinsic part of the countryside. Lastly, conventional agriculture requires the mobilization of resources such as knowledge, soil, plants, and animals in order to produce and contribute to the regional landscape. The authors indicate that the three aspects of conventional agriculture have been changed in the following ways (Figure 2.2):

- Agricultural production is *deepened* which means that it expands and transforms to fit the preferences of society (i.e. organic farming)
- The rural area is *broadened* to include diversified activities, which then provide additional income. (i.e. agri-tourism, wind generation)
- The *regrounding* of resources allows agriculture to form activities on new or different sets of resources. Through pluri-activity and farming economically the farm is increasingly reliant on off-farm income from urban related jobs. This used to be an expression of poverty but now is associated with income security.

**Figure 2.2** *Changes to the Agricultural Enterprise*



(van der Ploeg and Roep, 2003: 45)

The transformation of conventional agriculture to multifunctional agriculture has meant that increased attention has been focused on all agricultural functions.

Traditionally, the primary function of agriculture was to produce commodities that were valued by markets based on their quality and quantity. The growth of the multifunctional

paradigm has meant that attention has shifted to the joint production of commodities and non-commodities (Durand and Van Huylenbroeck, 2003). However, the joint focus on commodities and non-commodities challenges the market-oriented approach in the modern economy (Batie, 2003). The market-oriented approach fails to realize the value that farmland contributes to society because certain agricultural functions such as scenic farm views and rural cultural heritage are not valued correctly. The market-oriented economy is not structured to compensate landowner and farmers for such functions and thus little attention has historically been paid attention to non-market goods and services (Nickerson and Hellerstein, 2003).

Hellerstein et al. (2002) describe these functions as externalities and define them as the side effects of the production, consumption, or the distribution of agricultural products. The products can either have positive or harmful effects and are generally of the public goods nature. Positive externalities have value to society but often the landowner or the farmers are not compensated for providing them. Negative externalities can be harmful or an irritant to society but the landowner or the farmer is not often required to pay for them. The inability of the market to capture the cost of these externalities is because they are classified as public goods which are distinguished by their nonrivalness and nonexcludability (Hall et al., 2004; Hellerstein et al., 2003, Nickerson and Hellerstein, 2003). Nonrival goods can be consumed or can benefit the user without hindering the ability of another person to consume or benefit from its use. Nonexcludability means that a good can be consumed or used by anyone once it is produced because the producer is not able to restrict access to that good.

### *2.5.1 Demand for Multifunctional Agriculture*

The demand for multifunctional attributes of agricultural, especially non-market goods and services, can be attributed to both changing lifestyle choices and a changing view of farmland. Durand and Van Huylenbroeck (2003) state that increased leisure time and higher incomes have altered both lifestyle and consumption patterns. Society has adopted a post-modern view of agriculture in which agriculture is viewed as a product to consume not only for food but also for a variety of activities (i.e. leisure and recreation activities). Batie (2003) suggests that the increase in demand for multifunctional attributes in regions such as the Northeastern United States is predictable because increases in urbanization and rising incomes have fuelled the demand for multifunctional attributes (Schweikhardt and Browne, 2001).

Batie (2003) suggests that evidence of support for the multifunctional paradigm can be found by looking at the growth in public policies, related research, and in the growth of market and non-market demands. Public policies have increased, especially in the face of urban development forces. In the same respect, academics have placed more emphasis on researching the impact of agricultural systems on local regions. Furthermore, the public has a growing demand for specialized market goods and has increasingly given more attention to NGOs that focus on agricultural protection. Batie (2003) describes several ways in which there is growth in market and non-market demands. These include (a) the growth in demand for organic food; (b) the success of retail stores that connect people with agriculture; (c) the growth of regional labels; (d) the growth of ecolabels (e) the growth in agri-tourism opportunities and; (f) market growth for sustainable agricultural products. Together these items give evidence that the

multifunctional paradigm has a growing importance, especially in terms of farmland preservation. Preservation policies are beginning to try to balance support for the multifunctional attributes of agriculture in an attempt to formulate a relationship between conventional agricultural functions and the non-market functions (Hall et al., 2004).

## **2.6 Demand for farmland preservation**

The rise in demand for farmland preservation can be linked to the demand for the multifunctional attributes of agricultural. Hellerstein et al. (2002) developed an econometric model to determine the underlying motivations for farmland preservation.

Their results supported the following three hypotheses:

- *Wealthier communities will preserve farmland* – There is positive correlation between rising incomes and the existence of farmland preservation.
- *Preserving what farmland is left* – There is positive correlation between land preservation and population pressure, increase in population pressure, increases in population pressure and reductions in the quantity of farmland.
- *Availability of farmland* – There is positive relationship between remaining farmland and farmland preservation (available land equals more preservation)

Hellerstein et al. (2002) indicate that it was easy to find support for these hypotheses because they are all interrelated. Schalpfer and Hanley (2003) indicate that public support for landscape protection is often linked to the scarcity of open space availability in one's locality. They also found that higher incomes increased the level of support for protection. Pfeffer and Lapping (1995b) in their study of planner attitudes also acknowledge that population growth creates demands for farmland preservation programs like PDR (Purchase of Development Rights). However, their findings also indicate that the stronger the drop in farm population numbers, the less interest there seems to be in PDR. These trends are explanatory because as urban development increases, average income levels are also likely to increase. Higher income levels are an indication of the



tax base, which could influence the amount of land being preserved. Preservation programs are also easier to develop when there is abundance of farmland available (Hellerstein et al., 2002).

Knowing that the general population is beginning to support farmland preservation programs indicates that such programs should be developed and continued. However, this knowledge needs to be expanded so planners can understand what the public prefers from farmland preservation programs. In their attempts to do this, researchers have moved away from investigating general attitudes about environmentally related issues and have attempted to identify the underlying values that form the basis of their environmental attitudes (Schultz and Zelezny, 1999).

Values are defined as important life goals or standards that serve as guiding principles (Rokeach, 1973). Values are thought to determine attitudes and behaviors to different environments, and by doing so affect how individuals form their preferences for the different landscapes (Kaltenborne and Bjerke, 2002). Berry (1976) suggests that “values form the general basis for specific claims to protect open space” (Berry, 1976: 114). The formation of a person’s value orientation depends on a number of factors relating to a person’s social and cultural context (Zube and Sell, 1986). Age, living environment, education, life cycle state, and income also play a role in the formation of values (Berry, 1976; Kaltenborne and Bjerke, 2002). Values are not only linked to the individual’s characteristics but are also partially based on an individuals’ ability to derive utility from a specific program or land-use change (Zube, 1987). The study of underlying values can be useful because it provides an answer as to why certain landscape preferences are formed. Several individuals may have the same general

attitude towards preserving a certain landscape but may have fundamentally different reasons for supporting that attitude (Schultz and Zelezny, 1999).

Researchers have attempted to understand the popularity of farmland preservation programs by determining the sources of support for these programs. In his study of open space, Berry (1976) argues that six values seem to be particularly important when individuals consider decisions about preservation. Although he studied open space (unaltered landscapes), the values he introduces are applicable to farmland preservation. These values include utility, functional, contemplative, aesthetic, recreational, and ecological values. Utility values are often expressed as tradeoffs between goods and services. Individuals derive utility out of particular open space in exchange for the costs needed to visit it and use it. Functional values are when the open space is preserved in order to be effective in meeting another goal such as the protection of water quality. Contemplative and aesthetic values are related to how an individual enjoys the landscape both in the past and in the present. An individual does not necessarily need to be in the same locality as the open space but rather knowing that the open space exists is enough for the individual. Recreational values are when individual values the outdoor recreation opportunities available in public open space. Ecological values are not human-oriented but rather involve unique plant and animal communities. Since the communities are unique they are valuable in and of themselves and therefore must be protected. The value that a person puts on land preservation is likely a result of a combination of these values. The relative importance of the value differs among individuals and also differs between different types of open space. This concept is backed by Kline and Wichelns (1998) who argue that the value an individual places on one particular parcel of land can be very

different from the value another individual places on the same parcel of land. Realizing that there is variation in the way people value agriculture and open space is an important component in forming an effective farmland preservation policy.

Bunce (1998) suggests that the issue of farmland preservation can be broken down into two distinct ideologies, environmentalism and agrarianism. At the environmentalist end, there are two distinct streams, resourcist environmental philosophy and the ecological environmentalist philosophy. The resourcist view argues that the farmland preservation policies are needed to maintain food production while the ecological view argues that farmland preservation policies are needed for general environmental protection. Within the agrarian ideology there are also two competing perspectives, progressive agrarianism and romantic/fundamentalist agrarianism. Progressive agrarianism argues that farmland preservation is needed to support the agricultural economy to the national interest. Romantic/fundamentalist agrarianism is more concerned with the culture of farming contained in the rural landscape. Each ideology contains streams that utilize a productionist and utilitarian rationale and a cultural and ecological rationale. Despite the some general differences, the two ideologies contain a commonality in that they both agree on the sustainability of agricultural land use and community.

Comparison studies have attempted to distinguish values that determine what amenities draw the most support. Using focus groups, Kline and Wichelns (1996) developed a list of reasons why preserving farmland and open space was important. The authors developed a survey that asked recipients to rate different qualities of preserved landscapes, finding that participants who rated one quality as important tended to place

high ratings on other qualities of similar nature. The authors determined that the reasons could be grouped together into three common attributes, labelled: environmental; agricultural, and; growth control. In a later study, Duke and Aull-Hyde (2002) developed a similar list but expanded it to include an additional attribute (open space). Figure 2.3 shows the list of qualities and attributes used by those authors to determine support for farmland preservation in Delaware. The attributes are described by the qualities that are attached to them.

**Figure 2.3** *Qualities of Farmland*

<b>Attribute</b>	<b>Quality</b>
Agricultural	Providing locally grown food
	Keeping farming as a way of life
	Important Industry
Environmental	Protecting water quality
	Protecting wildlife habitat
	Preserving natural places
Growth Control	Slowing Development
	Preserving Rural Character
Open Space	Preserving Scenic Quality
	Breaks in the built environment.

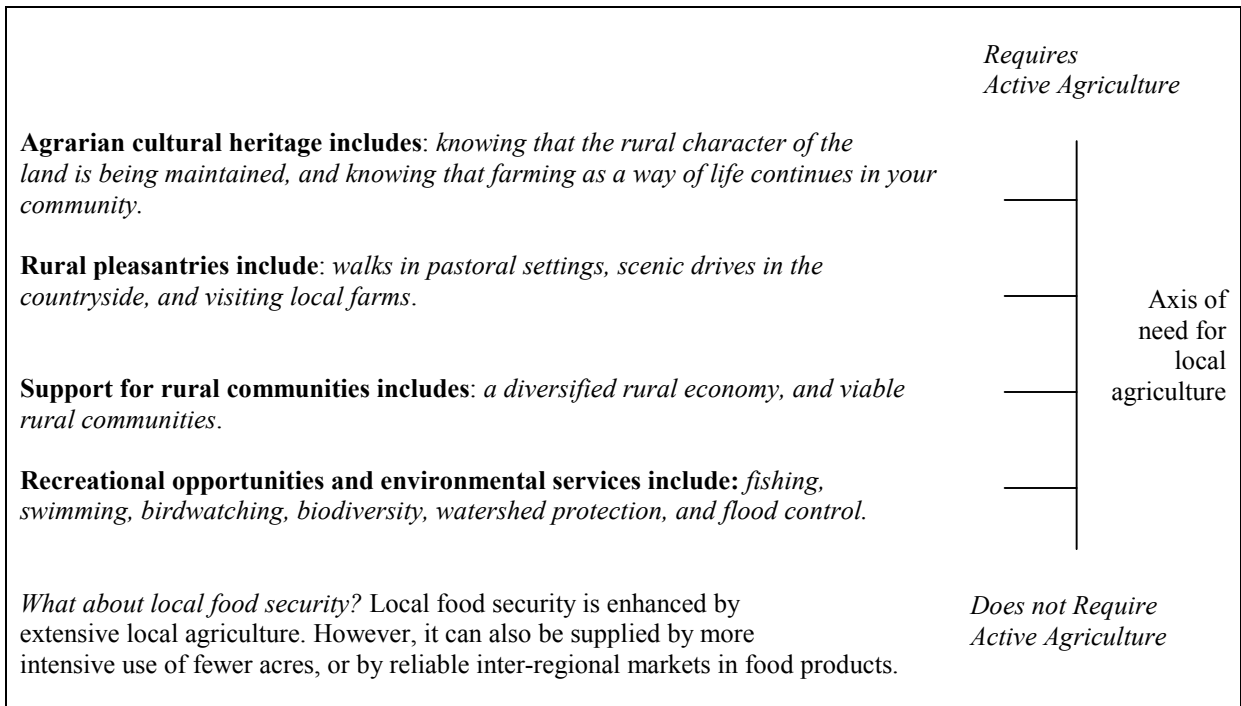
Duke and Aull-Hyde (2002) pg. 141

Other studies have used similar qualities and attributes to determine the sources of support for farmland preservation. In their analysis of farmland preservation policies, Hellerstein et al. (2002) identified the goals of the different programs and compiled them into several broad classes. The following list was compiled after analyzing farmland preservation programs throughout the United States.

- Ensuring orderly development (control of urban sprawl)
- Maintenance of agricultural production (providing food security)
- Supporting the agricultural economy (providing employment and business opportunities)
- Protecting environmental services (protection of natural resources)
- Providing rural amenities (scenic views)

The authors put the above list of classes along an axis to indicate the degree of active agriculture that each class requires

**Figure 2.4** *Axis of Agriculture*



(Hellerstein et al., 2002: 12)

The authors also point out that the agriculture landscape also includes woodlots, rural parks, natural resource areas (i.e. wetlands), and rural communities. These landscapes also may contribute to how farmland preservation programs are viewed.

Ensuring orderly development, the maintenance of the agricultural production, and support of rural economy are rarely referred to in recent academic literature. Most literature addressing farmland preservation places emphasis on the provision of environmental and rural amenities. Nickerson and Hellertstein (2003) argue that the protection of rural amenities provides the most compelling reason to develop farmland preservation programs. It is particularly important because the “public good” nature of the rural amenities and environmental services are not valued by market thereby

necessitating government involvement (Hall et al., 2004). Hellerstein et al. (2002) provide a summary on rural amenities and what these entail. The authors indicate that rural amenities are produced in a rural setting and are non-market goods. The components that they have included in this category are open space, rural/agrarian character, wildlife habitat, and scenic beauty. The authors point out that demand for these rural amenities might not be related to a tangible experience but rather knowing that the amenities exist.

## **2.7 Group Preferences**

Many studies have estimated preferences for the landscape by studying various groups separately. Kline and Wichelns (1998) argue that assuming groups have different attitudes is much more appropriate than assuming that society has homogeneous landscape preference. Earlier in the chapter, it was stated that value orientations for landscape preferences form out of different social and cultural contexts. Generally, the value orientations can be broken down into two different groups, farmers and the non-farm population. Kaltenborne and Bjerke (2002) researched environmental value orientations and landscape preferences. They found that a positive correlation existed between eco-centrism and a preference for wildlands with water and cultural landscapes. Anthropocentric value orientations matched preferences for farm environments. Studies have revealed that farmers and the non-farm population view the aesthetic function of the agricultural landscape much differently. A study by Van Den Berg et al. (1998) indicated that the non-farm ratings of landscape beauty were closely correlated with how experts rated characteristics of ecologically sustainable development plans. Meanwhile the ratings given by farmers were negatively related to these characteristics. Studies like

these show significant differences between farmers' attitudes and those of the non-farm population. Usually this indicates that the groups behave from a certain perspective. For farmers is it often from a productivist perspective and the non-farm population from an urban oriented perspective (Primdahl, 1999).

### *2.7.1 Non-Farm Population*

Most of the studies on farmland preservation (see Figure 2.5) do not separate the non-farm population and the farm population. Rather, the studies refer to the general public, which may or may not include members of the farm population. Much of the research indicates that farmland preservation programs receive broad public support (Duke and Aull-Hyde, 2002; Kline and Wichelns, 1998). Public support comes from a wide variety of interest groups ranging from agricultural groups to environmentalists to the general public. However, it must be noted that the political support for farmland preservation from these groups is not necessarily homogeneous.

Many of the studies focus on how much people are willing to pay to protect farmland. WTP (willingness-to-pay) and hedonic approach studies conclude that people are willing to pay to protect farmland. This is evident by the increased property prices of housing lots adjacent to farmland (Nickerson and Hellerstein, 2003). A study by Kline and Wichelns (1998) of Rhode Island residents revealed that the public had preferences for the environmental services provided by agricultural land. They argue that an understanding of the values and landscape choices of the public helps to enhance farmland preservation programs. Another study by Rosenberger (1998) also concluded that the public values the environmental services provided by agricultural land. However, a study by Fursueth (1987) concluded that the public values the protection of

foods supplies and farming heritage. In yet another study, by Duke and Hyde (2002), the public identified that the most important reasons for preserving agricultural land were to maintain the agricultural way of life, protect water quality, and provide locally grown food. A study by Ryan and Hansel Walker (2004) in Connecticut recognized that the public were increasing their demands for recreation space (i.e. increased trails for biking and hiking,) and the protection of wildlife habitat. Hall et al. (2002) summarized a list of studies and identified the public preferences that emerged from the studies (Figure 2.6). They concluded that a variety of reasons exist for preserving farmland but not one reason dominated the studies.

**Figure 2.5** *List of Farmland Preservation Preference Studies*

<b>Authors</b>	<b>Study Area</b>	<b>Research Findings</b>
Halstead (1984)	Hampden County, MA	There are strong preferences for protecting remnant farmlands, that increase with size of program, and seem to be positively influenced by the proximity to farms.
Furuseth (1987)	Mecklenberg County, NC	There is broad support for farmland protection; farmland heritage, environmental reasons, and protection of future food supply were important reasons.
Variyam et al. (1990)	National	Support for a variety of agricultural programs suggests that preservation of family farms is important, but respondent self-interest also influences support for agricultural policies.
Dillman and Bergstrom (1991)	Greenville County, SC	Positive, though small, benefits to protection of farmland, with the benefits of such protection stated as being limited to changes in rural amenities. The low values are attributed to the large amount of agriculture in the study region.
Kline and Wichelns (1994, 1996)	Rhode Island, Pennsylvania	Environmental reasons are most important, followed by local food concerns, preservation of rural communities, and slowing development.



Bowker and Didychuk (1994)	New Brunswick, Canada suburbs	Willingness to pay for farmland protection is correlated with membership in environmental organizations and “visiting the land” and is negatively correlated with distance to farmland.
Ready et al. (1997)	Kentucky	Positive difference between survey-derived compensating variation measures and house-price/wage-rate hedonic measures of the value of protecting horse farms suggests that these farms have an existence value.
Rosenberger and Walsh (1997)	Routt County, CO	Protection of ranchland yields small overall per acre values. These values may be substantially larger if preferences of summer visitors are considered.
McLeod et al. (1999)	Sublette County, WY	Residents prefer continued agriculture on some lands, and wildlife/recreational uses on others, with development never a preference.
Krieger (1999)	Chicago suburbs	The support for rural land protection (which includes farmland protection) seems to be derived from quality of life concerns, especially those related to sprawl reduction. Compared with other rural land protection programs, the most important reasons stated for supporting farm protection were protecting family farms and maintaining food supplies.
Boyle et al. (2001)	Several American States	Focus groups suggest that the public favours protection of family farms, protecting land with water on it, and favouring land with active farming
Duke et al. (2002)	Delaware	Delawareans seem to be most concerned with keeping farming as a way of life, having access to locally grown agricultural commodities, protecting water quality, and preserving rural character

(Hellerstein et al. 2002: 16)

Tourist preferences for rural landscapes usually parallel the preferences of the general public population. A study by Vanslebrouck and Van Huylenbroeck (2003) showed that the positive externalities of the agricultural landscape increase the price that tourists are willing to pay and affect demand for rural tourism. Hackl and Pruckner (1997) indicate that the environmental amenities are essential for tourism to prosper and

that a well-kept countryside draw tourists to certain central European countries. Many marketing campaigns targeting wine tourists have used imagery that portrays wine country as a rural paradise complete with scenery and outdoor activities. However, researchers have noted that more research needs to be done on what is the perceived and preferred wine country imagery (Brown and Getz, 2005). These studies largely indicate that in areas with rural tourist industries, the maintenance of the positive agricultural amenities is essential for the well being of the industry.

### *2.7.2 Farmers*

Very few studies on farmland preservation exist where farmers are surveyed and interviewed. Despite this, several authors claim that understanding the attitudes and willingness of farmers is important in the development of farmland preservation strategies (Pfeffer and Lapping, 1995b; Ryan and Hansel Walker, 2004). In the study by Ryan and Hansel Walker (2004), farmers placed a high priority on farmland protection and personally-supported protection efforts (otherwise known as “stewardship” efforts). However this can be debated because Pfeffer and Lapping (1994) suggest that farmers express opposition toward farmland preservation, especially those close to retirement age. Bunce (1998) confirms this when he writes that few studies have shown farmer support for farmland preservation. The studies show that most farmers will resist any restriction to their development rights. Pfeffer and Lapping (1995b) suggest that farmer support for programs such as PDRs is market driven. Population growth and the diminishing supply of farmland seems to have no direct impact on farmer support. Rather, urbanization may indirectly reduce farmer interest in programs in the short run because of the increased land prices.

Besides research on how farmers view farmland preservation activities, the researcher could not find evidence of any studies on what farmer preferences are for the agricultural landscape. A study by Van Den Berg et al (1998) suggested that farmers enjoy landscapes that are highly influenced by human development, while the non-farm population prefers landscapes with a low degree of human influences. In another study, researchers determined that occupation bias and knowledge of the landscape type influence a participants' rating of enjoyability (Brush et al. 2000). The studies indicate that farmer attitudes are shaped by their occupational connection to the landscape.

## **2.8 Non-Farm Population vs. Farmer Population**

The wide variety of preferences placed on farmland by the non-farm population often conflict directly with the interests expressed by farmers. The tension between farmers and the non-farm population is not a new concept in many environmental issues. Kaltenborn and Bjerke (2002) indicate that conflicts between preservation-oriented environmentalists and persons with more utilitarian and anthropocentric views are common. In the debate over landscape amenities protection, urban-rural differences seem to be even more pronounced (Schapfer and Hanley, 2003). The intense growth of new developments in the urban-rural fringe has placed new residents in close contact with farmers resulting in an increased likelihood of conflicts developing. The general public is increasingly intolerant of the negative externalities of modern agriculture (Hellerstein et al. 2002; Durand and VanHuylenbroek, 2003). Non-farm residents are often in conflict with farmers over machinery noise, aerial spraying, pesticide use, odours, dust, and the recreational use of fields. New legislation is even more of concern to farmers in the urban rural fringe. Though many of these conflicts are resolved through

personal negotiation, some result in formal litigation. Tied to formal litigation are often changes to laws that further restrict farming operations (Lisansky and Clark, 1987).

Farmers are particularly concerned with changes to legislation in the urban-rural fringe as it further contributes to the impermanence syndrome (Pfeffer and Lapping, 1994)

Pfeffer and Lapping (1994) suggest that the farmer/ non farm differences come from different value systems. Farmland preservation pits private ownership rights against the public use value of the land. Farmers have an interest in maintaining profitable production and land use flexibility, and are often less supportive of regulatory methods (Ryan and Hansel Walker, 2004). The farmers have an economic interest in the development potential of their land and any changes to their property rights are viewed negatively (Pfeffer and Lapping, 1995b). Farmers who are faced with the loss of development rights to their land tend to be hostile or are at least ambivalent towards this restriction (Bryant and Johnston, 1992). Farmers have held to the argument that the only way to protect the landscape is to protect the actual farmer (Bunce, 1998). The idea has become entrenched in the mindset of farmers and is commonly used as an argument against farmland preservation (Gayler, 2004).

The view that farmland preservation is often based on urban-centered ideas further complicates debate over farmland preservation. Several authors question the effectiveness of farmland preservation programs if they are indeed focused on the views of the non-farm population. Bunce (1998) argues that if farmland preservation is truly based on the values of the non-farm population, it will remain a contentious issue. He indicates that mainstream farm voices are barely audible in the push for farmland preservation. He questions who really defines and controls the preservation agenda and

who it best serves. Ryan and Hansel Walker (2004) indicate that farmers in general have a lack of involvement when it comes to land use decisions. They argue that landowners and farmers must participate in order to avoid conflict or resistance in the future.

## **2.9 Economic Viability**

Farm viability is an important component of the debate over farmland preservation. In their study of conservation production systems in the Midwest United States, Napier et al. (2000) reported that many farmers reported that they were struggling to make a profit and many did not expect that their children would be operating the farm in the future. Krueger (1977a) argues that economics must be considered in the whole issue. Society cannot expect farmers to manage their land continuously without making a comfortable living. Challenges to the agricultural industry reduce the ability of farmers to maintain their equity base and cash flow. The development of farmland preservation is becoming “problematic from a financial standpoint” (Pfeffer and Lapping, 1994).

Farmers located in the urban-fringe are faced with the task of making farming viable despite the demands created by the urban populations. Added legislation such as nutrient management has made farming more difficult. Farmers are also hampered by the events that are currently reshaping the agricultural market and agricultural landscape. Market liberalization and the advent of free trade have dramatically changed the farm business unit (van der Ploeg and Roep, 2003). The regrouping of resources in the farm unit has meant that the farm unit now depends on off-farm income for survival. The removal of the family farm unit and the move towards corporate farming is also becoming an important concern among farmers.

Farmers have turned to non-traditional methods as a way to generate equity and cash flow. Farmers facing financial difficulty often depend on off-farm employment income. Farms also find ways to extract additional value from existing farm products. Many farms improve farm income by producing organic and other high value products and by lowering production costs. Other farmers take advantage of new economic opportunities by running agritourism operations and by diversifying into the production of new farm activities (i.e. energy production). The new activities enlarge income flows while at the same time provide goods and services that are demanded by the public (van der Ploeg and Roep, 2003).

Farmland preservation programs tend to further restrict the rights of farmers and contribute to the impermanence syndrome (Pfeffer and Lapping, 1994). Consequently Bunce (1998: 243,245) concludes,

Whatever the argument for farmland preservation, farmers and their land have been placed at the center of the issue, cast in the role of guarantors of food supply, of national, regional, and local economic stability and of our connections with the earth as well as in the role of guardians of nature, landscape, open space, rural heritage and community values. They have been both coerced and co-opted into fulfilling these roles.

Since farmers have been forced to accept new regulations and the fact that these programs are for the benefit of urbanites, then the cost of preservation cannot be charged to farmers alone (Krueger, 1977b).

One of the principal problems is how to develop methods to provide compensation to landowners and farmers for providing the public goods (Durand and VanHuylenbroeck, 2003). Some methods have been developed in an attempt to correct the market failure that results when farmers are unable to profit from the non-economic benefits of farmland (Nickerson and Hellerstein, 2003). Compensation to farmers can

play an important role in the financial stabilization of farms by freeing up capital that enables farmers to make investments in the maintenance of their farm operations (Pfeffer and Lapping, 1994).

## **2.10 Farmland Preservation Methods**

The paradigm shift to multifunctional agriculture puts more emphasis on the non-market public goods (Batie, 2003; Hellerstein et al., 2003). A variety of different methods have been established to preserve agricultural production and rural amenities. Farmland preservation strategies try to provide answers to the concerns expressed by a range of groups. The actual strategy used in a locality tends to be reflective of agricultural type and pressures facing that jurisdiction. Farmland preservation methods have varied results because the design and implementation may not reflect the preferences of the various groups. Some methods may be poorly designed to pursue the values demanded by the general public while others fail to address farm viability (Kline and Wichelns, 1998). Ryan and Hansel Walker (2004) argue that there is no single solution available for both preserving farmland and keeping farming viable. The effectiveness of the farmland preservation programs can be measured by looking at two criteria: political acceptability and land use performance. First, programs need to have widespread support, including landowners in order to be successful. Second, the program should reflect the goals of the preservation program and positively affect change within the landscape (Fursueth and Pierce, 1982).

Private initiatives towards farmland preservation usually take the form of private rural land trusts that accept charitable donations of preserved agricultural land. However, most methods are designed by governments and use both regulatory and voluntary

frameworks (Nickerson and Hellertstein, 2003). Government involvement in farmland preservation is needed because the conflict and administration/ regulation cannot be solved through market functions (Lapping et al, 1989). Governments at all levels have adopted farmland preservation strategies within their jurisdictions to help manage conflicts over land use. Local government officials are able to develop local land use plans that reflect local interests. Higher-level governments are able to manage land from a regional perspective and implement programs over a variety of jurisdictions. Unfortunately, governments have not always recognized the value of managing farmland from a regional perspective and have compromised the effectiveness of a variety of preservation programs (Pfeffer and Lapping, 1994).

Regulatory methods compel governments and landowners to participate in programs in which the government regulates local land use (Fursueth and Pierce, 1982). Regulatory methods set strict guidelines to ensure that all participants follow the direction of the program. Farmland preservation methods that use voluntary methods (stewardship programs) are flexible and are usually designed by a number of different stakeholders including government officials, community groups, and farmers (Nickerson and Hellerstein, 2003). Voluntary approaches are innovative and are often designed to keep the land in private ownership while accomplishing the goals of farmland preservation. Incentives to landowners in exchange for development rights are usually a key component of voluntary programs (Ryan and Hansel Walker, 2004). For this reason voluntary programs are increasingly popular but also plagued by questions over cost effectiveness. Questions linger as to whether the programs are actually preserving the amenities that the public truly prefers and as to whether the public actually supports using



public monies to support such programs (Duke and Aull-Hyde, 2002; Pfeffer and Lapping, 1995a).

The following section details some of the regulatory and voluntary farmland preservation models commonly used in North America:

1. *Agricultural conservation easements* – Involve the placement of restrictions on individual parcels of land. The landowner retains ownership of the land but voluntarily relinquishes their development rights to the land. Public funds are then provided to the landowner in the form of cash, income tax deductions, or other combinations. Some conservation easements strategies are voluntary but are still bound by legal agreements between the landowners and the preservation agency. This type of land use planning generally takes the following three forms (Hellerstein et al., 2002).
  - a. *Purchase of development rights (PDR)* – Also referred to as purchase of agricultural conservation easements (PACE) - Using this model the landowner is compensated for the value of development rights. One method of determining the value is to subtract the market value of the land from the value of the farm production.
  - b. *Donation or charitable contribution.* – The landowner gives a gift of the development rights to a preservation agency often resulting in income tax deductions.
  - c. *Transfer of Development Rights (TDR)* – These programs allow landowners (in designated areas) to transfer the development rights to an area where urban growth is desired. Land developers purchase the TDRs and use them to develop lands at higher densities than what the actual zoning allows. The transactions are negotiated between the landowners and the developers privately.
2. *Agricultural Districts* – Landowners are enrolled in a district that has land use guidelines attached to the land. Landowners agree to be in the district for a certain number of years (Hellerstein et al., 2002).
3. *Agricultural protection zoning* –Agriculture zoning that restricts non-farm activities on lands zoned as agriculture. Various jurisdictions may have a variety of agricultural zoning allowances for different farm types and mixtures (Hellerstein et al., 2002).
4. *Preferential or differential assessment of farmland* – Farmland is valued by officials by its agricultural productivity rather than the market value of the land. Landowners are offered preferential assessment in exchange for the agreement not

- to develop the land over a certain time period. Penalties can be used if the landowner fails to complete the agreement (Hellerstein et al., 2002).
5. *Right-to-Farm* – Legislation offered to farmers to protect them from lawsuits stemming from neighbours who object to normal farm activities. The legislation also protects farmers from local legislation that may restrict their farming operation. Often new residential buyers are warned beforehand that some of the negative externalities of normal farm operations may occur near and around their living locations (Hellerstein et al., 2002).
  6. *Urban Growth Boundaries* – A common method used by municipalities to place urban growth in certain areas. The boundaries direct urban growth to areas that are near established neighbourhoods and cost-efficient. Preserving farmland is not the primary goal of urban growth boundaries (Hellerstein et al., 2002).
  7. *Agri-Environmental Programs* – Farmers are compensated for providing environmental services (i.e. carbon uptake) which result from environmentally friendly agricultural practices and land uses (Bernstein et al., 2004; Doberstein, personal communication, 6 September 2005).

The above farmland preservation methods are used as part of farmland preservation strategies throughout North America and Europe. Many of the methods are used in conjunction with each other in order to achieve the goals of the farmland preservation strategy (Alterman, 1997).

## **2.11 Conclusion**

This chapter attempts to set the literature background for the remaining portions of this research study. It introduces the multifunctional paradigm and argues that the paradigm presents a clearer understanding of how agriculture is evolving while being faced with land loss and economic pressures. Much of the focus of this paradigm has not been on the productive capabilities of the landscape but rather on provision of non-market amenities. Research shows that people are demanding non-market amenities of farmland, especially in areas with high rates of urbanization. Farmland preservation models have matured and begun integrating ways of preserving not only the market

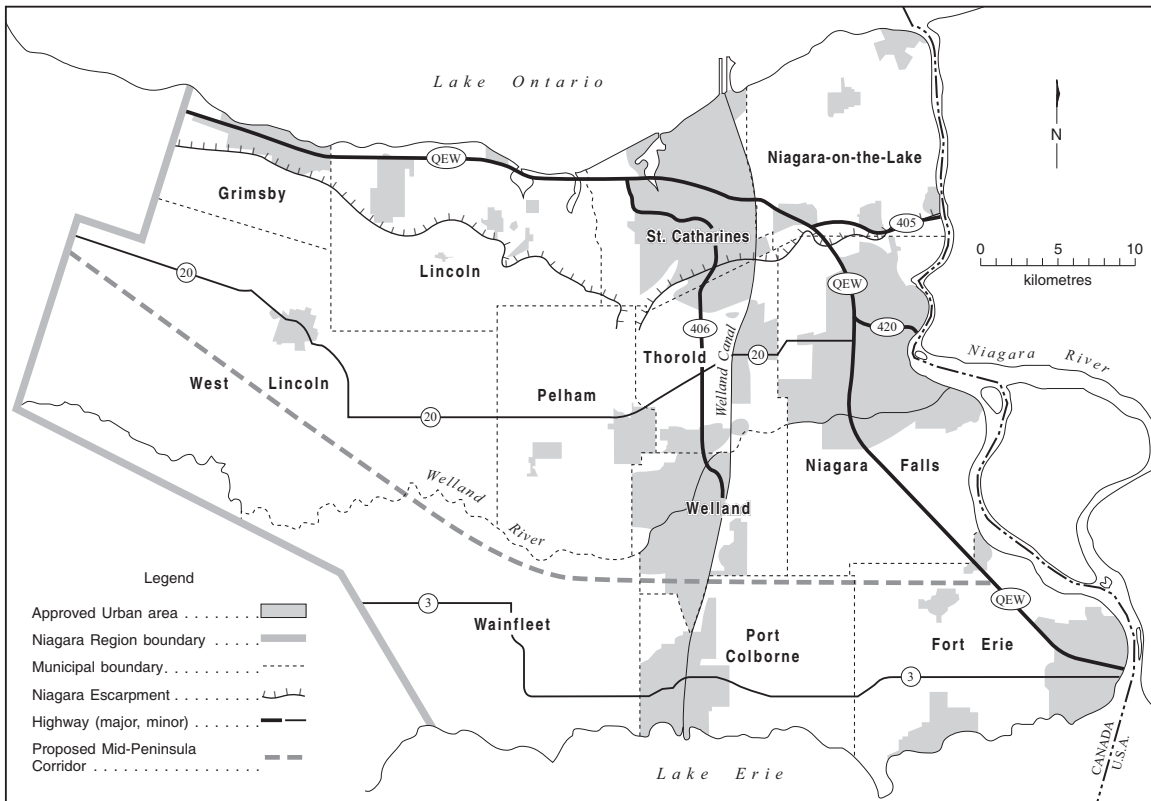
qualities of the land but also the non-market qualities. Despite the evolution of farmland preservation programs, they still remain contentious. Research shows that farmland preservation programs can place additional economic difficulties on farmers and often fail to include them in the planning process. Farmers also are being forced to deal with an increasing amount of conflict with non-farm residents, especially in areas along the urban rural fringe. For these programs to become effective they will need to gain the support of both the non-farm population and the farmers. To achieve this goal, it is necessary to evaluate the group preferences for farmland preservation and rural amenities.

## Chapter 3 – Study Methodology

### 3.1 Introduction

Farmland preservation remains a contentious issue even after being on the North American political agenda for over thirty years (Bunce, 1998). The realization that farmland has additional benefits has generated more debate over the issue. The understanding of how various groups view and value farmland is the key to developing successful farmland preservation strategies. This chapter introduces the methodology used to try and understand how both the non-farm population and farmers view and value the tender fruit and grape lands of Niagara. To achieve this objective, surveys (N = 233) were conducted with members of each group. The study sample was geographically limited to the four municipalities that contained the majority of the tender fruit and grape growing operations in Niagara. The four municipalities (Lincoln, Niagara-on-the-Lake (NOTL), St. Catharines, and Pelham) can be found on Figure 3.1. To provide additional information, interviews (N = 11) were performed with selected informants from each of the municipalities, and from a range of agricultural industries. The chapter also details an extensive literature review that was completed to support and compare the data from both the surveys and interviews. During the time of data collection, the government introduced the Greenbelt Act, which turned out to be directly linked to the research. Finally, the chapter looks at the methodology and evaluates its strengths and limitations.

**Figure 3.1** *Niagara Urban Areas, 2002*

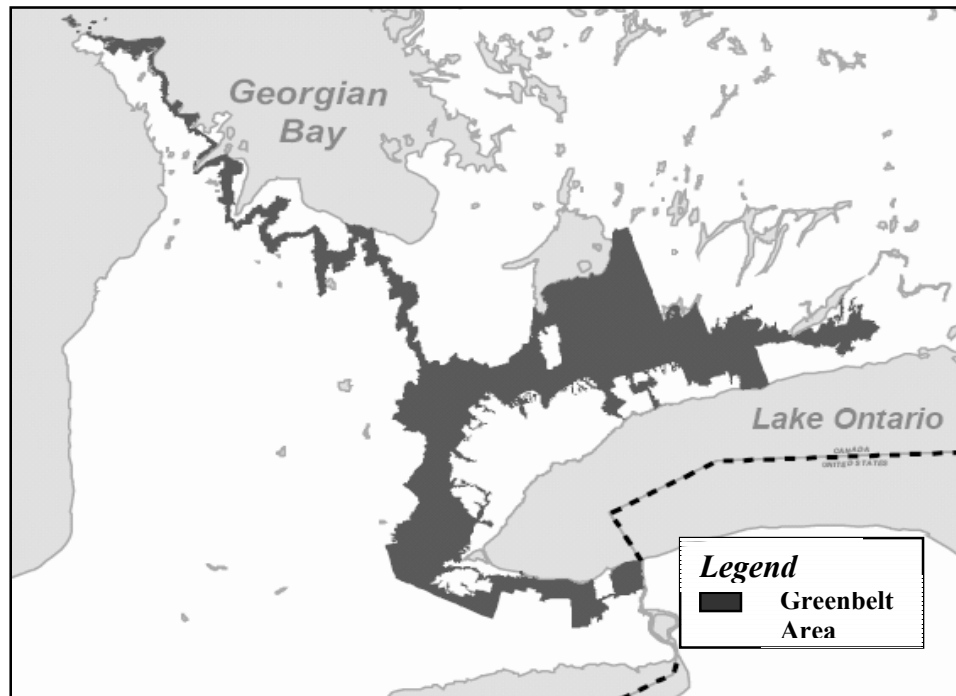


(Gasparotto, 2005)

### 3.1.1 Greenbelt Act

During the development of the research methodology, the government of Ontario developed legislation for a Greenbelt around the “Golden Horseshoe”. The study area was located in a portion of the area that was to be governed by the greenbelt legislation.

**Figure 3.2** *Greenbelt Plan Area*



The legislation was timely because it coincided with many of the interviews and the delivery of the survey material and seemed to affect the research in a number of ways. The content of the Greenbelt legislation angered landowners and farmers causing the media to report it within the local papers. It was hoped that increased awareness of the issue would increase response rates and would encourage participants to record their own views on the issue. However, it was also suspected that an increased media focus might turn people away from the issue. The development of the legislation provided other avenues to collect research data. During the development of the legislation, public consultation meetings were scheduled throughout Golden Horseshoe. One of the meetings was scheduled in St. Catharines and attracted numerous farmers and representatives from a variety of organizations. Public responses by organizations that were presented at the meetings were also collected and analysed. More information on

the Greenbelt Act and how it impacted the research is described in the subsequent chapters.

### **3.2 Literature Review**

An extensive review was conducted on literature pertaining to the research topic. A review was conducted on the history of farmland preservation, multifunctional agriculture, and current farmland preservation methods. The analysis provided a theoretical background on farmland preservation and identified how it has evolved into practice. The recent surge in interest in farmland preservation and multifunctional agriculture provided a wide range of academic articles from which information could be derived. A background review was also conducted on literature pertaining to farmland preservation and preferences for agriculture. Several studies were available on public support for farmland preservation and public preferences of farmland. The studies were used to compare data on what the public was demanding in other jurisdictions. Very few studies existed on farmer preferences for farmland preservation and farmland. The lack of studies provided a narrow view and prevented any significant comparisons from being made. By looking at group preferences for both non-farm residents and farm residents, this study is able to make a unique contribution to academic literature.

To provide a detailed analysis of farmland preservation in Niagara, a review of the history of farmland preservation programs in the Niagara Region was completed. Government publications, planning policies, and journal articles were reviewed and analysed. Since the region is one of the few regions in Canada that is able to grow tender fruit and grape products, it has received more attention than other agricultural regions in Ontario and Canada. However, there is still only a limited amount of information from a

select group of authors. A review of data concerning the loss of farmland in Canada and agricultural farm receipts was also completed as part of the literature review. Electronic data from the Census of Agriculture (1991, 1996 and 2001) and data from the Environment Accounts and Statistics Division (Statistics Canada) were obtained. Recent studies provided up-to-date statistical information that accurately depicted the issue of farmland loss in Canada. However, the lack of previous literature on the subject prevented any accurate comparisons from being made. Overall, each phase of the literature review provided the necessary background information and created an ideal framework for the research project.

### **3.3 Data Collection**

Interviews and surveys were used to determine the preferences that different interest groups had for the Niagara tender fruit and grape area. Surveys (N = 233) were conducted with fruit farmers and the non-farm population to understand their attitudes towards the fruit growing region, farmland preservation, and other issues relating to the farmland. Interviews (N = 11) were conducted with people who have a direct impact or link to the issue such as planners, academics, and interest groups. Prior to the start of the research, the survey and interview questions were designed and pilot tested on fellow students, friends, and Niagara residents. Using their input, the survey was changed to be more user friendly and then submitted to the Office of Research Ethics at the University of Waterloo. The university requires all research with human participants undergo an ethics review and clearance. The purpose of the review is to ensure that all research complies with the guidelines set out by the Office of Research Ethics and that the safety, rights, and welfare of the participants are protected (Office of Research Ethics, 2004).



For more information regarding the Ethics Review, please refer to Appendix B for the Ethics Review Application.

### *3.3.1 Surveys*

The original intention of the survey research was to approach members of the non-farm population and farmers to administer face-to-face interviews. Members of the non-farm population were to be approached in public places and farmers were to be approached at their residences. It was anticipated that approximately 50 surveys for each group would be conducted using the face-to face method. Numerous advantages are associated with this method including higher response rates and the ability to conduct longer surveys. The method allows the researcher to ask probing questions, use visual aids, and measure non-verbal communication. The disadvantages of this method are that they are expensive, and there is a greater possibility of interviewer bias (Neuman, 2000). After an initial test phase of this method, and difficulty obtaining permission to survey people in public places, it was decided to switch to a mail survey. Mail surveys are convenient, cheaper to conduct and can be sent over a wide geographical area. However, mail surveys often suffer from lower response rates, limit the types of questions that can be asked, prevent the researcher from observing nonverbal communication, and prevents the researcher from controlling the conditions under which the survey is completed (Neuman, 2000). The previous face-to-face survey was adapted into a mail survey and then sent to the Office of Research Ethics.

The change from the face-to-face method to the mail survey impacted the results in several ways. The change allowed the research time frame to be shortened because instead of interviewing participants over the course of several weeks, the mail surveys

were distributed over a couple of days. The change also allowed the surveys to be distributed over a larger geographical area including both rural and urban areas. Actual survey distribution numbers were increased to 600 for non-farm residents and 150 for farmers. It was decided that increased numbers would help offset the lower response rates associated with the mail surveys, increase distribution over a larger area, and increase the amount of survey data. The potential negative effect of the change was that there may be lower response rates and a higher rate of non-response on the questions. Participants may have misunderstood the questions and either chose not to respond to them or to respond to them from a different perspective.

Designing a survey format that provides meaningful data must be cost efficient, user friendly, and must be well represented by different user groups. During the development of the survey, three important questions emerged regarding the survey design:

- What is the most effective methodology that can be used to measure public preferences of farmland?
- What is the most effective methodology to determine this: rankings or ratings?
- What qualities are demanded by the public and need to be included in the survey?

To provide answers to the questions, above external sources were referenced to develop the most effective survey format. The studies by Kline and Wichelns (1998), Duke and Aull-Hyde (2002), and Nickerson and Hellerstein (2003) are as much about providing an effective technique for analyzing public preferences as they are about presenting the actual public preferences. The study by Hall et al. (2004) provides a summary of all the different methodologies used to examine preferences for farmland. The research

methodology used in the current study tried to build upon the strengths and weaknesses of the different methodologies reported on in these studies.

Hall et al. (2004) reviewed the various methods that have been used for determining what the non-farm preferences are for the agricultural landscape. The authors concluded that no meaningful qualitative data could be obtained from conclusions in the reviewed literature. The methodologies that were analysed included opinion polls, proxy for public preferences (i.e. legislative review), deliberative methods (i.e. focus groups), monetary valuation, and multi-criteria analysis. Although each of the methods had their strengths, it was determined that multi-criteria analysis in combination with choice experiments (a valuation method) was the preferred method. Even though the method appeared to be effective, it was time consuming, contained a weak theoretical foundation, and was cognitively challenging for respondents. After reviewing the strengths and weaknesses it was determined that this method would be ineffective and inappropriate for Master's research because it would be difficult to implement and explain to participants, time consuming, and costly.

Many studies on farmland preservation have focused on the willingness to pay (WTP) of the public to protect farmland, or live near farmland. (Please refer to Figure 2.5 in Chapter Two for list of studies.) Nickerson and Hellerstein (2003) argue that valuation studies prove that people are willing to pay to preserve agriculture but they have a weak understanding of what objectives people actually seek from the preservation program. Kline and Wichelns (1998) argue that although value estimation provides a useful tool, it does not identify the heterogeneous attitudes that are useful in designing preservation programs. Additionally, value estimations are considered to be grounded in

economic theory, which many people do not subscribe to, have strict design criteria, need focus groups to establish criteria, and may not be fully understood by participants (Hall et al., 2004). Thus it was determined that valuation methods would not be the most appropriate survey tool to meet the stated research objectives. Additionally, it was thought that the method would confuse participants because the Greenbelt legislation did not introduce a compensation mechanism to landowners.

The study by Kline and Wichelns (1998) developed a methodology that later motivated the studies by Duke and Aull-Hyde (2002). Kline and Wichelns (1998) developed a methodology by first forming small groups and then developing a survey around rating system. In the study, they required participants to rate on a scale of 1 to 10 (*not important to most important*) how important each reason should be when selecting parcels of farmland for protection. The authors performed a factor analysis on the results to produce more specific results. The methodology used by Kline and Wichelns was determined to be user-friendly, produced good quality data set, and was widely referred to by other academic articles. Thus, it was determined that a variation of this methodology would be used in the present study.

Using the rating technique proposed by Kline and Wichelns (1998) raised some questions about the effectiveness of rating techniques versus ranking techniques. In most cases, ratings were chosen because of the simplicity of use and the ability to present the results efficiently. A literature analysis and discussions with fellow researchers were conducted to determine what method should be used. The differences between ratings and rankings are highlighted in many social research textbooks and research studies. Neuman (2000) argues that it is better to ask participants to rank items instead of rating

items because participants will tend to rate several items equally high, but will place items in a hierarchal order if asked to rank them. A study by Alwin and Krosnick (1985) argued that ratings and rankings may be interchangeable for the purpose of measuring the order preferences. They concluded that rating measurements appear to be just as effective as ranking techniques. This conclusion along with the thoughts expressed by fellow researchers indicated that the rating method would be acceptable to use.

One of the questions of the survey asked participants to rate how important it was to preserve the different non-market qualities of the farmland. Kline and Wichelns (1998) and Duke et al. (2002) used focus groups to establish the qualities of farmland while Nickerson and Hellerstein (2003) analysed farmland preservation programs to determine the list of non-market qualities. Although the qualities and categories presented in each of these studies were not exhaustive, they were well defined. The qualities were taken from the studies and used in the survey. After several interviews, it was determined that an additional quality (Preserves a unique agricultural terrain) should be included the list of qualities. For the list of qualities that appeared on the survey please refer to Appendix C.

The survey used a number of different-styled questions, including open-ended questions and closed-ended questions, such as scaled responses, ranked responses, and multiple answer responses. The survey contained several open-ended responses so that participants could enter free responses to support their answers or concerns. The closed ended questions made up the majority of the survey and were used so that participants would provide a fixed response that could easily be understood. Scaled responses and ranked responses were used because they are user friendly and the most appropriate

method to measure the level of the support for farmland qualities and for farmland preservation. Several multiple answer responses were used to allow participants to choose from a variety of answers. To provide users with more choice, a space for an open response was also given for most of these questions.

Prior to the actual delivery of the surveys, a pilot test was conducted with both the farm and the non-farm surveys. The pilot test was conducted with friends and several farmers to ensure the survey questions and structure were user-friendly and provided useful results. Each participant was asked to complete the survey and then give feedback. Participants recommended that the wording and format be changed on some of the questions. In addition, the survey results from pilot tests revealed that some of the questions did not provide meaningful data and these questions were then eliminated. Any changes to the survey format or survey questions were then forwarded to the Office of Research Ethics.

The farmer and non-farm surveys were similar in length and took about five to ten minutes to complete. The survey format was also very similar between the farmer and non-farm surveys. However, the first few questions of the farmer survey asked for comments relating to the stability of the tender fruit and grape industry. The questions relating to the demographic information were also slightly different. Please refer to Appendix C to review both surveys.

The sampling method chosen to distribute the surveys was based upon nonprobability sampling. Nonprobability sampling selects cases gradually and for their specific content information. On the other hand, probability sampling uses a mathematical theory to determine the sample size (Neuman, 2000). Probability sampling

was not chosen because of its complexity, costs, and increased time commitment. The nonprobability sampling techniques used in this study consisted of both quota sampling and haphazard sampling. The sampling techniques allowed for convenient and cost effective survey distribution. However by using this sampling method, the data was not able to be generalized from the sample to population.

A quota system was used to set a target number of surveys for each group: farmers and the non-farm. Neuman (2000) reports that a response rate of 10 to 50 percent is common for mail surveys. Survey distribution numbers were based upon the assumption that response rate would fall in between these percentages. By increasing the quantity of delivered surveys, it was hoped that more surveys would be returned. A large quantity of returned surveys would strengthen the statistical results. Thus, it was determined that 150 surveys would be distributed to tender fruit and grape producers. It was also determined that a minimum of 100 surveys needed to be delivered to each of the municipalities. Given that St. Catharines had a much larger population, it was decided that 300 surveys needed be delivered to that municipality. The other three municipalities each received 100 surveys. This decision was made because it was thought that it would increase the accuracy of the results and increase the accuracy when comparing municipalities. The following chart shows the 2001 census population of each municipality and how many surveys were delivered in each municipality.

**Table 3.1 Survey Distribution Numbers**

<b>Municipality</b>	<b>Population (2001 Census)</b>	<b>Number of Surveys</b>
Lincoln	20,612	100
NOTL	13,839	100
Pelham	15,272	100
St. Catharines	129,170	300

(Statistics Canada, 2001b)

The sampling methods used to distribute the farmer and the non-farm surveys varied slightly. Farmer surveys were delivered to the tender fruit and grape producers connected to the Grape Growers of Ontario (GGO). This organization provides marketing support and information to approximately 500 grape growers in Ontario. This group is also affiliated with Grape and Tender Fruit Ontario Ltd., which is connected to over 1000 grape and tender fruit producers in the Niagara Region. The organization maintains a database of fruit and grape farmers and distributes grower numbers to fruit and grape farmers. There are no restrictions on who can obtain a grower number. However, in order to sell produce to licensed processors, farmers must first register with the organization and obtain a grower number. The registering of farmers enables the organization to collect board fees on both tender fruit and grapes.

The organization endorsed the survey and put an official notice of the survey into the newsletter provided to its members. The organization placed the addresses and mailed the surveys to protect the confidentiality of its members. An expert with the organization ensured that only the tender fruit and grape producers in Niagara would receive the survey. Surveys to the non-farm population were distributed across four Niagara municipalities: Lincoln, NOTL, Pelham, and St. Catharines. These four municipalities were chosen because they have the highest concentration of tender fruit and grape land in the Niagara Region (Planscape, 2003). It is also important to note that



each municipality is experiencing a decline in the amount of available tender fruit and grape land (Statistics Canada, 2001a). Five municipalities were originally targeted to receive surveys but this was narrowed when Grimsby was removed. It was determined that very little tender fruit and grape land remained in Grimsby outside of existing urban boundaries. The information came as a result of an interview conducted with an informant located in Grimsby. The informant explained that most of the existing grape and tender fruit land fell within urban expansion boundaries and thus would be removed from production in the near future.

The surveys were delivered to each location in person over a four-day period. To ensure an accurate geographical distribution, the surveys were delivered to residents located on north / south streets across each of the municipalities. About 30 rural surveys were delivered in each municipality with the rest being distributed in urban centers. To ensure income diversity among participants, the surveys were delivered to a variety of residential units including single detached homes, duplexes, and townhouses. Unfortunately, surveys were not delivered to high rise apartment buildings because of difficulty associated in entering those buildings (i.e. security).

The surveys were delivered with a cover letter, a feedback letter and a self-addressed postage paid envelope. The cover letter, or consent letter, detailed the research goal, the survey contents, the researchers and contact information. If the participants had questions or concerns with the contents of the survey or survey design they were encouraged to contact the researchers or the Office of Research Ethics. To complete the survey package a feedback letter was included. The feedback letter contained

information about the research goal, a thank-you message, related references, and information as to where the participant could obtain study results.

The response rates for the surveys fell into the 10 to 50 percent range that was reported by Neuman (2000). Overall the response rate for the non-farm participants was 30.3%. There was some variation between the municipalities with Pelham having the highest response rate of 46 % and St. Catharines having the lowest response rate of 24%. The response rate for farm participants was 34% which means the response rate for both non-farm and farm participants was 31.1%. Please refer to Table 3.2

**Table 3.2 Survey Response Rates**

Group	Surveys Distributed	Surveys Returned	Response Rate
Lincoln	100	38	38.0%
NOTL	100	26	26.0%
Pelham	100	46	46.0%
St. Catharines	300	72	24.0%
Farmers	150	51	34.0%
Total	750	233	31.1%

After the completion of the data collection, the data were analysed both quantitatively and qualitatively. The quantitative data were entered into the data analysis program SPSS. The demographic information was compared to statistical data from Statistics Canada. Much of the data were compiled into frequency tables in which the mean, the median, and the standard deviation are displayed. For one of the questions a factor analysis was completed to narrow the data into useable themes. Several questions were also cross-compared using scatter plots to determine data similarities. Qualitative data were read over and a content analysis was conducted. A content analysis divided the contents up into categories and quantified the data. After reviewing the answers to the

open-ended questions, themes were developed around common ideas found in the comments and within literature (Please see Appendix F for more information on the themes identified in the open-ended questions). The researcher placed one or more themes on each of the comments based on the information it contained. A second researcher (Brenda Prins) also reviewed the comments and separately placed themes on each of the comments. After this was completed, the lists were combined to determine any irregularities and to develop a master list. The master list was then compared to other survey responses and the comments were used to identify concerns for each the participants.

### 3.3.2 *Interviews*

Interviews were chosen as an additional means of achieving the objectives of the study and to provide additional background information. The interviews were organized as a typical field interview. A typical field interview is unstructured, nondirective, and in-depth. The researcher and the member are both active participants in the interview and each may share personal experiences (Neuman, 2000). The researcher approached the interview with a broad set of issues that were readjusted according to each informant. The snowballing method was used to select informants from a network of people and organizations that were associated with farmland preservation in Niagara. The snowball sampling method selects cases that are in a network and begins with a few people and expands based on the links obtained. The snowball method continues until there are no more links or until the network is too large for him or her to study (Neuman, 2000). Using this method, informants were asked at the end of the interview to give names of groups or individuals that might provide additional insight.

Using the snowball sampling method, eleven interviews were conducted. The interviews were conducted with members of the city councils from each of the four municipalities. Members of the regional government were interviewed to determine how the Region viewed and valued the farmland. Interviews were also conducted with people directly involved with the farmland. Members of both the Grape Growers of Ontario and the Ontario Tender Fruit Marketing Board were interviewed. Most of the names that were provided by the other informants could be linked back to the Agricultural Task Force of Niagara. After eleven interviews it was determined that no more interviews needed to be conducted because little additional insight was being obtained and those informants interviewed reflected a diverse range of employment backgrounds.

The topics of conversation were consistent with the overall topic of the research project but also gave some focus to the concerns, issues, and facts that related to the specific organization to which that informant belonged. The Office of Research Ethics at the University of Waterloo approved the interview topics. The following list details the topics covered during the interview. The interviews topics were arranged around the background of each informant.

- Perception of the future of the tender fruit industry
- Threats and constraints facing the industry
- Value placed on the farmlands
- Factors contributing to the loss of farmlands
- Present actions relating to the protection of farmland
- Support for agricultural fruit land preservation among farmers and the non-farm population. What does the public want? What do the farmers want?
- Primary objective of farmland preservation

Interviews were arranged with each of the informants on an individual basis.

Prior to the interview, the informant was given information in the form of a letter

detailing what the interview involved and the overall interview topic. At the interview, the informant was given a consent form to authorize their participation in the research project. It was clearly stated to each of the informants that they would not be identified by name in the research project. The interviews were unstructured and were scheduled for thirty minutes but often lasted up to an hour in length. Responses from the interview questions were recorded during the course of the interview. Every effort was made to review the comments within 24 hours of completing the interview to complete any information gaps that might exist. The comments are recorded in the results chapter and are compared to the data collected from both the farmer and non-farm surveys.

### **3.4 Limitations to methodology**

Extensive research was conducted to ensure that important themes, ideas, and perspectives were not eliminated during the data collection phase. Although a number of different sources were used to obtain data for this research project, the methodology is not exhaustive. The study is not without research limitations and the following limitations of the research methodology have been identified.

Time and financial constraints limited the quality and accuracy of the survey and the survey distribution method. If the constraints did not exist, survey numbers would have been increased and a random survey distribution method utilized. The choice of survey and survey distribution method resulted in the following limitations. First, both the farmer and non-farm surveys were distributed using nonprobability sampling. This sampling method is not determined by a mathematical formula and thus does not represent true random sampling. Using the nonprobability method meant that some researcher bias may have entered the distribution sample. The method also prevented any

surveys from being delivered to certain building types (e.g. apartments and condominiums). The distribution method could potentially remove certain demographic segments of the population from the data set and reduce the accuracy of the data. The distribution method also prevents the statistical data from being generalized to the entire population of the four municipalities. The distribution method was chosen due to the ease of distribution and the ability to quickly distribute surveys within a shortened time frame. It would have been beneficial to increase the survey numbers as well as circulate surveys to additional areas outside of the Niagara. Increasing the survey numbers along with using a probability sampling method would have increased the accuracy of the survey data. Delivering surveys outside of the areas that contain tender fruit and grape lands would have enhanced the survey data as it would allow comparisons to be made on how agricultural landscape is viewed both inside and outside the four municipalities.

The type of survey used during the research also contains several limitations. Response rates to mail surveys are typically well below the response rates of other social research methods. Although the response rate (31.1%) fell within the normal range for mail surveys, the response rates may have been higher if another method was used. Question responses may have also been more accurate if either face-to-face interviews or phone interviews were conducted. Using these methods, the researcher may have been able to solicit more information from the participants regarding their choices during the survey administration. Several of the questions asked participants to rate their preferences on a scale. Participants in preference surveys may tend to rate all qualities as high because they determine them all to be valuable. This tendency may derive the results of some of their usefulness.

Interviews were used as a research tool to expand the knowledge base in regards to the attitudes towards the agricultural landscape and farmland preservation. Additional informants may have provided more in depth information in regards to farmland preservation. However, while conducting the interviews no new information was being obtained on farmland preservation and the agricultural landscape. The informants reflected a diverse range of backgrounds and interviewing more informants would have stretched the project beyond its original scope and increased the required time and financial commitment.

### **3.5 Summary**

The methodology highlights the range of methods that are used to measure preferences for farmland. Each of the methodologies has both advantages and disadvantages. This chapter describes the methodology used to fulfill the research goals of this study. The above methodology contains limitations that may mean that gaps could be found in the research results. The absence of probability sampling, the choice of survey method, and survey questions contributes to a potential bias. While these limitations may affect the validity of some of the data, the methodology still provided data that can generate discussions regarding farmland preservation in Niagara.

## **Chapter Four - Farmland Preservation in Niagara**

### **4.1 Introduction**

This chapter provides an overview of the study area. The chapter has been composed to not only explain the geographical details of the study area but also to explain the issues regarding farmland preservation. A brief geographical analysis appears at the beginning of the chapter followed by a brief history of the agricultural landscape. This provides an ideal context by which the history of farmland preservation can be explained. The history, issues, group preferences and recent developments relating to farmland preservation complete the chapter.

The preferences of specific interest groups play an important role in deciding how the agricultural landscape will be preserved in the future. Historically, farmers and rural non-farm landowners have had opposing opinions with the non-farm population. However, neither group has homogenous reasons for preserving the landscape. This chapter attempts to set the context for understanding group preferences for the agricultural landscape in Niagara. The geographic and demographic structures of the overall landscape are important determinants in how the landscape is viewed. In addition, the historical and current planning processes affect how the landscape has and will continue to be viewed. It is hoped that the understanding of these variables will provide some answers as to what the structure of future farmland preservation policies should look like.



## 4.2 Geographical Information

The Regional Municipality of Niagara is found in southern Ontario, and is part of the southern portion of the Golden Horseshoe. The Region is commonly referred to as the Niagara Peninsula, although it is not a true peninsula. The Region covers 1896 sq. km and is bounded by Lake Erie (to the south), the Niagara River (to the east), and Lake Ontario (to the north) (Planscape, 2003). Haldimand County and the City of Hamilton border the western side of the Region.

**Figure 4.1** *Location of Niagara Region*



(Gasparotto, 2005)

The Region is composed of twelve separate municipalities (please see Figure 3.1). The Region officially formed in 1970 when twenty-six municipalities were reorganized and formed into the twelve current municipalities. St. Catharines, Niagara Falls, and Welland contain most of the population and industry. The Region's population in the

2001 Canadian census was 410,570 (Regional Municipality of Niagara Public Health Department, 2003). Significant industries in the Region include tourism, manufacturing, farming, natural resources (mining) and environmental resources (peat and petroleum)(Regional Municipality of Niagara, 2005).

The Niagara Region contains some of the best and most unique agricultural lands in all of Canada. Overall, Niagara is comprised of 444,349 acres of which 232,817 are dedicated to farmland (Planscape, 2003). The Niagara Escarpment runs east to west and generally separates the different types of agricultural land. The agricultural land that is located north of the Niagara Escarpment is where most of the unique agricultural land is located and is generally referred to as the Niagara Fruit Belt. The land located to the south of the Escarpment is also good quality agricultural land but is not suitable for growing specialty fruit crops.

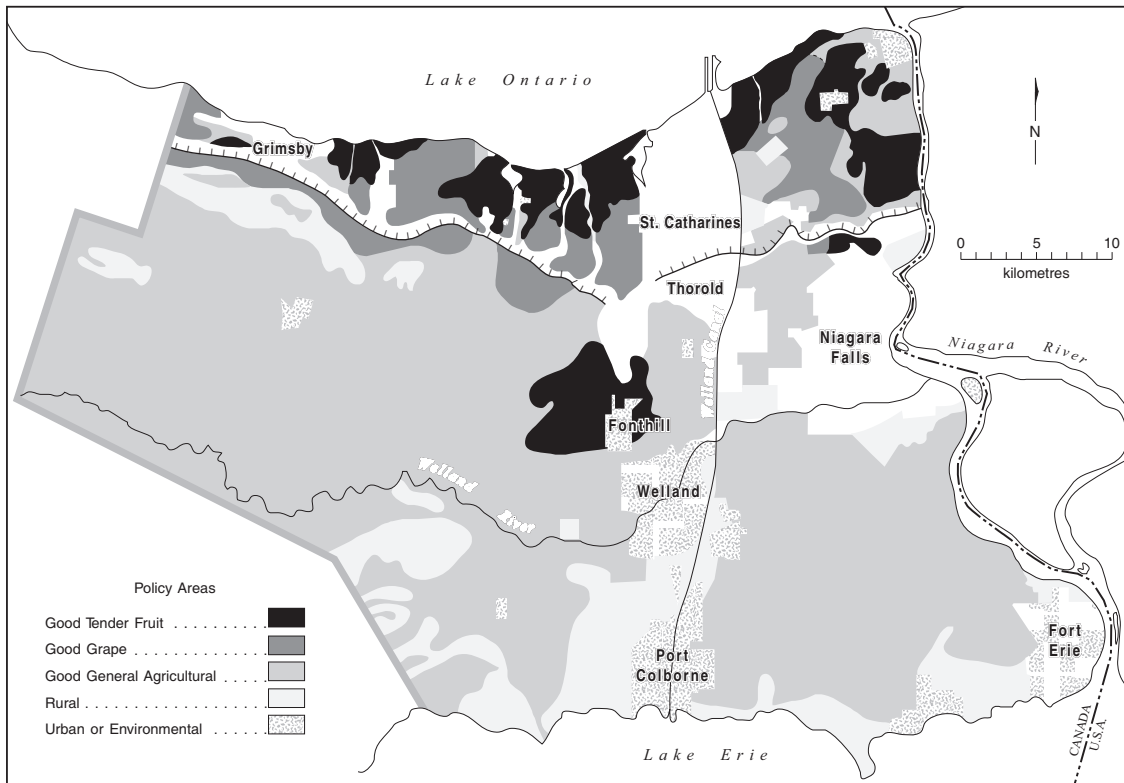
The Region recently completed an extensive study in 2003 entitled the *Regional Agricultural Economic Impact Study (RAEIS)*. This study gives a detailed analysis of the agricultural industry and includes an evaluation of the land base, land use planning and the agricultural economy. The RAEIS (Planscape, 2003: i): makes the following statement regarding the agricultural land in the Niagara Region

...the unique combination of geography and climate combine to make portions of Niagara one of the few areas in North America where the sensitive vinifera grapes and peaches can be grown. Niagara is also recognized as one of the most stable stone fruit producing regions on the continent.”

The Niagara Escarpment, the Iroquois Plain and the Haldimand Clay Plain are the three physiographic regions that dominate the landscape and divide the different agricultural areas. The Haldimand Clay Plain is located on the southern side of the

Niagara Escarpment and the Iroquois plain is located on the northern side. The Niagara Escarpment is a linear series of cliffs with large drops in elevation that runs east to west along the northern half of the peninsula. Along sections of the Escarpment in areas near Lincoln and St. Catharines a ‘bench’ area is located. The area is located between the Escarpment cliffs and Lake Ontario and is also suitable for specialty fruit production. An additional area located in Pelham is also suitable for specialty fruit production. In this area, the Fonthill Kame rises significantly above the landscape to provide ideal conditions for growing specialty crops (Planscape, 2003).

**Figure 4.2** *Niagara Agricultural Areas*



(Gasparotto, 2005)

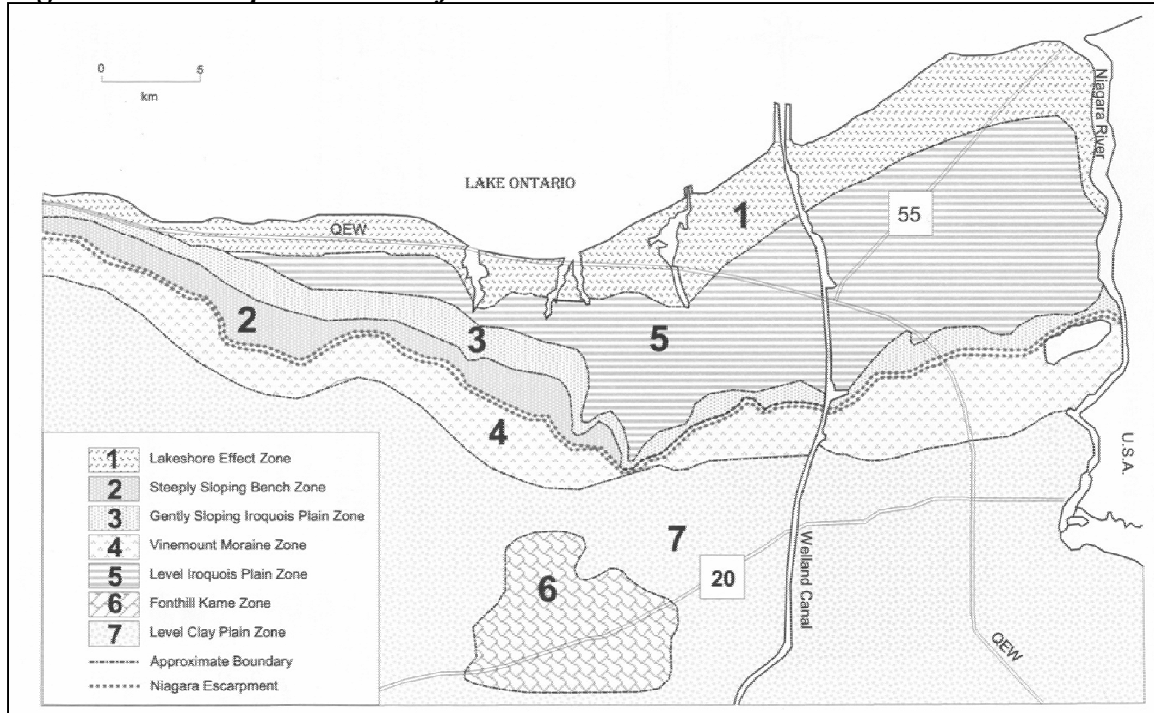
The Region, along with the various municipalities, have conducted numerous soil surveys to map the soils in Niagara. Regional Council requested the most recent soil survey (Kingston and Presant, 1989) survey because it was disappointed with the amount

of information in existing surveys. The survey was quite extensive and details the geological and physiological features; soil groups and types; soil moisture characteristics; drainage and variability; common properties of soil groups; schematic cross sections of relationships and relative depths of soils; climatic zones for grapes and tender fruit; agricultural land suitability ratings for certain crops and land use and management comments. The survey indicated that the majority of soils in Niagara could be classified in the CLI Class 1-3. (See Appendix A for Classification Information) The survey also indicated that prime agricultural soils, useful for growing tender fruit and grapes were found between the Escarpment and Lake Ontario. These lands were considered to be specialty crop production lands and are referred to as grape and tender fruit lands.

The location of the Region of Niagara between Lake Erie and Lake Ontario and the geographic location of the Niagara Escarpment combine to form a unique climatic zone, the Niagara Fruit Belt Climatic Region, which is climatically suited to growing tender fruit and grape crops (Kingston and Presant, 1989). Lake Ontario regulates air temperatures on the northern half of the peninsula by warming the land temperature in the wintertime and lowering land temperatures in the spring and summer. The regulation of air temperature delays bud development on the fruit trees in the spring, prevents premature ripening in the summer, and extends the growing season in the fall (CVA, n.d.b). The following map (See Figure 4.3) appeared in *The Soils of the Regional Municipality of Niagara* (Kingston and Presant, 1989). The map identifies areas that are suitable for the growing of tender fruit and grape crops. The setting for each zone is identified and the zones are labelled in descending order of suitability for growing grape and tender fruit crops. The soil report indicates that climate may be more important than

soil characteristics in determining suitable sites for grapes, and equally as important for identifying sites for tender fruit crops (Kingston and Presant, 1989).

**Figure 4.3** *Grape and tender fruit climactic zones*



(Planscape, 2003)

### 4.3 Development of Niagara's Tender Fruit and Grape Industry

The tender fruit and grape lands in Niagara have long been referred to as the Niagara Fruit Belt and has been an important part of the economic success of the region since the early years of Confederation. The RAEIS indicates that at the time of Confederation, apples, peaches, and grapes emerged as profitable products (Planscape, 2003). Profitable apple production continued in the Niagara until 1890, when British Columbia and Nova Scotia entered the market. The increase in competition forced apple production to decline and peach production became the dominant fruit crop in Niagara.

Peach production quickly became the largest tree fruit crop in Niagara because the unique climatic conditions gave it a comparative advantage to other locations in Ontario and Canada. By 1905, the peach production in Niagara had a virtual monopoly in Ontario, and as a result, the industry continued to grow. With the rise in peach acreage came small increases in the amount of acreage devoted to pears, plums, cherries, small fruits, and vegetables.

The total amount of land in tender fruit production continued to grow until 1951. However, in 1951 the amount of land added to tender fruit production was outpaced by the expansion of other non-agricultural uses (Krueger, 1959). Soon after, reports started to emerge regarding the reduction of land in tender fruit production (see Figure 4.6). Many of the reports attributed the loss of tender fruit land to market conditions. In his 1969 report, Reeds identified high land prices, rising production costs, and price fluctuations as contributing to uncertainty in the industry. He indicated that this uncertainty prevented any sort of permanence forming around the industry. Chudleigh's report in 1972 painted a similar picture and indicated that the acreage in peaches was declining as this crop was facing increased competition from foreign markets.

The 1979 tariff increases under the GATT (General Agreement on Tariffs and Trade) agreement provided some stability. However, the reworking of the tariffs under NAFTA (North American Free Trade Agreement) in the late 1980s reversed this stability and further caused hardships for the tender fruit industry by increasing foreign competition. Several canning and packaging plants closed or resourced their supply from other areas causing economic hardships for tender fruit producers (Niagara Tender Fruit Working Group, 1990). These hardships were compounded by the recession in the early

1990s. Recently, the tender fruit industry has gone through a renaissance in the 1990s. It now appears that there is a projected need for more tender fruit land (Gayler, 2004). Even though a “renaissance” has been identified in the tender fruit industry and in particular for peach producers, it is not removed from the vagaries in the market conditions. In addition, recent outbreaks of diseases such as plum pox virus on peach trees add additional stress to tender fruit producers (Canadian Phytopathological Society, 2005).

Grape production began to rise in Niagara during the same time that peach production began to rise. The RAIES indicates that a Wine Grower’s Association was formed in 1866 (Planscape, 2003). Initially, much of the grape production was located on lands north of the Escarpment but then spread to the top of the escarpment (Chapman, 1994). By 1965, about 40 percent of the grapes in the Region were located on top of the Escarpment (Krueger, 1977a). Grape production continued to grow at a steady pace until a rapid increase occurred in 1945. During this time there was an increase in demand for grapes and wine in North America, which led to the rapid rise in amount of grape acreage (Krueger, 1959). Grape acreage continued to expand until 1971, until it stabilized in 1986 (Chapman, 1994).

The growth in grape acreage can be linked to changes in grape varieties. Traditional varieties, such as the Labrusca grape, were long part of grape production in Niagara. However, wines made from these grapes were considered by wine critics to be undrinkable (Gayler, 2003). By the late 1960s, consumer preferences began to change from sweeter desert wines to table wines that were dryer and contained lower alcohol levels. The industry responded by moving away from traditional varieties toward the

vinifera vine and French hybrids (GGO, 2002a). At the same time, grape production began to increase as a result of the introduction of the new varieties, increased density, and mechanical harvesting. During this time the grape industry increased production by 38 percent even though there was only a five percent increase in grape acreage from 1961 to 1981 (Chapman, 1994). The industry fell on tough economic times as NAFTA changed the industry in the early 1990s and caused the government to negotiate a Grape Acreage Reduction Program (GARP). Under this program, farmers were paid to remove 8200 acres of grape plants, which represented about 40 percent of the total grape acreage (Chapman, 1994). The pullout of the grape plants shifted the industry dramatically as most of the grapes that were pulled were native varieties. Regulation now exists that prevents wine from being made and sold from the native labrusca variety (Telfer, 2001).

The grape industry was also affected by changes in the distribution of wine and changes to the wine content act. In the late 1800s, as many as 35 enterprises distributed wine made from Ontario grapes (GGO, 2002a). However, in 1927, the Ontario government formed the LCBO (Liquor Control Board of Ontario) whose purpose was to regulate the prices, distribution, and selling of alcohol in Ontario (Telfer, 2001). The formation of the LCBO limited the development of new wineries and restricted those in operation forcing the number of wineries to fall from 61 in 1927 to six by 1974. It was not until 1975 that a new winery license was issued to Inniskillin Wines. Inniskillin and a few other wineries began to transform the market by planting the new vinifera grapes (GGO, 2002a). Up until this time, the wine content regulation ensured that wine produced in Ontario contained 100 percent Ontario grown grapes. However, in 1973 the wine content regulation was changed to allow foreign blended wine to be mixed with



Ontario wine. Initially, only small amounts of foreign wine were allowed to be blended but this changed with the signing of NAFTA (GGO, 2002c). The signing of the agreement reduced the price of foreign wines on the Ontario market. Following the signing of NAFTA, the provincial government reworked the wine content act, allowing wines in Ontario to contain up to 70 percent foreign content. These changes had a large impact on grape growers and forced the government to negotiate the GARP (Chapman, 1994). Around the same time that NAFTA emerged, a voluntary organization called the Vintners Quality Alliance (VQA) formed and mandated that 100 percent of the wine displaying its label must be made from Ontario Grapes (Please refer to Figure 4.4 for wine categories produced in Ontario). The VQA designation gave credibility to Ontario wine and helped propel it onto the world scene. The wine industry has now exploded with the creation of many cottage wineries and the loosening of wine distribution restrictions (Gayler, 2003).

**Figure 4.4 Categories of Ontario Wine**

VQA	Contents: Made with 100% Ontario-grown grapes.  VQA (Vintners Quality Alliance) is a symbol of quality and designation of origin for Ontario wines produced in three Viticulture Areas: Niagara Peninsula, Pelee Island and Lake Erie North Shore.  The QC (Quality Certified) symbol on Fruit Wines of Ontario bottles means you are buying wine made with 100% Ontario-grown fruit. QC is modeled on the same quality standards as VQA.
Product of Canada	Contents: Made with a minimum of 75% Canadian-grown grapes. May contain up to 25% imported wine. *
Cellared by ABC Winery	Contents: Made with a minimum of 30% Ontario-grown grapes. May contain up to 70% imported wine. *

\* Only Wineries established before 1993 are allowed to blend imported wine.

Source: GGO, 2002c

The tender fruit and grape industries play a large part in the larger agricultural industry in Niagara and in Ontario. The most recent census of agriculture determined that of the major fruit crops in Niagara, peaches (5780 acres) and grapes (15616 acres) have the largest amounts of acreage in Ontario (Please refer to table 4.1 for exact acreage). These crops make up 87 percent and 86 percent of production in Ontario, respectively (Cumming, 2004). The other tender fruit crops play a role but the acreage and production amounts are not as significant. The RAEIS reports that there are a total of 264 peach producers and 561 grape producers in the Niagara Region (Planscape, 2003). The Wine Council of Ontario (2005) reports in their Ontario Guide of Wineries that there are over 40 wineries operating in Ontario.

**Table 4.1 Crop Acreage**

<b>Crop Type</b>	<b>Niagara -2001 (acres)</b>	<b>Ontario -2001 (acres)</b>	<b>Percentage of Provincial Total</b>
Apples	1,029	24,252	4.24
Peaches	5,780	6,616	87.36
Sour Cherries	1,114	2,314	48.14
Raspberries	82	1,299	6.31
Strawberries	202	5,003	4.04
Grapes	15,616	18,206	85.77
Total fruit crops	28,111	65,077	43.2

(Cumming, 2004)

#### 4.4

##### **Economic Significance of Agriculture**

The number and size of tender fruit and grape operations suggests that they have a significant role in the larger regional economy. The RAEIS indicates that agriculture in Niagara is a significant industry with a total of \$511 million in gross farm receipts. This is significant because Niagara Region only ranks 38<sup>th</sup> in total area in Ontario but ranks 4<sup>th</sup> in gross farm receipts. The average gross farm receipt per acre in Southern Ontario is

\$995 while Niagara it is \$2195 (Planscape, 2003). Although, the greenhouse industry makes up a significant portion of the agricultural industry in Niagara the tender fruit and grape industries also make a significant contribution. The tender fruit industry had total gross farm receipts of \$48 million and the grape industry had total farm receipts of \$50 million (Planscape, 2003).

The impact of the agriculture industry on the Region goes beyond the amount of gross farm receipts and can be determined by looking at the multiplier effect. A large multiplier is typical of developed economies and suggests that the bulk of inputs required by one sector of the economy can be produced by other sectors in the local economy. The RAEIS determined that with the multipliers for the agriculture industry, Niagara agriculture stimulates a total output of \$1.8 billion. Both the tender fruit (2.99) and grape industries (2.94) have high multipliers. By comparison, the construction (2.50), retail trade (2.52), health care (2.01) have lower multipliers. The high multipliers indicate that both the tender fruit and grape industries generate additional dollars and jobs for the local economy (Planscape, 2003).

#### **4.5 Agri-Tourism**

Tourism already has a wide impact in Niagara because of the presence of Niagara Falls, the Welland Canal, the Shaw Festival, and the historic buildings located in Queenston, Fort Erie, and NOTL. The economic significance of agriculture cannot be fully comprehended without looking at its connection to tourism. Telfer and Wall (1996) suggest that since wine has an agricultural base, it can have an important role in the development of rural tourism opportunities. The rise of the grape and wine industry has connected the agriculture and tourism industries allowing the Niagara to become an

emerging wine destination. The popularity of Niagara as a tourist destination has enabled Niagara area tourist operators to further explore linkages to help the promotion of wine and regional cuisine (Telfler, 2001). Wineries have added dining facilities, accommodations, tours and tastings, and have thus increased the options available to tourists. In addition, Niagara has created tourist attractions such as the Niagara Icewine Festival, Niagara Grape and Wine Festival, and the Niagara New Vintage Festival (GGO, 2002b). The attractions help market Niagara as a tourist destination and have increased the length of visitor stays (Regional Municipality of Niagara, 2000).

In addition to the larger attractions, wineries have developed a range of value-added activities including seminars, concerts, plays, art exhibits, car shows, recreational activities, and culinary events. To help market these activities and link them with other wineries, the Wine Council of Ontario has set up a wine route (Gayler, 2003). The wine route links wineries throughout the region together through a series of roadways. The route is marketed through both maps and road signage. The wide range of activities provides tourists with an interactive experience that helps to promote return visits (Planscape, 2003). The RAEIS was unable to attach a dollar figure to winery related tourism but notes its significance. Although no substantiated visitor numbers could be found, the RAEIS estimated that wineries attract up to 800 000 to 1 000000 visitors per year (Planscape, 2003). The increase in tourism has allowed winery tourism jobs to triple from 1995 to 1998 (Regional Municipality of Niagara, 2000).

Although the winery industry receives most of the attention regarding agri-tourism, the tender fruit industry also plays a significant role. Retail road sales, pick-your-own operations, and farmers markets are popular destination choices (Planscape,

2003). Farm sales of tender fruit have long been part of tender fruit operations as a secondary income generator. However, the boom in the wine industry has given rise to an increase in retail sales. A range of retail locations from the small roadside stand to the larger supermarket style locations have emerged along rural roadways. Many of these rural roadside stands take advantage of tourists traveling along the Wine Route (Gayler, 2003).

**Table 4.2 Agri-tourist Operations in Niagara**

Nurseries and Sod – Retail (63)	Farmers Markets (6)
Farm Stands – Retail (19)	Events and festivals (52)
Wine Boutiques – Retail (31)	Banquets/ Meeting Facilities (17)
Farm Tours (15)	Wine Tasting (29)
Wine Tours (31)	Dining Facilities (20)
Pick your own operations (37)	Education/Seminars (14)

(Planscape, 2003)

#### **4.6 Non-Economic Benefits of Niagara’s Farmland**

The tender fruit and grape lands contain many non-economic benefits that are not easily quantifiable. The RAEIS makes a significant economic statement but also details the non-economic benefits of the agricultural landscape. The document explains the non-economic benefits of agriculture and claims the benefits contribute to a “healthy society and a sustainable environment” (Planscape, 2003: 7.1). A document entitled *Securing a Legacy for Niagara’s Agricultural Land* recognizes similar non-economic benefits (Agricultural Task Force, 2003). The recognition that these non-economic benefits exist strengthens the argument for farmland preservation. Some of the key benefits contained in these documents are found in the following figure.

**Figure 4.5 Non-Economic Benefits of Agricultural Land.**

*Societal Benefits* – The regional landscape has deep agricultural history, which contributes to the historical value of the region. The landscape also has cultural and community benefits because of the diverse range of people who are connected to it and the range of cultural and culinary traditions and events that develop from it. The landscape also contributes to local education and knowledge, as it is a leader in research and the training of farmers especially with regards to fruit and grapes.

*Food Security, Quality and Safety* – The landscape produces a mixture of foods that are distributed both locally and internationally and secure the food supply. These quality products are also known to have an excellent record in regards to food safety.

*Health Benefits* – the area provides a number of food products that contribute to the health of the human population. The landscape also enhances the mental well being of individuals when they spend time recreating in natural environments, open spaces, and farmland.

*Reconnection of Urban Society to Rural Roots* – The urbanization of our society has caused people to be separated from their agricultural roots. The landscape contains a network of agricultural related businesses and events that help bring people to the agricultural land and help them understand the significance of the industry.

*Environmental Benefits* – Direct environmental benefits are received from farmland that is properly managed through responsible farm practices. Environmental farm plans, nutrient management plans, and ecological, organic, or alternative farming are components of responsible farm practices. Indirect environmental benefits of farmland include the preservation of green space, soil management, the proper disposal of sewage biosolids, air quality, water quality, and biodiversity.

Adapted from: RAEIS, Planscape, 2003 and *Securing a Legacy for Niagara's Agricultural Land*, 2003

#### **4.7 Loss of agricultural land**

Agricultural land acreage in Niagara has gone through a history of expansion and contraction. Statistics Canada noted a drop of 8000 acres or 30 percent of the orchard coverage from 1941 to 1986. At the same time that orchard acreage was decreasing there was 50 percent increase in grape acreage (Chapman, 1994). From 1971 to 2001 there was an overall drop of 19 727 acres or 8 percent in agricultural land in Niagara. Yet,

between 1996 and 2001 there was an increase in the amount of land being farmed in Niagara. However, there was a significant decrease in the Township of Lincoln of 4165 acres which represents a 13 percent decrease (Planscape, 2003). The figures presented above indicate a history of changes across the whole region and crop types. Table 4.3 shows drops in the amount of land in peach and grape production from 1975. In 2003, peach acreage was 69 percent of what it was in 1975, and grape acreage was 61% of what was in 1975 (S. Mailvaganam, personal communication, April 27, 2005). There were also reductions in the amount of tender fruit farms in operation. From 1971 to 2001, the amount of farms decreased by 1926 which represents a 49 percent decline. However, this is comparable to the Ontario average of 42 percent (Planscape, 2003).

**Table 4.3 Crop Acreage Reductions**

<b>Year</b>	<b>Estimated area of Peach (acres)</b>	<b>Estimated area of Grapes (acres)</b>
<b>1975</b>	7,230	21,300
<b>1980</b>	6,820	24,469
<b>1985</b>	6,654	21,492
<b>1990</b>	7,343	14,413
<b>1995</b>	5,546	10,817
<b>2000</b>	4,707	12,003
<b>2003</b>	5,010	13,067

Note: The above estimates are based on Statistics Canada's census data and are not intercensally revised.

Source: OMAF Seasonal Fruit and Vegetable Report (S. Mailvaganam, personal communication, April 27, 2005)

The reduction in the acreage of agricultural production may also be a reflection of the larger changes facing the industry. Changes in technology, such as the introduction of new fruit varieties, mechanization, and growing technologies can improve production even though there is a decrease in the amount of agricultural land. Chapman (1994)

indicates that there were more peach trees in 1981 than there were in 1966 even though peach acreage decreased. Changes to the number of farms cannot always be attributed to loss of agricultural land because there has been an industry tendency toward larger farms and the consolidation of operations. Changes in acreage are also reflective of the economic state of the industry. Oversupply and lack of confidence in the industry prevent farmers from planting and growing additional crops (Planscape, 2003).

Besides changes to the industry, much of the loss can be attributed to the conversion of agricultural land to other uses. In 1959, when Krueger evaluated the changes occurring in the agricultural landscape he determined that the changes were a result of urban growth. In another article in 1977, he noted that the pattern of urban growth was low density, scattered with some nodal concentrations, and a tendency for expansion along Lake Ontario. Gayler (2004) argues that a mixture of urban-related uses in the countryside (i.e. churches, cemeteries, social clubs, and sports facilities), severances, and conversions of farms by owners to other uses has replaced agricultural land. He suggested that even though these individual changes were small, they cumulatively, formed a slow reduction of the agricultural land base. Gayler (2004) also indicates that greenhouses play a small role in the loss of farmland even though they are zoned as agriculture. (Note: Greenhouses typically do not use the soil that they are located on). Gayler (2004) also suggested that another element that was leading to the loss of agricultural industry was changes to the agricultural industry. The growth in the wine industry had encouraged the development of wineries and agri-tourism. Gayler (2004) argues that warehouses, parking lots, and retail centres associated with these enterprises have replaced farmland.



#### **4.8 Preservation of Niagara Tender Fruit and Grape Lands**

Agricultural preservation in Niagara has had a long history of successes and failures. Gayler (2004) writes that it has been “a long and difficult struggle regarding preservation.” Concern over the agricultural fruit lands was given an early start thanks to the work of Ralph Krueger. With the completion of his doctoral dissertation, Krueger became the key advocate for the preservationist movement in Niagara. In his dissertation Krueger (1959) raised the issue by stating the Niagara Fruit Belt was being threatened by urban expansion. Many of the later published reports on farmland preservation in Niagara were influenced by Krueger’s early work. Krueger was also one of the academics that contributed on behalf of the public advocacy group, PALS (Preservation of Agricultural Lands Society) (Gayler, 2004).

In the 1960s, the public began pressuring the government about the loss of farmland in the Niagara Region (Krueger, 1977a). Many of the early reports commissioned by the government linked the success of farmland preservation to economic viability. Initially, Krueger (1959) had suggested that preserving agricultural land was necessary because the expanding market of the Golden Horseshoe would provide continued economic growth for the industry. It later became evident that tender fruit and grape production was faced with financial hardships. In 1977, Krueger wrote that the industry was caught in a tight cost-price squeeze because of imports and unstable prices. During this time, urbanization and development allowed farmers to sell land at an ideal price. A market report issued by the provincial government also indicated that the market conditions looked bleak for the tender fruit industry (Chudleigh, 1972). These market conditions ended up slowing the agricultural preservation movement and were

cited as reasons to expand urban lands. Krueger (1977a: 147) responded to this argument by writing:

The economic plight of farmers is a short-run problem. There surely are solutions to farm income problems that do not necessitate destroying prime farmland that would produce food indefinitely. If we look at the cost and benefits in the long run, any costs involved in making fruit growing more profitable would fade in significance when compared to the value of produce of this prime farmland for centuries.

Farmland preservation activities have continued to be connected to farm viability. Much of the recent legislative developments have spurred media reports that suggest farmers are unsupportive of farmland preservation because it is not attached to farm viability.

The early discussion surrounding farmland preservation quickly entered the political realm (Krueger, 1977a). The quest for farmland preservation in Niagara has been a political struggle with the Ontario Government, local politicians, farmers, and PALS being the main actors. The actions of the provincial government have dictated much of the initiatives regarding farmland preservation. Regional and local politicians are torn between supporting the demands of local industries and the demands exerted by the general public. Although strict farmland preservation policies have been developed at both the local and the municipal level, legislation from the provincial government gives the policies real meaning (Gayler, 2004). The following timeline details some of the significant farmland preservation events that have occurred in the Niagara Region.

**Figure 4.6 Significant dates regarding farmland preservation in Niagara**

1951 – First time the loss of fruit land used for urban uses outpaces the amount of land placed in fruit production (Krueger, 1977a).

1959 – Ralph Krueger completes a PhD dissertation entitled *Changing Land-Use Patterns in the Niagara Fruit Belt*. The study starts discussion regarding land use change in Niagara (Bunce, 1998; Krueger, 1959).

1950s, 1960s, and early 1970s – Several government studies are published regarding land use and tender fruit production in the Niagara Region (Krueger, 1977a).

1970 – The provincial government establishes the Regional Municipality of Niagara and requires the Regional government to develop an Official Plan (Gayler, 2004; PALS, 2005).

1973 - 1975 – The Regional government forwards the Official Plan to the provincial government. The provincial government questions the urban boundaries and requires the Regional Government to consider reducing urban boundaries and to preserve the fruit lands (Gayler, 2004; Krueger, 1984; PALS 2005).

1975 - 1978 – The Regional Government fails to match the urban boundaries as recommended by the provincial government. The provincial government requires the Regional government to reduce the urban area boundaries. The Regional government decides to take the Official Plan to the Ontario Municipal Board (OMB) ( Gayler, 2004 Krueger, 1977a, 1984).

1978 – 1981 – At the OMB hearings, the newly formed public advocacy groups, Preservation of Agricultural Lands Society, represents the preservation side and a conglomeration of developers, Region representatives, and landowners represents the other side. Two OMB hearings are held and decide that a portion of the lands designated as urban area boundaries should be removed from the Official Plan. (Gayler 2004; Krueger, 1984)

1988 – Canada/ USA Free Trade Agreement is signed and reduces protectionist tariffs and increases foreign competition (CVA, n.d.a).

1988 – VQA was launched in Ontario and sets standards that are meant to elevate the quality of Canadian wine. At the same time, GARP is introduced and assist grape producers in pulling out old Labrusca grapes (Chapman, 1994; CVA, n.d.a).

1990 – NDP government is elected to provincial legislature. The new government introduces the Tender Fruit Lands Program which gave farmers a one time subsidy for giving up the development potential of their land in perpetuity. The government also strengthens the wording in the Planning Act so that local plans have to be ‘consistent with’ the provincial policy guidelines (Alterman, 1997, Gayler, 2004; PALS, 2005).

1995 –Progressive Conservatives are elected to provincial government and cancels the Tender Fruit Lands Program. The new government weakens the wording in the Planning Act so that local plans have to be “in regard to” the provincial policy guidelines (Alterman, 1997, Gayler, 2004)

2002 - 2003 – The 2<sup>nd</sup> Annual Smarter Growth Niagara Summit discusses the concept of an agricultural preserve. The discussion leads to the formation of the Agricultural Task Force. The task force is charge with developing an integrated approach to agriculture in Niagara and submits a document entitled *Securing a Legacy for Niagara’s Agricultural Land: A Vision from One Voice* (Agricultural Task Force, 2003).

2004 – Greenbelt Task Force is appointed by the Liberal provincial government and charged with providing recommendations and advice concerning a Golden Horseshoe Greenbelt (MAH, 2005a.)

2005 – Greenbelt Plan is released and enacted by the Ontario Ministry of Municipal Affairs and Housing. Greenbelt brings permanence to the unique agricultural lands in Niagara (MAH, 2005b).

#### 4.8.1 Group Preferences

Past research in the Niagara Region indicates that preferences for farmland preservation appear to be divided between farm and non-farm residents. Farmer support for farmland preservation appears to be limited while there is debate over the level of non-farm support. Krueger (1977a) indicates that there may be non-farm support for farmland preservation but this is not reflected in the politicians who have been elected. Despite all the different studies that have looked at the landscape, very few have considered the opinions of both non-farm and farm residents towards farmland preservation. The Niagara Region Agricultural Research Report by L.G. Reeds (1969) is one report that collected interview and questionnaire data on both farmer and rural non-farm residents. Reeds found that support for farmland preservation among farmers was low with only 40 percent indicating that agricultural land should be protected from other uses and only 28 percent indicating that they were in favour of saving the best farmland. Those that said that the land should be protected indicated that any new legislation

protecting the land would be unrealistic because of the tough economic conditions at that time. Most farmers were opposed to any limitations on their freedom to manage their landscapes. The farmers suggested that the best method to protect the land would be to adjust product prices.

Support for agricultural preservation was also limited among rural non-farm residents. Only a few residents indicated that they were in support of any methods to protect the farmland. Most of the respondents were in favor of increasing residential units in the agricultural landscape. Reed suggested that this is a contradiction because most of the respondents also indicated that they lived in a rural setting because they preferred country living. It is important to note that most of the non-farm residents were found to have either a farm or rural background. Another study by Rosaleen Murphy (1994) concluded that the majority of the individuals studied were supportive of the maintenance of the Niagara Fruit Belt. The respondents of her study recommended that development and farmland preservation should co-exist if only managed properly. The lack of research on group preferences for farmland preservation provides the basis for the present research. The lack of research may also mean that farmland preservation methods may not be reflective of the preferences of both groups. This may be debatable, as some of the recent legislative developments for protecting the farmland have had extensive public consultation phases.

#### **4.9 Recent Developments**

Much of the conflict over farmland preservation in the Niagara Region occurred during the mid 1970s to early 1980s. Following the OMB decision in 1981 (see figure 4.6), not much attention was given to farmland preservation although urban expansion

was continuing. However, the initial economic decline of the fruit and grape industry and its subsequent success has caused farmland preservation to once again re-emerge as an issue. The recent surge in wineries and in greenhouses has taken some of the urban pressure away from farmland because these businesses are seen as viable economic options. In fact, several wineries have recently put pressure on the local governments to preserve farmland as an agricultural preserve. Discussion regarding the agricultural preserve concept led to the formation of a Regional Agricultural Task Force whose mandate was to develop a strategy for continued support of agriculture (Agricultural Task Force, 2003). At the same time these efforts were being undertaken, the Liberal provincial government initiated steps to legislate a Greenbelt for the Golden Horseshoe including the Niagara Region. In addition to these items, retirement severances, Smart Growth, and the Mid-Peninsula Transportation Corridor (MPC) are important issues in the debate over farmland preservation in Niagara.

#### *4.9.1 Severances*

Severances have become a planning issue in Niagara with regards to agricultural preservation. A recent study by Caldwell and Weir (2002) measured severance activity across Ontario and determined that the Niagara Region had the second highest number of residential lots created in agricultural land during the 1990s. Niagara created a total of 833 new residential lots on agricultural land, which resulted in an average of 3.62 new lots per 1000 acres from the year 1990 to 2000. Table 3.4 details the type and number of severances. Although severances are insignificant on an individual basis, cumulatively they combine to remove significant portions of land from the agricultural land base. Increased amounts of severance activity also add to greater conflicts between over land

use and may contribute to impermanence syndrome in farmers, and affect farm production. The negative consequences are even more pronounced in Niagara, where the average farm size is significantly smaller than the provincial average (Caldwell and Weir, 2002).

**Table 4.4 Severance activities in Niagara Region’s agricultural land 1990 to 2000.**

Surplus residential	162
Retirement Lot	414
Rural Residential	232
Infilling	25
Total New Lots	833

(Caldwell and Weir, 2002)

According to the RAEIS, most of the severance activity in the Niagara Region can be justified as reasonable activities. Nevertheless, farm retirement severances have become a contentious issue regarding farmland preservation. Under the Niagara Regional Policy Plan, retirement lots are permitted when a farmer retires or when a farmer chooses to sever a farm help lot which is provided to one member of their immediate family (Caldwell and Weir, 2002; Planscape, 2003). Severances are viewed as added equity to the farmer but can be seen as an extension of urban sprawl (Gayler, 2004). Given this scenario, any threats to remove the retirement severances are met with opposition from farming groups. However, at the same time preservation groups suggest that farm severances are poorly governed urban intrusions into the agricultural landscapes (Gayler, 2004).

#### *4.9.2 Mid Peninsula Transportation Corridor (MPC)*

The MPC has gained considerable attention especially from some advocates of farmland preservation. The MPC is a limited access transportation corridor that is the

planning stages at the provincial level. The MPC is to be located on the southern half of the Niagara Peninsula and is meant to relieve traffic congestion on the heavily travelled Queen Elizabeth Way (QEW) and is considered as part of the growth strategy of the first Regional Plan (See Figure 3.1 for locations) (Planscape, 2003). Much of the unique agricultural land falls along the QEW corridor, which runs along the northern half of the peninsula. Development pressures along the corridor threaten the continued availability of the unique agricultural lands. The MPC has been proposed as one of the responses to these concerns as well as growing transportation demands in Ontario. The MPC has gained support by some politicians, farmers, and advocates for agricultural preservation in Niagara. It is seen as a way to reduce growth along the northern half of the peninsula, while directing this growth to the southern half (Gayer, 2004; Planscape, 2003).

#### 4.9.3 *Smart Growth*

The “Smart Growth” concept has gained political momentum in recent years. Smart Growth initiatives are concerned with finding partial solutions to the issues of urban sprawl, finding a better way to grow, and enhancing the quality of life (*Smart Growth in Niagara*, 2001). In Niagara, Smart Growth emerged as a response to the review of the Provincial Smart Growth initiative (Planscape, 2003). Smart Growth formed out of public concern that Niagara needed to retain the qualities that made it a distinct place and that urban pressures should be taken off unique agricultural lands in order to promote the wine industry (Gayler, 2004). Smart Growth was identified as a way to create more compact urban development and reduce urban sprawl. The Smarter Niagara initiative has gained some political support and has connected different members of the community in discussion (Gayler, 2004; Planscape, 2003). Niagara’s strategy is to



provide future direction for growth and to improve all aspects of life (*Smart Growth in Niagara*, 2001). Although agriculture does not have a major importance in the Smart Growth initiative, it does benefit from the strategies associated with it. With Smart Growth, development will be more thoughtfully planned and it is hoped that it will take some of the pressure off agricultural land (Gayler, 2004).

#### 4.9.4 *Agricultural Preserve Initiative*

Several winery owners in Niagara have launched an agricultural preserve initiative. The idea was to create a preserve that would permanently protect the unique agricultural lands from non-agricultural related uses. The idea was formulated as the wine industry began to recover and become prosperous. The initiative was met with concern from grape growers and other members of the agricultural sector. Farmers were concerned that the initiative would give priority to certain farm types and there would not be an equal playing field. Politicians were also wary of the goals of the program and were not comfortable with the restrictions imposed by the initiative. Political acceptance of the initiative was weak and has since been replaced by the introduction of the provincial Greenbelt Legislation (Gayler, 2004; Planscape, 2003).

#### 4.9.5 *Agricultural Task Force*

A discussion paper entitled *Securing a Legacy for Niagara's Agricultural Land*, written by the Agricultural Task Force, combined the ideas of numerous agricultural industries to come up with a strategy to support agriculture. The paper was rather unique because it involved the leaders of the various agricultural sectors coming together to develop a consistent strategy. It was hoped that the governments would recognize this effort and work towards implementing the strategy developed by the task force. The task

force confirmed the importance of the RAEIS towards agriculture but also wanted to come up with a strategy to combat some of the disturbing trends reported in the RAEIS. Specifically, in regards to agricultural preservation, the task force wanted to develop recommendations regarding urban expansion and encroachment on agricultural lands. The task force developed specific recommendations for the regional government as well as the provincial and federal governments. For the regional government, the task force developed specific recommendations for managing changes to unique agricultural lands. A key recommendation as part of the strategy to preserve agricultural lands was also to protect farm profitability. The task force also suggested that regional officials should promote Niagara as a unique agricultural area. For the other levels of government, the task force recommended that they work cooperatively to increase the protection of agricultural land by promoting Niagara-specific research, securing a provincial commitment to agricultural, increasing federal support of agriculture (i.e. subsidies, trade related issues), and publicizing the reality that agricultural lands are a non-renewable resource.

The tools that the task force recommended to use to implement these recommendations were organized into three categories: Building Support, Legislative Tools, and Creating an Environment. The building support category focused on tools that promoted cooperation between different government levels and education of the public about agriculture. The legislative tools category referred to legislative processes that could restrict development on agricultural lands yet protect farmers. The last category referred to tools that could help make the agricultural industry stronger within Niagara.

Providing infrastructure, research, and Niagara Brand promotion are a few key tools mentioned as part of this category (Agricultural Task Force, 2003)

#### 4.9.6 *Greenbelt Act*

The Greenbelt Act has brought a new level of agricultural preservation to the Niagara Region. The provincial government under Dalton McGuinty initially conceived of the legislation. In February 2004, a Greenbelt Task Force was established to consult with stakeholders and develop recommendations. After a series of consultations with stakeholders and public meetings, the Greenbelt was established in February 2005 (MAH, 2005b). The Greenbelt covers one million acres in the Golden Horseshoe and this extends to 1.8 million acres when the protected lands along both Oak Ridges Moraine and Niagara Escarpment are included. In the Region of Niagara, the Greenbelt protects 100 000 acres of land or approximately one quarter of the land area (MAH, 2005c). See Appendix D for map of Greenbelt Plan in the Niagara Region.

The Greenbelt plan has set out a broad vision of protecting the agricultural land base, natural heritage and water resource systems, and maintaining a diverse range of economic and social activities. In terms of the agricultural land base the Greenbelt Plan has set out the following goals:

- Protection of the specialty crop area land base while allowing supportive infrastructure and value added uses necessary for sustainable agricultural uses and activities;
- Support for the Niagara Peninsula specialty crop area as a destination and centre for agriculture focused on the agri-food sector and agri-tourism related to grape and tender fruit production;
- Protection of prime agricultural areas by preventing further fragmentation and loss of the agricultural land base caused by lot creation and the redesignation of prime agricultural areas;
- Provision of the appropriate flexibility to allow for agriculture, agriculture-related and secondary uses, normal farm practices and an evolving agricultural/ rural economy; and

- Increasing certainty for the agricultural sector to foster long-term investment in, improvement to, and management of the land. (MAH, 2005b)

Besides the general goals of protecting the agricultural land base throughout the whole area, the Greenbelt legislation has set out specific policies for the agricultural land in Niagara. Much of the land in Niagara area within the Greenbelt has been designated as a specialty crop area because of the tender fruit and grape lands. The designation was based on provincial soil and climate analysis of the lands. The policies that were set out in the Greenbelt for Niagara include:

- Within specialty crop areas, normal farm practices and a full range of agricultural, agriculture- related and secondary uses are supported and permitted.
- Lands within the specialty crop areas shall not be redesignated in municipal official plans for non-agricultural uses, with the exception of those uses permitted in the general policies. (i.e. infrastructure, natural resources, cultural heritage resources, existing uses, lot creation)
- Towns/ Villages and Hamlets are not permitted to expand into specialty crop areas.
- New land uses, including the creation of lots, as permitted by the Policies of this Plan, and new or expanding livestock facilities shall comply with the minimum distance separation formulae. (MAH, 2005b)

#### **4.10 Summary**

The above chapter attempts to present the geography, history, and challenges facing the Niagara Tender Fruit and Grape Areas. The recent planning policies, especially the Greenbelt Act, have brought more permanence to this unique agricultural area. However, as the long struggle for farmland preservation in Niagara demonstrates, the discussion is not complete. Further legislative processes may have to be used in order to further establish Niagara Region as a unique agricultural area. Gayler (2004:79) summarizes this when he writes,

The way forward to effectively secure the Niagara Fruit Belt as a unique agricultural area is to continue to promote the present development in the agricultural industry, in particular the grape and wine industry which naturally has a vested interest in wanting the land base preserved for all time, and conversely would not want to see continuing attrition by urban sprawl.

The promotion of the Niagara Fruit Belt as a unique agricultural area means that all levels of government and all significant stakeholders will need to cooperate. As part of this process, some method will have to be established to ensure that farming remains viable. The current study is trying to answer part of this by looking at how both the farm and non-farm population view the agricultural landscape in regards to farmland preservation.

## Chapter Five - Results

### 5.1 Introduction

The following chapter details the results obtained through the data collection phase of research. The chapter is divided into three distinct parts which emerged from the survey and interview results. The first section introduces the social demographics of the survey participants and compares these to census data. The next section traces the results revealed in the survey data. The third section of the chapter focuses on the interviews and themes that emerged from them. The last section looks at the reaction to the Greenbelt Plan and how it affected the results. The limitations surrounding the survey methodology used during this study indicate that the results cannot be generalized to the whole population of the four municipalities. Despite this limitation, the results contain important information that may generate important discussion surrounding the group preferences for farmland preservation.

### 5.2 Surveys

#### 5.2.1 *Non-farm population*

182 usable responses out of the 600 delivered surveys to non-farm participants were returned for a response rate of approximate 30.3 percent (please see table 5.1). Although most of the respondents listed their municipalities, eighteen respondents chose not to fill in their locations and were removed the survey database. It was determined that the survey response rates for the non-farm population surveys fell within the normal response rates for mail surveys (10 to 50 percent). The number of surveys received also

provided enough usable responses to conduct statistical analysis and draw conclusions from.

The sample of returned surveys is not proportional to the population data of each municipality. Every effort was made during the distribution of the surveys to ensure that each municipality received enough surveys to derive useful results from. Table 5.1 details the survey sample to the actual census data for each municipality. The table reveals that lower response rates were found in both St. Catharines and NOTL. The lower response rate in St. Catharines may be attributed to its urban nature because residents may not be as aware or concerned about the surrounding agricultural land. The lower response rates in NOTL may be attributed to seasonality of residential units resulting in some residences being unoccupied at the time of the survey distribution.

**Table 5.1 Response Rates for Non-Farm Participants**

<b>Location</b>	<b>Sent</b>	<b>Received</b>	<b>% Received</b>	<b>% of Total</b>	<b>Population *</b>	<b>% of Total Population</b>
Lincoln	100	38	38.0	20.9	20612	11.5
NOTL	100	26	26.0	14.3	13839	7.7
Pelham	100	46	46.0	25.3	15272	8.5
St. Catharines	300	72	24.0	39.6	129170	72.2
<b>Total</b>	<b>600</b>	<b>182**</b>	<b>30.3</b>	<b>100</b>	<b>178893</b>	

\*Statistics Canada (2001b)

\*\*Nineteen of the surveys were removed because they were spoiled.

The median age of the sample is 53 years while the median age of residents in the four municipalities is 42 years. This represents a large difference of 10 years. The mode and median income levels of the returned surveys were recorded to be in the \$40 000 to \$59 999 range. Most of the reported salaries fell into three income levels that ranged from \$20 000 to \$79 999. The survey data shows that 46.9% are female and

53.1% are male. This is comparable to the census data, which shows that 51.6% are female and 48.4% are male. For complete demographic statistics regarding the non-farm participants please refer to Appendix E.

**Table 5.2 Demographic Information for Non-Farm Participants**

	Age		Gender			
	Mean	Median	Female		Male	
			N	%	N	%
Sample Data	53	52	84	46.9%	95	53.1%
Census Data*	n/a	42	92340	51.6%	86545	48.4%

\*Statistics Canada (2001b)

The survey also posed several other questions to participants regarding their background. The survey data reported that the average time of residence in Niagara was 34.9 years with a standard deviation of 19 years. Participants reported a range of occupations with most participants recording an occupation in the *other* category. The majority of the responses recorded in the other category were *retired*. Considering that the average age was 53, it was expected that the average length of residence would be high. The reported number of retired participants is also connected with a high average age. A possible explanation for this is that the retired population may have had additional time to respond to the surveys.

The survey was designed to determine the level of support for farmland preservation in Niagara. Each of the survey questions touched upon this to a certain degree. The first question asked participants to rank various landscapes that they had a visual preference for. However because of the number of choices available to participants, the landscape *woodlands* had the highest frequency for both rank choices one and two. Both vineyards and orchards also received high rankings.



**Table 5.3 Landscape Rankings**

	Rank #1		Rank #2		Rank #3	
	Count	% of Total	Count	% of Total	Count	% of Total
Beaches	22	12.2	17	9.5	23	12.9
Crop and Pasture	2	1.1	6	3.4	13	7.3
Orchards	43	23.9	38	21.2	29	16.3
Rivers	33	18.3	43	24.0	38	21.3
Vineyards	14	7.8	22	12.3	35	19.7
Wetlands	4	2.2	7	3.9	11	6.2
Woodlands	60	33.3	44	24.6	25	14.0
Other	2	1.1	2	1.1	4	2.2
<b>Total</b>	<b>180</b>	<b>100</b>	<b>179</b>	<b>100</b>	<b>178</b>	<b>100</b>

Participants responded to a question that asked them which activities they had participated in during the last year. This question was designed to see how much utility that the public derived from the agricultural land base. The results indicated the public participated in a variety of activities within the agricultural landscape, with the number one activity being purchasing agricultural goods. High frequencies were also recorded for scenic drives and bike rides/hikes.

**Table 5.4 Farmland Based Activities**

Activity	N	% Of Total
Purchased Agricultural Goods	164	27.0
Scenic Drives	152	25.0
Bike Rides/ Hikes	113	18.6
Picked your own fruit	85	14.0
Tourist related activities	73	12.0
Other	20	3.3
<b>Total Responses</b>	<b>607</b>	<b>100.0</b>

Note: N values add up to more than sample N (182) because multiple answers were permitted.

### 5.2.2 Farmers

Farmer response rates were similar to the non-farm response rates. The response rate from the farmers was 34% and fell within the normal range for mail surveys. The

surveys were addressed by a third party (GGO) and any knowledge about the exact distribution of surveys to each municipality is unknown. Eight of the survey participants did not identify their location on the surveys. These surveys were still included in the data because they contained usable responses to the other survey questions. It was determined that enough surveys were received that contained usable responses to justify data analysis. Comparison to the census data is not relevant because a third party delivered the surveys.

The survey instrument asked farmers to respond to a number of questions relating to their background. One of the purposes of these questions was to evaluate how the responses compared to the data obtained from the Census of Agriculture. It was determined that the mean age of the sample data was 54 years and the median fell into the 35-54 years range. The median from the census data fell into the range. However, due to the large age categories in the census data it is hard to determine if the ages are actually similar. The percentage of males and females differs slightly from the sample data to the census data.

**Table 5.5 Demographic Information for Farmer Participants**

	Age		Gender			
	Mean	Median	Female		Male	
			<i>N</i>	%	<i>N</i>	%
<b>Sample Data (N = 50)</b>	54.24	35-54	3	6.0 %	47	94.0%
<b>Census Data*</b>	n/a	35-54	495	28.4%	1250	71.6%

\*Statistics Canada (2001a)

The survey also asked farmers a number of questions that could not be directly linked to the census data. Farmers reported the average number of years that they had lived in Niagara was 47.7 years with a median of 47 years (N = 50). Farmers were also

asked how long they had farmed and the average number was 33.5 years with a median of 34.5 years (N = 48). Forty farmers reported their income and the median income was \$40 000 to 59 999. Seventy percent of participants reported that they had a post-secondary degree. Both community college (N=15) and university/graduate level (N=13) had the highest frequencies. For complete demographic statistics regarding the farm participants please refer to Appendix E.

In addition to the questions about their personal background, the survey also asked farmers to answer questions about their farming operations. Participants reported that the average acreage of their farms was 142.38 acres with the median of 54 acres. This number is larger than the census average of 62.357 (Statistics Canada, 2001a) acres per farm. The actual acreage amounts between the different farmers varied greatly with one farmer reporting a 5 acre farm and another reporting a 1600 acre farm. Each of the surveys also asked farmers to report the types of fruit that they produced on their farms. Most farmers reported growing grapes (78.4%) and peaches (54.9%). In addition to fruit crops, 14 farmers reported that they grew additional crops. The last question asked farmers to rate the quality of their land on scale of 1-5, with 1 being the lowest quality and 5 being the highest. The rating most frequently given by the 49 farmers who answered the question was 4. For complete information regarding farm statistics please refer to Appendix E.

The first set of the questions in the farmer surveys asked the participants to indicate the present and future economic stability for each of their industries. The question was asked in an attempt to grasp how much farm viability would factor into their support for farmland preservation. The results indicated that most farmers view the

present and the future of the industry as unstable (See Table 5.6). The farmers were asked in an open-ended question what the reasons were behind their choices. A range of economic challenges was described including increased competition, free trade, government regulations, and changing consumer preferences. For a full description of the comments that were written in the open-ended questions please refer to Appendix F.

**Table 5.6 Farmer Responses to Economic Stability**

	<b>Present</b>		<b>Future</b>	
	N	%	N	%
Extremely Unstable	12	24.5	8	16.3
Unstable	26	53.1	34	69.4
No Opinion	0	0.0	1	2.0
Stable	11	22.4	6	12.2
Extremely Stable	0	0.0	0	0.0
<b>Total</b>	<b>49</b>	<b>100.0</b>	<b>49</b>	<b>100.0</b>

### 5.2.3 Joint Questions

The next set of questions appeared in both the non-farm population and the farmer surveys. The data are presented from each of the groups separately in order to help compare the answers. The first question asked the participants to choose the challenges they thought were facing the tender fruit and grape industry. The farmers described the largest challenges to be lack of support (financial), land use regulations, and price instability. The non-farm answers revealed the non-farm population felt that the conversion of land to other uses was the biggest challenge facing the tender fruit and grape industry. The answers reveal that there is marked difference between the perceptions of the non-farm population and the farmers.

**Table 5.7 Challenges facing the tender fruit and grape industry**

<b>Challenges</b>	<b>Farmer</b>	<b>% Of Group Total</b>	<b>Non-farm</b>	<b>% Of Group Total</b>
Conversion of farmland to other uses	13	6.8	140	27.4
Lack of support (financial)	33	17.3	94	18.4
Lack of support (technical)	30	15.7	62	12.1
Land use Regulations	35	18.3	80	15.7
Poor Access to Labour	16	8.4	32	6.3
Poor Quality Crops	5	2.6	10	2.0
Price Instability	38	19.9	52	10.2
Transportation Costs	4	2.1	22	4.3
Other	17	8.9	19	3.7
<b>Total</b>	<b>191</b>	<b>100.0</b>	<b>511</b>	<b>100.0</b>

Note: Multiple answers permitted.

An important part of determining the level of support for farmland preservation is to determine the preferences that the participants have for the agricultural landscape. The next question asked participants how important it was to them to preserve certain amenities provided by agricultural land. The question asked the participants to rank these amenities on a scale of 1 to 5 with 1 being no importance and 5 being extremely important. All of the scores were skewed towards the highest rating causing the median for each of the amenities to be either 4 or 5. The amenities with the overall highest means were *protects water quality*, *provides locally grown food*, and *preserves air quality*. The highest scored amenity among the non-farm population was *protects water quality*, and the highest rated amenity for farmers was *provides locally grown food*. Table 5.8 shows the distribution of the scores and the mean for each of the amenities. The bolded numbers highlight the amenities with highest average rating for each group.

**Table 5.8 Participant Responses to Rural Amenities**

	<b>Group</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
Keeps farming as a way of life	Farmer	48	4.10	1.10	0.16
	Non-Farm	176	4.27	0.82	0.06
Preserves air quality	Farmer	47	3.70	1.14	0.17
	Non-Farm	177	4.53	0.78	0.06
Preserves a unique agricultural terrain	Farmer	48	3.67	1.23	0.18
	Non-Farm	175	4.18	0.86	0.06
Preserves natural places	Farmer	48	3.13	1.30	0.19
	Non-Farm	175	4.37	0.83	0.06
Protects water quality	Farmer	48	3.90	1.02	0.15
	Non-Farm	178	<b>4.61</b>	0.75	0.06
Protects wildlife habitat	Farmer	47	2.83	1.40	0.20
	Non-Farm	178	4.35	0.87	0.07
Provides breaks from urban locations	Farmer	47	2.66	1.46	0.21
	Non-Farm	172	3.90	1.06	0.08
Provides locally grown food	Farmer	49	<b>4.41</b>	0.84	0.12
	Non-Farm	177	4.36	0.84	0.06
Provides scenic quality	Farmer	47	2.81	1.41	0.21
	Non-Farm	177	4.05	0.95	0.07
Slows development	Farmer	47	2.87	1.51	0.22
	Non-Farm	169	3.70	1.23	0.09
Sustains an important regional industry	Farmer	47	4.32	0.96	0.14
	Non-Farm	171	4.21	0.92	0.07

A two-sample t-test was completed to determine if the differences between the means were significant. The test was completed at the 95% confidence and the results are shown in figure 5.9. Levene's test for the equality of variance indicated that the variances were significant for all but three of the amenities. *Keeps farming as a way of life, provides locally grown food, and sustains an important regional industry* had insignificant variance and therefore the t-test assumes that the variances not significant. The t-test shows that there is significant difference between means of the two groups for other amenities. The amenities that do not have significant differences are bolded in the following table.

**Table 5.9 Two Sample T-test on Farmland Amenities**

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference
<b>Keeps farming as a way of life</b>	<b>5.062</b>	<b>0.025</b>	<b>-1.171</b>	<b>222</b>	<b>0.243</b>	<b>-0.169</b>	<b>0.144</b>
Preserves air quality	20.344	0.000	-4.702	57.788	0.000	-0.829	0.176
Preserves a unique agricultural terrain	15.924	0.000	-2.738	60.184	0.008	-0.516	0.189
Preserves natural places	14.617	0.000	-6.275	57.996	0.000	-1.241	0.198
Protects water quality	11.444	0.001	-4.562	61.591	0.000	-0.717	0.157
Protects wildlife habitat	31.092	0.000	-7.066	55.688	0.000	-1.519	0.215
Provides breaks from urban locations	15.894	0.000	-5.413	59.797	0.000	-1.236	0.228
<b>Provides locally grown food</b>	<b>0.008</b>	<b>0.929</b>	<b>0.345</b>	<b>224</b>	<b>0.730</b>	<b>0.047</b>	<b>0.135</b>
Provides scenic quality	15.402	0.000	-5.684	57.623	0.000	-1.237	0.218
Slows development	5.107	0.025	-3.439	63.991	0.001	-0.826	0.240
<b>Sustains an important regional industry</b>	<b>0.002</b>	<b>0.965</b>	<b>0.710</b>	<b>216</b>	<b>0.479</b>	<b>0.109</b>	<b>0.153</b>

It was thought that the differences in the level of support for agriculture preservation between the non-farm population and farmers would also be evident in the types of amenities. Kline and Wichelns (1998) conducted a similar survey in which they asked participants to rate on a scale of 1 to 10 how important each amenity was when selecting farmland parcels for preservation. The authors reduced the data by using factor analysis to identify unobservable hypothetical variables. Factor analysis would allow the

data to be broken down in a small number of factors that would account for most of the variation in the ratings. It was decided that this method could also be used to in the present study to analyze the data. The participant's ratings were analyzed using principal component analysis and rotated using the VARIMAX method. The resulting matrix described the correlations between the different amenities and revealed that three components could be identified as significant because they had eigenvalues over one. Analysis of the matrix revealed that the cross correlation coefficients of each amenity could be used to put the amenity into a particular component. Once the amenities were put in each component they were compared with each other to determine if they had a common theme. The comparison revealed that three common themes had emerged in the components and they were labelled environmental, aesthetic, and agrarian. One amenity (Preserves a unique agricultural terrain) did not have cross-correlation coefficient that was high enough in value to be contained in any of the components. Table 5.10 presents the cross correlation coefficients for each of the amenities and components.

**Table 5.10 Data Reduction of Participant Responses**

<b>Amenities</b>	<b>Component</b>		
	Environmental	Aesthetic	Agrarian
Keeps farming as a way of life (A)	.147	.260	.685
Preserves air quality (B)	.877	.184	.185
Preserves a unique agricultural terrain (C)	.249	.589	.431
Preserves natural places (D)	.669	.572	.106
Protects water quality (E)	.873	.087	.217
Protects wildlife habitat (F)	.690	.497	-.036
Provides breaks from urban locations (G)	.447	.719	.062
Provides locally grown food (H)	.233	-.050	.770
Provides scenic quality (I)	.243	.738	.193
Slows development (J)	.040	.835	.191



Sustains an important regional industry (K)	-.042	.230	.681
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Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a Rotation converged in 6 iterations.

The components identified in the factor analysis were put into the data set and the following formulas were used to derive scores for each participant.

$$\text{Environmental Component} = \Sigma (\mathbf{B+D+E+F})/4$$

$$\text{Aesthetic Component} = \Sigma (\mathbf{C+G+I+J})/4$$

$$\text{Agrarian Component} = \Sigma (\mathbf{A+H+K})/3$$

The participant's scores were compiled to find the mean, median, and standard deviation for both the farmers and the non-farm population. Table 5.11 presents the data for each group. The data reveal the differences between the different components and groups. The non-farm population supports environmental amenities the most, while the farmers support agrarian amenities the most.

**Table 5.11 Group Responses to Rural Amenities**

	<b>Group</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error Mean</b>
Environmental	Farmer	46	3.39	1.05	0.15
	Non-Farm	170	4.47	0.66	0.05
Agrarian	Farmer	46	4.30	0.76	0.11
	Non-Farm	166	4.28	0.62	0.05
Aesthetic	Farmer	45	2.99	1.17	0.17
	Non-Farm	161	3.99	0.76	0.06

The two-sample T-test was completed and revealed that there are significant differences between the sample means in the environmental and aesthetic components. Levene's test for equality of variance indicated that the equality of variance should not be assumed for these components and this is reflected in the t-test statistics. The variance

for the aesthetic component was assumed to be equal and the t-test statistics revealed that there was no significant difference between the two sample means. Figure 5.12 shows the complete results of the t-tests.

**Table 5.12 Two Sample T-test on Grouped Amenities**

	<b>Levene's Test for Equality of Variances</b>		<b>t-test for Equality of Means</b>				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Environmental	23.773	0.000	-6.630	54.904	0.000	-1.07928	0.16278
Agrarian	3.447	0.065	0.268	210	0.789	0.02925	0.10919
Aesthetic	11.409	0.001	-5.403	54.829	0.000	-0.99869	0.18486

Participants were asked to indicate whether the unique agricultural land in Niagara was in decline. A total of 173 (74.2%) of all participants agreed that the land was shrinking. Several participants wrote in comments that they thought they were not able to answer this question because they did not know the actual statistics on land loss. However, it was not the purpose of the question to see if the land was actually shrinking but to determine if there was a perception that it was. Those participants that agreed that the land was shrinking were directed to the next question, which asked them what land use was replacing the agricultural land. The majority of the participants chose urban/residential developments. It is important to note that many of participants circled too many responses thus rendering their response as unusable. Although, the pilot test did not reveal this problem, it was thought that the question format might have been confusing, thus yielding this result.

**Table 5.13 Group Responses to Farmland Loss**

<b>Is the Niagara tender fruit and grape area shrinking?</b>								
	Yes		No		Unsure		Total	
	N	%	N	%	N	%	N	%
Farmers	39	76.5	8	15.7	4	7.8	51	100.0
Non-farm	147	75.4	16	8.2	32	16.4	195	100.0
Total	186	75.6	24	9.8	36	14.6	246	100.0

Participants were asked how important it was to preserve the tender fruit and grape area in Niagara on a five-point scale. Support for farmland preservation was evident in the survey data; however there was a difference between the non-farm population and the farmers. The data indicate that farmers had an average support level of 3.79 while the non-farm population had an average support level of 4.57 (Table 5.14). The two sample t-test revealed that the differences between these means are significant and that the variance between the means cannot be assumed (Table 5.15).

**Table 5.14 Group Responses to the Importance of Farmland Preservation**

	Group	N	Mean	Std. Deviation	Std. Error
					Mean
Importance of Preservation	Farmer	47	3.79	1.23	0.18
	Non-Farm	158	4.57	0.63	0.05

**Table 5.15 Two Sample T-test on Importance of Preservation**

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Importance of Preservation	50.459	0.000	-4.191	53.385	0.000	-0.782	0.187

Participants were asked to rate on a scale of one to five the level of responsibility that different groups had for managing and protecting the land. Several participants

added a group to the other category. These categories more or less related to the categories that already were listed in the question. The farmers' highest rating average was for the farmers/landowners and the non-farm population's highest rating average was for the Niagara Regional Government (Table 5.16).

**Table 5.16 Group Choices for managing and protecting farmland**

	<b>Farmer</b>	<b>Non-Farm</b>	<b>Total</b>
	Mean		
Farmers/ Landowners	4.51	4.31	4.35
Municipal/ City Councils	4.06	4.23	4.20
Niagara Regional Government	4.09	4.44	4.36
Ontario Provincial Government	3.91	4.37	4.26
Canadian Federal Government	3.50	3.87	3.78
Other	3.88	4.47	4.28

Comparison tests were completed to determine if living location, municipality, and income affected the ratings for the grouped farmland amenities and the importance of preservation. One-way ANOVA tests were used to identify if there were any significant differences in the data. The tests revealed that there are no significant differences between the data sets. The results were surprising because it was assumed that living location and income would affect the ratings. For complete details concerning the comparison tests please refer to Appendix G.

#### 5.2.4 *Open-Ended Questions*

An open-ended question at the end of the survey asked participants to make further comments about the survey topic and survey questions. A total of 70 non-farm participants and 41 farmer participants wrote in comments about the survey or provided additional information relating to the survey topic. Only a small percentage (38.5%) of the non-farm population participants provided comments while a large percentage

(80.4%) of farmers provided comments. A content analysis was performed to identify common themes and preservation ideas. For further information regarding the contents of the comments and how they were categorized please refer to Appendix F.

### **5.3 Interviews**

Eleven interviews were conducted with selected informants in the Niagara Region (Please see Appendix H for informant list). The interviews were conducted with informants in the farming industry, academics, and government. The purpose of the interviews was to identify issues surrounding farmland preservation in the Niagara Region. The goal of the interviews was not to derive quantitative data that could be represented statistically but rather develop discussion around the research topic and to fill in any knowledge gaps. No references are made to the interviewees in the following section in order to protect their identity.

The discussion during the interviews was based on the research questions and on any new information introduced during the interview. The interviews revealed important information about perception of agriculture and farmland preservation in Niagara.

Generally, the discussion was be divided into the following themes:

- Perception of the agricultural land base
- Agricultural land loss
- Support for farmland preservation
- Farmland preservation Methods
- Agricultural-based vs. urban-based
- Economics
- Perception of Agricultural Land Base

The first several interview questions asked the informants to address how they perceived the agricultural land base. Many of the informants replied to this question from both their personal and professional perspective. The general consensus among the

informants was that the land was an important component of the Niagara Region economy and had a significant impact on a number of related industries such as tourism. Furthermore, each of the informants expressed the opinion that tender fruit and grape land of the Niagara Region was a unique resource. Some informants suggested that this resource had a national importance while others were unsure of how important it was to the larger community.

### *5.3.1 Agricultural Land Loss*

There was a general consensus among the informants that agricultural land was facing pressures from other uses. The informants indicated that the Queen Elizabeth Way (QEW), urban developments, farm retirement severances, greenhouses, and other non-agricultural uses affected the agricultural land base. Most of the informants described the development pressure brought by the QEW. They also suggested that demand for housing and its associated services (i.e. parks) put pressure on the agricultural land base. Informants indicated that the level of demand for development lots along the QEW corridor and in urban communities was causing developers to buy farmland in speculation. Developers would purchase the farmland and then take it out of agricultural production. The informants from the government planning offices indicated that municipalities would face urban land shortages in the coming years. Municipal governments needed to grant permits for new developments in order to generate additional income. Thus, municipalities would continue to look at new developments, as a way to meet their budget needs. The informants admitted that the need to develop would put additional pressure on the agricultural land base. Informants No. 1 and 3 questioned the retirement severance program because there were little restrictions placed

on the program. This, they suggested, had led to additional housing units being placed on prime agricultural land. Many of the informants talked about the growth of the greenhouse industry and how that had affected the agriculture land. Some informants indicated that the greenhouse industry was an important part of the agriculture industry but they were concerned about it taking up prime agricultural land. During the discussion, several informants indicated that many of the greenhouses did not actually use the soil and therefore it was thought that they should be placed in areas not suitable for tender fruit and grape production. Informants No. 1 and 3 also said that there was an increasing amount of non-agricultural land uses occurring on prime agricultural land. Examples were given such as trucking company lots, tourist facilities, and horse farms. The informants stated that even though these uses may be directly or indirectly related to agriculture, they still removed prime agricultural land from the land base.

Each of the informants recognized that past planning decisions had put additional pressure on the agricultural land base. Past planning decisions had not been coordinated with other municipalities and had failed to recognize the loss of tender fruit and grape land. Several government programs instituted by the province had prevented agricultural land loss in the past but they were mismanaged and were removed when the Conservative Government entered Ontario legislature in the mid-1990s. Informants No. 1, 3, and 4 suggested that urban area boundaries in the official plans were too generously provided to the municipalities. As a result, informants No. 1 and 3 suggested that urban area boundaries should not be expanded in the next amendment to the official plan and additional restrictions should be placed on the prime agricultural land. .

### 5.3.2 *Support for farmland preservation*

Each of the informants personally agreed that some form of farmland preservation was needed to protect the agricultural lands. Many of the informants answered from their professional perspective. The informants suggested that it was in the best interest of their organizations to support some form of farmland preservation as it granted permanency to the tender fruit and grape industry as well as the land base. Informant No. 11 suggested that the way person or group viewed the agricultural land affected their level of support. This informant suggested that various stakeholder groups had differing opinions and preferences for farmland and any form of support farmland preservation was based on these views. Groups would tend to support farmland preservation if they felt that their stake in the farmland was not seriously being affected.

Most of the informants suspected that farmers and municipal governments would have lower levels of support for farmland preservation because those groups were unsure of how legislation would restrict them. The informants were asked how much support the non-farm population and farmers had for farmland preservation. Most of the informants agreed that the non-farm population wanted some form of farmland preservation. Informant No. 3 suggested that amongst the non-farm population there was an overwhelming level of support. There was speculation that the non-farm population supported farmland preservation because they valued the aesthetics provided by the agricultural land. Informant No. 7 suggested a small minority of the public supported farmland preservation but for the most part the public was not aware. There was discussion about whether the amount of support for agriculture would differ between



the municipalities. Informant No. 5 suggested that farmland preservation was viewed differently in St. Catharines because of its urban nature.

The interviews revealed that there was a varying level of support for preservation among farmers. Informant No. 6 indicated that there was not one farming opinion because each of the different farming sectors had different opinions. It was speculated that different levels of support among farmers could be attributed to differences in farmer age, geographical location, crop type, and farm size. It was indicated that farmers tended to be more concerned with the viability of agriculture than farmland preservation. A number of times the following statement was stated during the interview: “Take care of the farmer and the farmer will take care of the land.” There was a discussion around this statement and how it translated into support for farmland preservation. Most of the informants agreed that support for agriculture preservation would emerge among farmers if they were to be included in the decision making process.

### *5.3.3 Approaches to farmland preservation*

The informants agreed that attempts to develop farmland preservation methods had been met with resistance in Niagara. The different methods that had been used only had marginal levels of success. The informants indicated that this mainly had to do with the difficulty of an effective developing farmland preservation method with such a wide range of differing opinions. However, the informants indicated that a recent attempt by the various agriculture industries, government, and public interests groups had produced a common platform for agriculture entitled *Securing a Legacy for Niagara's Agricultural Land*. The informants claimed that this document was an important attempt to bring

longevity to the agricultural industry and land base. Some of the methodologies proposed to preserve the legacy of agriculture land are described in this document.

It became evident during the course of the interviews that support for specific methodologies varied among the informants. The methods used for farmland preservation were closely aligned with each of the informants' stake in the agricultural land base. Contained in the list below are some of the main farmland preservation methodologies discussed during the interviews.

- There was discussion about the MPC and how its development would take pressure away from the QEW corridor. Informants No. 3 did not agree that this was the best method for reducing pressure on agricultural land.
- Informant No. 5 described a regional planning model in which urban growth would be looked at from a regional perspective instead of municipal perspective. Using this model, any urban growth could be targeted away from the unique agriculture lands to lands that were determined to be less productive.
- The use of economic incentives to farmers was discussed as a way to reward farmers for preserving the agricultural land. Changes to tax assessment, price controls, changes to wine content law, and easement programs were some of methods that were suggested. Providing farmers with technical incentives was also discussed as way to help farmers preserve agricultural land. Informants No. 3, 8, and 9 suggested that providing farmers with irrigation, technical, and marketing assistance would be helpful. Not all informants agreed that this method would be the most effective way of ensuring that farmers would preserve their land.
- Informants suggested that changes to the zoning laws could be used to restrict non-farm uses away from prime agricultural lands. Included in this suggestion was the proposal to limit the amount of greenhouse developments on land below the escarpment. Informant No. 6 suggested that if restrictions of this nature were to be implemented, incentives should be used to help locate industries to other areas. Informant No. 11 suggested that a scientific re-evaluation of the agricultural land base needed to be completed in order to determine the exact location of unique farmland. By re-evaluating the land base, parcels of relatively less productive land located north of the escarpment could be developed while productive land remained in tender fruit or grape production.
- Much discussion also revolved around the removal of farm retirement severances. Most of the informants agreed that the removal of this provision should occur but to varying degrees. Some suggested that the provision be revoked quickly while others

suggested a grandfathering of the plan. A grandfathering of the plan would help reduce the tendency of the farmers to view the severance as retirement income.

#### *5.3.4 Agriculture based approach vs. urban-based approach*

Several informants suggested that farmland preservation was an urban environmental movement. There was concern that farmland preservation (i.e. Greenbelt Legislation) contained an urban-related agenda that did not recognize the challenges that were being faced by the municipalities and farmers in Niagara. Informant No. 9 indicated that the Greenbelt Task Force (formed to develop recommendations for the Greenbelt legislation) did not include farmers. There was concern expressed that the Greenbelt was an agenda developed for the GTA. One informant indicated that any farmland preservation policy based on urban need was a harmful policy. Informant No. 6 suggested it was important to educate the public to help explain the range of issues that affect the farmers. Informants No. 6, and 7 suggested that any legislation coming from the provincial government be developed specifically for Niagara. They agreed that Niagara had a unique situation because of its unique geography and crop types and thus it was important that any legislation be developed in close coordination with the government and industry leaders in Niagara. Accurate representation would ensure that legislation would not be forced down on the Niagara region that would severely restrict the ability of landowner, farmers, and municipalities to manage land use.

#### *5.3.5 Economics*

Most of the informants suggested that the tender fruit and grape industry faced economic challenges. The rising Canadian dollar, changing consumer preferences, free trade, and the rise of farm corporations were some of the challenges that faced farmers. The industry informants looked at the future of the industry with guarded optimism.

Informant No. 8 recognized that business developments in both the wine and tender fruit industry had yielded more stability to these industries. The wine industry had successfully tapped into the wine market and consumer demand for wineries and their wines was growing substantially. However, the grape juice industry was suffering and many of the producers were responding by pulling out their grapes (Informant No. 7 and 9). The tender fruit industry was stabilizing after the addition of a new canning plant in Niagara and a stabilized demand for fresh peaches (Informant No. 8 and 9). Despite the stability that existed in the industries, the industry informants were wary about the future of the industry especially with regards to land controls and expanding free trade. There was also discussion on the economic benefits of tourism. Informant No. 7 saw this as an important growth area for agriculture and an important way to derive additional value from agriculture products.

#### **5.4 Greenbelt Observations**

The reaction to the Greenbelt in Niagara had an important impact on this research project. The Greenbelt Plan generated discussion and provided information that may not have been obtained otherwise. The reaction to the Greenbelt Plan was mixed and this was obvious at the Greenbelt Consultation Meeting that was held in late 2004 (Field Notes, 2004). Many of the stakeholder at this meeting expressed frustration with the lack of lack of incentives available to farmers and how the Greenbelt legislation did not address farm viability. In addition, the farming community raised concern about declining land values, the lack of available technical assistance, the mapping used in the Greenbelt plan, and loss of retirement severances. Townships reacted because they viewed the policies as a restriction to their ability to grow and generate new tax revenue.

Some landowners were angered that the Greenbelt policies would negatively affect their freedom to manage their land.

At the meeting anger was expressed over the lack of representation that Niagara had during the Greenbelt consultation process. Many felt that even though Niagara was designated as a specialty crop area in the Greenbelt legislation, the policies did not meet the needs of Niagara's farmers, municipalities, and landowners. While the Greenbelt had a broad focus of protecting natural, agricultural, and cultural components of the landscape, Niagara was mostly agricultural and distinctly different from other areas in the Greenbelt. The smaller sizes of farms, the high value of crops, and unique agricultural features meant that special representation and attention should be given to farmers. Some argued that Niagara should fall under its own policies that should be developed independently of the Greenbelt legislation. Although there was a high level of negative reaction to the Greenbelt, there was some positive reaction as well. Some stakeholders expressed optimism because agricultural lands fell under a more secure form of agricultural preservation. This would give permanence to the tender fruit lands and demonstrate a commitment to protecting the economy of the tender fruit industry.

## **5.5 Summary**

The interviews and surveys indicate a clear but varied and multi-faceted support for farmland preservation programs. The results indicate that there is a difference in the support levels for farmland preservation between farmers and the non-farm population. The survey data revealed that the two groups value the components of the agricultural landscape differently. groups had different preferences for the agricultural landscape.

Using these data, it is now possible to look at how farmland preservation should be understood and planned in the Niagara Region.

## **Chapter Six -Discussion**

### **6.1 Introduction**

Overall, the results of the surveys and interviews clearly indicate a favorable preference for the agricultural landscape in Niagara. Despite the similarities between the data, it was evident that the preferences expressed by each of the groups were not homogeneous. Interviews with informants provided similar results. This section provides a more detailed discussion on the major themes brought forward by the survey and interview results. The major themes that were identified in the data are listed below:

- Significance of Farmland
- Loss of Farmland
- Economic Viability
- Group Preferences
- Reorganization of Landscape
- Support for Farmland Preservation

### **6.2 Significance of Farmland**

The research data makes a strong statement regarding how the agricultural landscape is being perceived in Niagara. Not surprisingly, the surveys and the interviews convincingly demonstrated that the respondents thought that the agriculture landscape has an important value to the region. The overall significance of the landscape is also demonstrated by the amount of legislation and media coverage associated with it. The history of farmland preservation demonstrates that the landscape has long been considered to be of significant value. Recent land use planning mechanisms such as the Agricultural Task Force, the Greenbelt Legislation, the MPC, and Smart Growth

demonstrate that the governments, at all levels, recognize the significance of the agricultural landscape.

Conventional models for valuing agricultural landscapes place priority on the economic contributions of the landscape. The value of the landscape to society is often linked to the level of contributions the landscape makes to the local economy. The RAEIS makes a strong statement indicating that the agricultural economy is a very significant component of the local economy and impacts the larger regional and provincial economies (Planscape, 2003). The industry is able to provide meaningful jobs, contribute to the tax base, and attract investment to the Niagara Region. During the research, some farmers commented on how the industry in Niagara has no domestic competition and has a broad network of farm related support business. By viewing the agricultural landscape from this perspective, it is easy to understand the significance that the landscape holds.

The economic significance of agricultural land provides only a snapshot of the overall value that people place on the land. The RAEIS states that:

Agriculture in proximity to urban areas benefits urban dwellers. Amongst other things it provides attractive landscape, habitat, wildlife corridors, and carbon sinks to improve air quality (Planscape, 2003: 9.1)

The surveys and interviews clearly pointed to the fact that the agricultural landscape is valued for its other contributions. Further details on these preferences for the agricultural land are discussed later on this chapter. A number of responses suggested that the significance of the agricultural landscape is not just limited to the local area but can be extended to include the province and even all of Canada. The research for this study did not analyze the larger significance of Niagara's Fruit Belt so it is hard to determine the



impact of this statement. However, one can speculate that Canadians may be upset knowing that one of the few areas in Canada that produces tender fruit and grape products is disappearing. People who purchase goods from the Niagara Fruit Belt would also be angered by the loss of product choice. Tourists visiting the area would also likely be upset by the loss of the agricultural landscape, as it would limit the amount of tourist products available and the desire to tour the region.

### **6.3 Loss of farmland**

The concern over the loss of agricultural landscape has a long history in Niagara, and the results clearly indicate that this concern has not diminished. The results indicated that the general perception among survey respondents was that farmland was shrinking and that the primary reason for the loss was urban growth. Media reports and several studies have also identified the loss of prime agricultural land as a concern issue in the Niagara Region (Gayler, 2004). It appears that the concern among survey respondents and interview informants is warranted. In 1959, when Kreuger began writing about the Niagara Fruit Belt, he stretched the Fruit Belt from the edge of the city of Hamilton all the way to the Niagara River. However, Gayler (2004) writes that from the 1960s onward, arguments for preserving the fruit belt focused solely on five municipalities - Grimsby, Lincoln, St. Catharines, NOTL, and Pelham. However, research as part of this study suggested that Grimsby should be removed from this list as very little fruit production occurs outside of land designated for urban development.

The loss of agricultural land cannot be attributed to just the growth in the urban housing market. Several informants talked about severances, and how they were further eroding the agricultural farm base. Other respondents suggested that greenhouses were

taking up too much land and should be relegated to other areas. Other comments by both informants and survey participants suggested that the expansive growth of the wine industry was reducing the agricultural land base. They argued that vineyards have replaced tender fruit trees and winery related buildings such as cellars, warehouses, parking lots, and tourist facilities are often constructed over valuable agricultural land (Gayler, 2003). Wineries have enjoyed substantial growth in recent years and as a result there has been a proliferation of new wineries. This is an ironic development because wineries have increased the economic importance of the landscape but have also caused productive agricultural land to be lost.

The research also sparked several comments regarding the appropriate use of agricultural land. A number of comments by both survey respondents and the informants raised concern over land in the agricultural area that was being left dormant. Exact percentages of unused agricultural land could not be found. A brief trip through the agricultural area noted that there are parcels of land that are presently being left unused. The significance of unused agricultural land can be indicative of changes occurring across the agricultural landscape. Although the exact reasons that a landowner chooses to not to use a parcel of land are unknown, it can be speculated what some of these reasons might be. Gayler (2004) suggests that land is held speculatively and allowed to sit unused in order to bolster the argument that it is not good quality land and thus should be developed. However, other reasons may exist such as a landowner choosing not to use it for personal reasons (i.e. age, changing life experiences). Poor quality farmland quality will not be used because it may lead to negative economic returns. A landowner may choose not to develop land because of the instability in the fruit and grape industry. Fruit

and grape crops take several years to reach a productive state and large amounts of capital to plant. If the economic state of the fruit and grape industry is not stable, this may prevent landowner from investing the necessary time and money. Agricultural land may also be left unused if the owners are only holding it for its speculative value. Land located near urban boundaries or significant transportation corridors may be held for the sole purpose of returning a higher value to the buyer. Since the potential for the land to be developed may only be a few years away, landowners resist investing the time and money into planting new trees and vines.

Several informants suggested that an argument could be made that the loss of farmland can be attributed negative downturns in the tender fruit and grape industry rather than urban development. While this is a legitimate argument it does acknowledge that people value the landscape for more than its economic returns.

#### **6.4 Economic Viability**

Farm viability was mentioned at every step during the research process. A large number of farmers and several non-farmers wrote comments about this issue. The phrase *“Protect the farmer and they will protect the land”* was stated during the interviews and was written on many of the farmers’ surveys. It is not surprising that this attitude was almost exclusively limited to farmers, as they are the ones that are directly affected by negative changes to the industry. The lack of any compensation package in the Greenbelt legislation probably triggered most of the comments regarding compensation.

Farmers, like all business owners, desire to make a decent income. The tender fruit and grape industry in Niagara has long been negatively affected by changes in the larger fruit industry. Most farmers indicated that while production costs have increased

there has been very little change in the amount of income generated from sales. The changes have played a large role in how the industry has organized the landscape over the last 50 years. One participant indicated that while it was possible to make a living on the farm, farmers were continually faced with new challenges and lacked a good pension and medical coverage compared to other industries. Given this attitude, it was not surprising that farmland preservation would be viewed with some apprehension. As a result, many farmers see farmland preservation as another challenge that further limits their ability to make an income.

The following list contains some of the key comments that farmers had in regards to how farmland preservation would affect their farming operations. The comments indicated that farmland preservation would:

- Place further downward pressure on the fruit and grape industry.
- Give a free ride to society to enjoy the landscape at the expense of the farmer.
- Decrease land values and negatively affect the ability to finance capital expenses on credit.
- Remove farm retirement severances (Retirement severances are often viewed as future retirement money).
- Further restrict their ability to freely manage their farm operations.

Other challenges relating to farm viability also factor into the debate over farmland preservation. Farmers mentioned that the decline of the fruit related research, the lack of marketing programs, and technical assistance programs (i.e. irrigation assistance projects, continuing education) decreased the ability of farmers to maintain and further expand their operations. Many respondents also linked the changing social demographics of the farming industry to farm viability. Many farmers are approaching retirement (as demonstrated by the age of respondents) and are unable to redistribute their farm operations to their families. Family members are unwilling or unable to commit to the

continued operation of family farms because of lack of capital or because they are scared off by the economic future of the industry. Several farmers and informants pointed to the development of programs to encourage and educate young farming entrepreneurs (e.g. Brock University Viticulture Program)

Farm viability remains a contentious component of any farmland preservation policy. This was evident during the course of the research as different arguments suggested that farm viability should not be a component of farmland preservation. During one of the presentations relating to the Greenbelt Act, one group suggested that giving assistance to farmers for preserving land would set a bad political precedent. The group argued that other landowners do not receive subsidies for preserving land so why should farmers. Furthermore government assistance to farmers would be costly and would not necessarily yield the results being demanded by the public. Another argument suggested that farmers were makers of their own success. Farmers are business owners and some of these businesses are successful and some are unsuccessful. Thus it makes little sense to protect the farmer if the success of the agricultural land is dependent on the owner (Gayler, 2004). These arguments may contain some validity but certainly create conflict as they attack the credibility of both the farming industry and the individual farmer.

## **6.5 Group Preferences**

The current study compares the preferences of two distinct user groups, the non-farm population and farmers. The groups come from different perspectives and the concerns they have over the landscape are diverse. The differences can be expected because those who experience a landscape and interact with it on a frequent basis tend to

be more aware of the changes in it (Zube and Simcox, 1989). It was assumed that the landscape interactions of each group would influence the survey results in different ways. Farmer preferences would be directly connected to their daily working interaction with the landscape. On the other hand, non-farm participants would rate their preferences according to how they interacted with the landscape. The survey results show that the non-farm population uses the landscape on a regular basis by participating in a variety of different activities (Table 5.4). These interactions would have an affect on their preference ratings. Kline and Wichelns (1998) recognize that the landscapes are valued even though the non-farm population does not derive direct utility from the landscape. The landscape is valued as a public good that needs to be maintained for future generations. Participants may rate the farmland amenities based on this concept rather than on their interactions with the landscape.

The results show that there were slight differences in the preferences for non-market amenities between the groups. In both groups, concern over changes to the agricultural landscape was evident. The non-farm population's responses and comments seem to stem from the loss of agricultural land and its related benefits. On the other hand, farmer comments and answers seemed to be a reaction towards government legislation, specifically the Greenbelt Act.

It was thought that living location, years in Niagara, gender, age, employment type, and income would affect the preferences for non-farm population. In his research Fursueth (1987), noted that personal characteristics affected attitudes toward farmland protection. However, statistical tests on the non-farm demographic characteristics did not

reveal any change among farmland preferences or in the level of support for farmland preservation. (Please see Appendix G for complete results).

#### *6.5.1 Non-farm Preferences*

The results revealed that the non-farm participants and farmers preferred all the amenities described in the survey. These results are consistent with the results posted in similar studies throughout North America. Although the study methodologies differed, Kline and Wichelns (1998), Rosenberger (1988), and Duke and Aull-Hyde (2002) all determined that the public preferred many of the amenities of farmland preservation programs. While there was support for all amenities, higher ratings were observed for both the environmental and agricultural related amenities.

During the survey development and interview phase of the research, it was hypothesized that the non-farm population would prefer the aesthetic functions of the unique agricultural land. While it is true that the public preferred the aesthetic functions of agricultural land, most of the importance was placed on the environmental attributes. The non-farm participants gave each of the four environmental-related amenities high importance ratings. Using the factor analysis, these four amenities were grouped together because of similarities that were evident in the data. The answers given by the non-farm population are not surprising given the results that were obtained in similar studies done in different regions in the United States. The studies by Kline and Wichelns (1998), Rosenberger (1988), and Duke and Aull-Hyde (2002) all determined that the public placed high importance on environmental amenities on agricultural land.

The results are consistent with both the non-farm preferences for landscape types and user activities in the agricultural landscape. Pfeffer and Lapping (1995b) indicate

that there may be a larger interest in preserving fruit farms. The non-farm population ranked woodlands the highest, but both orchards and vineyard were also ranked high. The preference for woodlands seems to match the public preference for environmental amenities. Duke and Aull-Hyde (2002) suggest that a problematic conclusion may be drawn out of the data. In their study, participants tended to place high importance on agricultural land uses but at the same time wanted the land to protect water quality. However, it may be argued that unaltered landscapes (i.e. woodlands) protect water quality better than agricultural landscapes. This same problematic conclusion was also evident in this research as most participants selected woodlands as their preferred landscape and placed high ratings on the environmental related amenities. For the purposes of this research project it was assumed that woodlands would be interpreted as “unaltered.” Despite these choices, the non-farm population also chose that the agricultural land be preserved. The trend was also noticed in the comments contained in the surveys as several participants raised concerns over pesticide usage and debated whether agricultural land actually preserves water quality.

#### 6.5.2 *Farmer Preferences*

Farmer preferences of the non-market amenities were slightly different than those of the non-farm population. Interestingly, the preferences expressed by the farm respondents matched those already reported in the literature review. The answers and comments reflected both utilitarian and anthropocentric values. Of the non-market benefits of agricultural land, farmers rated the agrarian related amenities the highest. *Keeps farming as a way of life, provides locally grown food, and sustains an important regional industry* were the three highest rated amenities among farmers. Brush et al.



(2000) and Van Den Berg et al. (1998) suggested that farmers tend to favour landscapes that they are familiar with and economically attached to. Thus the expectation that the three agrarian amenities would have the highest rating amongst farmers was confirmed by the research. The agriculture landscape represents the main source of income and source of knowledge for farmers.

Farmer support for farmland preservation was slightly lower than the non-farm population. This was expected considering the opposition to certain government legislative processes. Much of the research literature suggested that farmers may be hesitant to accept farmland preservation, and the research results support this contention (Reeds, 1969; Ryan and Hansel Walker, 2004). Many of the farmer comments contained in the surveys dealt with the farm viability issue. Both Gayler (2004) and Bunce (1998) suggest that farm viability has become entrenched in the debate over farmland preservation. Farmers suspected the farmland preservation would reduce property values, decrease their equity, lead to the removal of the retirement severances, and reduce their flexibility to manage the land.

The urban-rural conflict often associated with farmland preservation was evident among farmer comments but only on a limited scale. Some comments showed evidence that the concerns of the farmers were portrayed well through local media. Many non-farm comments showed support for farmers and encouraged politicians on all levels to support farmers. A few comments indicated that members of the non-farm population were unaware of the challenges associated with maintaining a farm operation. Concern over adequate representation dominated most of the comments associated with urban-

rural conflict. The concern or perception that farmers were underrepresented may have fostered further opposition to farmland preservation.

## **6.6 Reorganization of the Landscape**

The paradigm of multifunctional agriculture indicates that agriculture is moving beyond its economic significance and towards an acceptance of the non-market functions of agricultural land. While North America has been slower to accept this new reality of agriculture, it is being accepted to some degree in Niagara. Research shows that in Niagara two components can be attributed to the changing attitude. First, consumers have an increasingly more diverse range of products and landscape preferences. Secondly, the rapid growth in the grape and tender fruit industry is creating more opportunities for farmers. The combination of the two components has shifted how the agricultural landscape is perceived and how it has become organized.

Consumer attitudes towards both agricultural products and the agricultural landscape have changed in several ways. First, farmers indicated that consumer attitudes towards their products are driven more by accessibility and price. Many farmers suggested that a wholesale change of consumer attitudes must take place to give the industry more viable. Several comments suggested that the government should do more to encourage consumers to buy locally produced products. Consumers expect to pay low prices for Canadian produced products when in reality these products cannot be produced more cheaply than imported products. Furthermore, free trade has allowed similarly priced foreign fruit products to appear year round in grocery stores. Second, the expanding cultural diversity in the Golden Horseshoe has increased demand for different agricultural products. For example, the RAEIS indicates that sour cherry orchards are

now planted with varieties that are preferred in Chinese cuisine. Third, consumers have started to become more health conscious and are more concerned about the quality of food products and how farmers produce those products. The RAEIS reports that there is a growing interest in fresh and nutritious products that are grown under controlled conditions. The interest has led to a growing interest in the environmental benefits of the landscape and in agricultural methods that preserve the environmental benefits (i.e. organic farming) (Planscape, 2003).

The change in consumer expectations and preferences can be coupled with the expansive growth of the grape and wine industry. The success of Niagara based wines has attracted more attention to the region, and wineries have responded by offering a greater variety of products and services. The grape and wine producers have further promoted their industry by developing agri-tourism initiatives (Gayler, 2004). Governments and business leaders now see agri-tourism as a model for economic growth and a responsible use of agricultural land base (Gayler, 2003). Many of the non-farm survey responses and informant comments indicated that agri-tourism provided the economic engine to make farming more profitable. The growth has not been limited to the grape and wine industry but also has spilled over into the tender fruit industry.

Changing consumer preferences and the expansion of the grape and wine industry have caused farmers to reorient their farms and farming methods. Farmers report trying to find ways to minimize costs by increasing demands for government support. Environmental-related legislation, such as nutrient management plans and pesticide application laws, have made farming practices more environmentally friendly and often more costly. The environmental demands have also fostered more opportunities for

farmers to market organic products, with at least one winery (Frogpond Farm Organic Winery) already producing wine from organically grown grapes. The success of the wine industry has created opportunities for grape producers to develop agri-tourism developments in the form of wineries, bed and breakfasts, and boutiques. Tender fruit producers have not been far behind and have taken advantage of tourists who pass road fronts along major routes such as the Wine Route. The changing preferences have resulted in the expansion of both farmers' markets and farm-gate sales along major roads in the Niagara (Gayler, 2003). Probably the largest change to the landscape has been the attitudinal shift to farmland preservation. With the success of the industry, some producers, particularly large winery owners, are at the forefront of demanding farmland preservation (Gayler, 2004).

The reorganization of the landscape has caused several concerns to develop. Numerous comments appeared about how the success of the grape and wine industry was leading to the development of a monoculture. Tied to the growth of the grape and wine industry was the expanding tourist industry which also drew a number of concerns. Expanding tourist operations resulted in more land being removed from the agricultural land base and increased road traffic along rural roads. There were questions as to when the farm operation becomes less important and the tourist operation takes over. This was illustrated at the Greenbelt Consultation Phase when frustrations emerged on how farmers were having a difficult time setting up agri-tourism initiatives. Interestingly, very few farmers commented on agri-tourism or recognized it as way to expand farm income. The lack of comments seems to coincide with the farmer survey results from the RAEIS. In the RAEIS survey farmers did not see agri-tourism as an opportunity to

increase revenue but a positive way to connect the public with agriculture (Planscape, 2003). Although farmers appear to have a positive reaction to agri-tourism, their lack of involvement may be result of lack of information, time, and skill. While it seems like a good idea, in practicality it may be hard to develop a business plan while running the day-to-day farm operations.

## **6.7 Support for Farmland Preservation**

The results show that the loss of farmland and the subsequent loss of amenities have created support for farmland preservation. Support for farmland preservation was greater among the non-farm population but support still existed among farmers. The results are consistent with existing research regarding support for farmland preservation. Most research shows that the non-farm population overwhelmingly supports farmland preservation especially along the urban-rural fringe. Farmers tend to have lower support because of the perception that farmland preservation will restrict their ability to manage their farmland.

The survey instrument did not ask participants any questions relating to existing methods of farmland preservation but many participants added comments. The following list details some of the ideas that were submitted:

- Move future development including greenhouses above the escarpment away from prime agricultural lands.
- Government has to do more to support farmers. Several ideas were given including product price support, tax breaks, infrastructure support, and crop insurance.
- More marketing support should be given to farmers to promote local produce. Perhaps provide incentives to grocery stores to support local produce.
- Promote agricultural tourism but be careful in how it is promoted. Tourism in NOTL has negatively affected outlying areas.
- Government on all levels has to be supportive of protecting the farmland.

- Better methods for developing lands already in urban areas should be used.
- In addition to protecting farmland, set aside land that protects natural areas.

Many of the comments were related to the Greenbelt Act that was legislated in early 2005. Many people suggested that the Greenbelt legislation was warranted for protecting the landscape but questioned all or some of the aspects of the program. Surprisingly, many sided with the farmers and suggested that additional funding should be provided to farmers for protecting the landscape.

The comments by farmers towards farmland preservation were far more direct. Many of the farmers' comments indicated that farmland preservation should be tied to some form of compensation. This was expected as farmland preservation directly affected their ability to manage a viable farm operation. The following list contains some of the key recommendations that farmers submitted.

- Farmland preservation solutions should be developed for Niagara and in consultation with landowners.
- Compensation package should be provided to farmers for protecting certain parcels of farmland.
- Price controls for foreign products.
- Direct marketing assistance to market fruit products locally, regionally, and provincially.
- Increased marketing of Ontario wine at the LCBO
- Changes to the Wine Content Act
- Move development away from prime agricultural land to poor quality land.
- Increased infrastructure support (irrigation) and research and development support.
- Increased legislative support such as right to farm, access to safety nets, and programs aimed to maintain domestic market share.

While support for farmland preservation exists among farmers, they do not act as one group when supporting farmland preservation. Given the small sample size, it wasn't applicable to determine differences between the different farming groups. However,

several of the informants spoke of differences between farming groups. Wineries, grape growers, tender fruit producers, and other agricultural industries (e.g. greenhouses), have different desires for developing the agricultural land. For instance, larger wineries may see farmland preservation as an excellent marketing tool but the smaller grape grower may see it as another restriction on their farm operation. In addition, age might cause retiring farmers to put less importance on farmland preservation than younger farmers. The challenge is to develop a farmland preservation method that is supportive of all these preferences.

## **6.8 Conclusion**

This chapter has presented and discussed some of the key themes found in the research results. It attempts to emphasize the role that group preferences have in each of those themes. The subsequent chapter looks back on this discussion and how it applies to the research goals and objectives.

## **Chapter Seven -Conclusion and Recommendations**

### **7.1 Introduction**

Farmland preservation remains a contentious issue in Niagara despite the many advances in recent years. This chapter summarizes the information highlighted throughout this research study. The summary provides an overview of the research objectives and how the research fits into the broader research literature. The chapter also highlights how economic viability became a central component of the research project and affected the responses by participants. The chapter also provides recommendations and suggests areas for future research.

### **7.2 Restatement of Goals**

The research sought to address a number of key objectives that were identified the introduction. The key objectives of the study were to:

- Identify the preferences placed on the tender fruit and grape landscape with a specific focus on the non-market goods supplied by agricultural land.
- Determine if the preferences placed on agricultural land translate into support for farmland preservation programs among government officials, farmers and the non-farm population.
- Determine if the goals and expectations of the non-farm population are consistent with the goals and expectations of the regional government, municipal governments, and farmers.
- To generate recommendations that will help guide the development of effective farmland preservation methods in the study area.

The literature review addresses the first objective by describing the variety of preferences placed on agricultural landscape with a focus on non-market amenities. The methodology chapter describes the different methods used to solicit information regarding the non-market preferences of the agricultural landscape. The results chapter



details the survey results, which indicated that the non-farm population prefers environmental amenities and the farmers prefer agrarian amenities. Further discussion regarding the group preferences are highlighted in the discussion chapter and in this final concluding chapter.

The second objective is introduced in the literature review and further discussed in the results chapter. The literature review evaluated the rise of the farmland preservation movement since the 1960s. Since then several studies have concluded that farmland preservation rises in popularity as urbanization and incomes increase within the local area. Furthermore, the loss of productive farmland to urban-related uses increases the level of support for farmland preservation. The results chapter shows that in the current study, farmers, the non-farm population, and informants support farmland preservation.

The literature review addresses the third objective by discussing the differences between the goals and expectations of non-farm population and farmers. Several academic studies show that the differences seem to be particularly pronounced in the debate over farmland preservation. The Niagara Chapter highlights how these differences have contributed to the development of farmland preservation in Niagara. The differences between the two groups, farmers and the non-farm population, are also highlighted in the discussion chapter. This final chapter attempts to further that discussion and presents recommendations to reduce that tension.

In the literature review, a variety of farmland preservation strategies are presented. It not the goal of this thesis to evaluate the merits of the different farmland preservation strategies but rather present recommendations that will guide the future

development of these strategies. This final chapter presents the recommendations concerning farmland preservation in Niagara.

### **7.3 Situated within Broader Literature**

The literature review introduced some of the main academic studies surrounding farmland preservation. The studies not only provided background information but also allowed for cross comparisons between data sets. The literature review introduces farmland preservation and subsequently introduces the new paradigm of multifunctional agriculture. While producing agricultural goods, farmers also produce a landscape that contains additional products and services (Vanslebrouk and Van Huylenboreck, 2003). Durand and Van Huylen Broeck (2003) define multifunctional agriculture as the joint production of commodities and non-commodities. Non-commodities or rural amenities are goods and services that are produced in a rural setting (Nickerson and Hellerstein, 2003). Rural amenities are public goods that are both nonrival and nonexcludable (Hellerstein et al. 2002). Markets do not set prices for rural amenities and thus farmers are compensated for providing them (Hall et al. 2004). The demand for rural amenities has caused the agricultural landscape to be reorganized and restructured. Batie (2003) suggests that the demand for rural amenities is evident by the rise in organic agriculture, the growth in retail centers that connect consumers and agriculture, increased agro-tourism opportunities, and increase in both ecolabeling and regional labeling.

While North America has been slow to accept multifunctional agricultural, this study shows that there is evidence of growing demand for rural amenities in the Niagara Region. Gayler (2003) and the RAEIS indicate that there is growing demand and availability of agricultural-related tourist activities, farm gate sales, and for VQA wines

(Planscape, 2003). The participants of the survey supported this conclusion by indicating that they participate in activities within the agricultural landscape on a regular basis. Furthermore, the participants placed high importance ratings on certain rural amenities that they wished to preserve. Not only are these results consistent with the literature but they also set the foundation of demand for farmland preservation.

The rise in the multifunctional paradigm coincides with an increase in demand for farmland preservation. Farmland loss is reshaping the agricultural landscape especially along the urban-rural fringe. Schläpfer and Hanley (2003) make the argument that demand for landscape amenities is dependent on what the perceived local abundance is. Thus, demand for non-market amenities should increase as farmland decreases. Hellerstein et al. (2002) also make the argument that wealthier communities tend to support farmland preservation methods when farmland is in decline. While the thesis did not attempt to research the actual loss of farmland, there are strong indications from earlier data and key informant and survey opinion that farmland is in decline in the Niagara Area. Numerous political debates have surfaced in Niagara every time farmland loss reaches the political agenda, resulting generally in a renewed push for farmland preservation. The survey shows that non-market qualities of the landscape are demanded and that there is a high level of support for farmland preservation methods. Coinciding with this high level of support is the perceived idea among survey participants that the farmland is shrinking to mainly urban uses.

Support for farmland preservation methods are typically divided by a variety of different interests (Kline and Wichelns, 1998). Bunce (1998) argues that two ideological streams have emerged in the farmland preservation discourse: environmentalism and

agrarianism. Kline and Wichelns (1998) suggest that the decisions to support farmland preservation programs are based on the utility an individual derives out of the landscape and public goods nature of the landscape. The different interests can be mainly linked to two groups: farmers and the non-farm population. While few studies analyze what landscape qualities farmers are demanding, numerous studies list the preferences of the non-farm population. Brush et al. (2000) discovered that farmers enjoy farm landscapes, suggesting that occupational bias and knowledge play important role in demand for landscape qualities. The current study concluded similar results as farmers rated agrarian related amenities the highest. Hellerstein et al (2002) lists an assortment of studies that conclude that the non-farm population prefers different amenities in different jurisdictions. This study is consistent with the study by Kline and Wichelns (1998), which indicated the non-farm population, is demanding environmental amenities.

## **7.4 Lessons Learned**

### *7.4.1 Economic Viability*

During this study many of the farmers, informants, and the non-farm population indicated the economic viability must be considered in the debate over farmland preservation in Niagara. The fruit and grape industry has gone through numerous cycles of economic failures and successes. Even with the recent advances in both the tender fruit and grape industries, many farmers suggested the industry had very little future stability. The perceived threat of farm preservation caused farmers to be even more anxious about the future of their farm operations. During the development of the research project it was suspected that farm viability would play a role in how farmers responded to the survey. However, it was not suspected how much emotion would be

attached to the issue of farm viability. When a commenter at the Greenbelt Information Meeting in St. Catharines suggested that farmers should not be given any compensation for preserving the land, the person was openly criticized for the rest of the night. Many of the farmers included comments in their surveys regarding economic viability.

Several research studies openly state that compensation should be included in the farmland preservation strategies. Hall et al. (2004) suggest that there are two questions regarding the changing preferences of the non-farm population. The first question is what the public wants and second is how should farmers be compensated for providing these demands. Nickerson and Hellerstein (2003: 131) write that

If a rural landowner could capture the value of rural amenities (i.e. compensation), the profitability of maintaining their land in a farming use would be increased. This would tend to postpone conversion of farmland to nonfarm uses, since alternative uses would have to generate higher income streams in order to bid the land away from farming use.

Several programs have been developed to provide compensation to farmers. Programs that provide compensation have had significant success, however the biggest drawback to them is their cost (Ryan and Hansel Walker, 2004). These programs also pose a risk in trade discussion with the WTO because they may appear as domestic subsidies (Potter and Burney, 2002).

The research methodology did not incorporate direct questions relating to economic viability, and the study does not attempt to analyze the impact of economic viability on the future of farmland preservation. However, it may have been useful to incorporate questions to farmers concerning economic viability to determine how the magnitude of the concern.

#### *7.4.2 Group Preferences*

Defining group preferences for agricultural landscape became a key component of this research study. Quantifying preferences is complex task and numerous methodologies have been referred to in this study. As previously mentioned, other studies have used contingent valuation, the AHP, and other statistical analyses of survey and referenda data to derive information how various groups value both rural and agricultural land. While the method chosen in this study is able to highlight the differences between the groups, it may have been useful to survey separate more distinct groups. Surveying groups such as tourists, residents outside of the four municipalities, developers and planners would have expanded the research platform but may have provided more complete results. In addition, the design of the research and the sampling methodology used this study should have been based on probability sampling methods. Even though the study methodology is generates discussion regarding farmland preservation in Niagara, these suggestions would have made the research more complete and furthered the impact of this research study.

#### **7.5 Recommendations**

The following list of recommendations is meant to provide future direction to the shape of farmland preservation in Niagara Region. The recommendations are prioritized according to their urgency. The following recommendations are given to help improve that legislation in a Niagara specific context.

*1) Facilitate discussion between all people affected by farmland preservation. (Top Priority)*

Removing farmers or non-farm population from discussions concerning farmland preservation strategies may lead to increased chance of conflict between the groups. The Agricultural Task force made a significant step in fostering more discussion between farming groups. However, the invitation should be furthered to include members of the non-farm population, and organizations such as Smart Growth Niagara, Niagara Economic and Tourism Corporation, Grape Growers of Ontario, the Wine Council of Ontario, and the Ontario Tender Fruit Producers. While these organizations play important role in the discussion, the provincial government should be responsible for funding and providing direction concerning farmland preservation.

*2) Evaluate the financial and technical needs of farmers on prime agricultural lands. (Top Priority)*

Lands designated as prime agricultural lands have been placed under strict legislation within the Greenbelt Act. Through normal farming practices, farmers continue to provide cultural and social benefits. By determining the financial and technical needs of farmers, new legislation can include compensation mechanisms that accurately target farmer needs. The following list contains recommendations that are directed towards assisting farmers.

- Increase marketing of Niagara Region agricultural products and services
- Provide so called “green incentives” to farmers for using environmentally friendly farming practices
- Increase support for irrigation of agricultural lands
- Increase funding for agricultural research and development at Niagara area institutions
- Provide direct compensation to farmers for protecting land from development

The provision of financial and technical assistance is the responsibility of all levels of government. Local and regional governments have a responsibility of ensuring that needs of the farmers are being met. However, the larger responsibility remains with the provincial government and the federal government to fund the long-term viability of agriculture in Niagara.

3) *Re-evaluate the method to designate land as prime agricultural lands. (Medium Priority)*

Numerous comments in the surveys and in the Greenbelt meetings suggested that the methodology used to designate prime agricultural lands was inaccurate. By completing a detailed study, the exact parcels of land that are suitable for growing tender fruit and grapes could be identified and future development could be directed to parcels of land that were not as productive. This would give farmers and town councils security knowing which lands are productive and which lands are suitable for development. Farmers need to share information with the provincial ministries to ensure that the mapping and the method used to evaluate land is completely properly.

4) *Evaluate the preferences put on farmland by both the non-farm population and by farmers. (Medium Priority)*

Farmland preservation programs are often poorly designed to pursue some of the objectives demanded by different groups (Kline and Wichelns, 1998). In the present study, the non-farm population and farmers demanded environmental amenities and agrarian amenities respectively. By evaluating the preferences, preservation programs can be designed to fulfill these objectives. The following list contains specific recommendations for fulfilling these preferences.

- In areas in which members of the non-farm population visit, concentrate on providing environmental amenities; in areas that are not as frequently



visited, concentrate on the continued production of agricultural goods (Hackl and Pruckner, 1997).

- Encourage and provide training for farmers to adapt to more environmentally friendly practices.
- Provide roadways and recreational areas where people can recreate in the agricultural area.
- Develop greenhouse infrastructure in other regions in order to encourage greenhouse development away from prime agricultural lands.
- Preserve both farmlands and significant woodlots located in Niagara.
- Preserve farmscapes that contain traditional structures often associated with family farms (e.g. Farm Houses, Barn Structures, and Fence Lines).

The implementation should be a joint effort between provincial, local governments, farm support organizations, and citizen groups. Local governments, farm support businesses, and citizen groups are needed to identify local strategies and solutions. The provincial government needs to provide a strong legislative framework to work within.

5) *Provide mechanisms that help farms to become potential multifunctional rural enterprises (Marsden et al. 2002). (Low Priority)*

Agri-tourism, farm-gate sales, and the use of alternative agricultural techniques (i.e. organic) have provided farmers with additional sources of income in Niagara. However, many of these initiatives are weakly defined by governments and farmers are unsure of what direction to take. Local governments need to define all aspects of the agricultural landscape and evaluate ways to encourage multifunctional agriculture. Local government needs provide direction and develop mechanisms that allow for farmers explore tourist related businesses on their properties. Such mechanisms could include workshops, tax relief, special zoning amendments, and temporary and seasonal permits. Training of farmers should be an important component of this strategy.

## 7.6 Future Research Needed

This research report developed ideas that can be incorporated into other research projects. The areas of further research identified in the following section will be able to build upon the information brought forward by this study. The potential studies will not only fit into the broader research agenda concerning farmland preservation but may lead to the development of an effective farmland preservation program in Niagara.

*1) Conduct a detailed analysis on the changes to the farm landscape within Niagara Region with a specific focus on prime agricultural land.*

It appears from the literature that there is much debate about the actual amount of agricultural land lost to competing uses. It is unknown what percentage of land within the agricultural area has been left unused and what percentage of land has been consumed by non farm uses. A detailed GIS based analysis would provide the needed geographical information to accurately illustrate farmland loss in the Niagara Region.

*2) Research farmland preservation programs and solicit information from participant groups regarding their choices.*

The present study did not attempt to evaluate specific farmland preservation programs and apply them to the Niagara Region. However, a number of specific strategies exist that could be incorporated into a successful farmland preservation program. More research on these programs is needed to provide landscape planners with additional information.

*3) Research the importance of the Niagara Fruit Belt to consumers and users located outside of the Niagara Region.*

This research study did not attempt to look at the value placed on the Niagara Fruit Belt by external residents. During the course of the research, several suggestions were made that the Niagara Fruit Belt holds both a national and provincial value. The

unique crop types and landscape may hold importance values to consumers outside of the region. Farmland preservation programs would need to take these perspectives into account as tourist visits and tourist dollars provide stability to the agricultural sector.

*4) Conduct a detailed analysis on the agri-tourism initiatives occurring on prime agricultural land.*

Very little research has been conducted on the role agri-tourist enterprises play in restructuring that agricultural landscape. Many wineries have limited information regarding tourist visits and tourist dollars spent at their locations. The study could be expanded to include all agri-tourist enterprises such as bed and breakfasts, farm markets, and farm tours. The information could be used to design farmland preservation programs that best meet the needs of farmers and tourists.

*5) After the Greenbelt Plan has been in place for several years, determine if farmland values have lowered.*

Many farmers argued that declining property values would hurt their businesses. During the development of the Greenbelt Plan, no one really understood how property values would be affected. The study could analyse the transactions of tender fruit and grape land in the Niagara Region. The information could provide information to other areas considering farmland preservation.

## **7.7 Concluding Remarks**

This chapter has attempted to evaluate the degree to which this study has fulfilled the objectives outlined in the introduction. The chapter has identified how the information learned during the course of the research fits into the broader research agenda. The research study succeeds in identifying the preferences for agricultural land and how they affect support for farmland preservation. Differences between the two

groups highlight the need for farmland preservation strategies to engage all participants. The recommendations at the end of chapter provide ideas for producing an effective farmland preservation strategy. Using these recommendations and engaging in addition research will help Niagara area leaders develop an effective farmland preservation program

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## Appendices

### Appendix A – CLI Classifications

Class	Description	Percentage of Land in this Class
1	Soils in this class have no significant limitations in use for crops.	0.4
2	Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.	1.6
3	Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.	2.5
4	Soils in this class have severe limitations that restrict the range of crops or require special conservation practices.	2.5
5	Soils in this class have very severe limitations that restrict their capability in producing perennial forage crops, and improvement practices are feasible.	3.4
6	Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.	1.7
7	Soils in this class have no capacity for arable culture or permanent pasture.	5.9
0	Organic Soils (not placed in capability classes).	1.8
Unclassed	Unmapped areas including urban areas, national and provincial parks and forest reserves not included in the CLI agricultural classification	1.0
Outside CLI	All areas outside CLI boundaries – nearly all Classes 6,7, and 0, but not arable because of climate and topography.	79.1

Note: Classes 1 to 7 indicate mineral soils. A rating of 1 represents prime agricultural land with few limits to production and 7 represents land that is unsuitable for agriculture. Class 0 indicates organic soils. Sub-classifications such as C, S, F, M, N, T, and W indicate other problems such as adverse climate, stoniness, low fertility, moisture limitation, salinity, topography, or excess water.

Source: Wang, 2004

## Appendix B – Office of Research Ethics Application Package

### APPLICATION FOR ETHICS REVIEW OF RESEARCH INVOLVING HUMAN PARTICIPANTS

Please remember to **PRINT AND SIGN** the form, and **forward TWO copies** to the Office of Research Ethics, Needles Hall, Room 1024, with all attachments.

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#### A. GENERAL INFORMATION

**1. Title of Project:** Identifying the values attached to agricultural land in the Niagara Region

**2. a) Principal and Co-Investigator(s)**

Name	Department	Ext:	e-mail:
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**2. b) Collaborator(s)**

Name	Department	Ext:	e-mail:
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**3. Faculty Supervisor(s)**

Name	Department	Ext:	e-mail:
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Judith Cukier	Geography	5490	jcukier@fes.uwaterloo.ca
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**4. Student Investigator(s)**

Name	Department	Ext:	e-mail:	Local Phone #:
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Gideon Prins	Geography		pgprins@fes.uwaterloo.ca	519-884-3858
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**5. Level of Project:** MA      **Specify Course:**

Research Project/Course Status: New Project\Course

**6. Funding Status:**

Is this project currently funded? No

- If No, is funding being sought OR if Yes, is additional funding being sought? No
- Period of Funding:

**7. Is this research a multi-center study?** No

If Yes, what other institutions are involved:

**8. Has this proposal been submitted to any other Research Ethics Board/Institutional Review Board?** No

**9. For Undergraduate and Graduate Research:**

Has this proposal received approval of a Department Committee? Not Dept. Req.

**10. a) Indicate the anticipated commencement date for this project:** 11/10/2003

**b) Indicate the anticipated completion date for this project:** 8/20/2003

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**B. SUMMARY OF PROPOSED RESEARCH**

**1. Purpose and Rationale for Proposed Research**

a. Briefly describe the purpose (objectives) and rationale of the proposed project and include any hypothesis(es)/research questions to be investigated. Where available, provide a copy of a research proposal:

With the pressures facing the unique agricultural land in the Niagara Region it is becoming increasingly evident that special policies must be implemented to protect the lands. Policies used to preserve the agricultural land need to consider the different values placed on actual environmental land. In the Niagara Region, both individuals and groups place value on the land differently and it is necessary to consider these values when developing policies. Thus, this research project will need to work in a framework which recognizes differential values people have for agricultural land. The research will create a better understanding of how agricultural land is being valued and how it should be used in the future within the Niagara Region.

The following research objectives outline the research design of the research project.

- Identify values that people attach to the agricultural land of the Niagara Peninsula.
- Identify if the values translate into support for agricultural land preservation programs among government officials, farmers and the general public.
- Determine if the goals and expectations of the general public are consistent with the goals and expectations of the regional government, municipal governments, and farmers.

The objectives are designed to incorporate the different values attached to farmland in order to determine if there is support for agricultural preservation activities. It is hoped that the objectives will lead to a project that will help policy makers to develop effective preservation programs in the Niagara Region

b. In lay language, provide a one paragraph (approximately 100 words) summary of the project including



purpose and basic methods:

The project will look at the different ways in which people view the tender fruit lands in the Niagara Region. Interviews and surveys will be conducted with the general public, government officials, interest groups, and farmers. The interviews and surveys will analyze how the agricultural land is being viewed and what support there is for agricultural land preservation activities. It is hoped that government officials will then consider these perceptions when developing land use plans in the Niagara Region.

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## C. DETAILS OF STUDY

### 1. Methodology/Procedures

a. Which of the following procedures will be used? Provide a copy of all materials to be used in this study.

Survey(s) or questionnaire(s) (in person)    Some are standardized.

Interview(s) (in person)

Analysis of secondary data set

Unobtrusive observations

b. Provide a brief, sequential description of the procedures to be used in this study:

Below is a list of the procedures to be used throughout this study. First, a literature review will be done on all land preservation activities that have occurred in North America. Secondly, a literature review will be done on provincial procedures and procedures already carried out in the Niagara Region. In the next stage of the project surveys will be completed with both the general public and farmers. Interviews will also be conducted with key informants at this point. During the course of the research project, unobtrusive observations will be made.

1. Literature Analysis (North America)
2. Literature Analysis (Provincial and Niagara Region)
3. Surveys – General Public
4. Surveys – Farmers
5. Interviews – Key informants

c. Will this study involve the administration of any drugs? No

### 2. Participants Involved in the Study

a. Indicate who will be recruited as potential participants in this study.

#### **Non-UW Participants:**

Adults

Seniors

b. Describe the potential participants in this study including group affiliation, gender, age range and any other special characteristics. If only one gender is to be recruited, provide a justification for this:

The potential survey participants will all be residents of the Niagara Region. Surveys will be conducted with a random sample of volunteers composed of both the general public and farmers. No preference will be given to particular gender, age range, or group affiliation. Farmers may be a particular gender and age range but any data analysis will take this into account. Interviews will be conducted with people who have a direct impact or link to the issue such as planners, academics, and interest groups (i.e. Preservation for Agricultural

Lands Society, Smart Growth Niagara, Tender Fruit Producer's Marketing Board, Grape Growers of Ontario)

c. How many participants are expected to be involved in this study? Approximately 200 people will be involved in the study.

### **3. Recruitment Process and Study Location**

a. From what source(s) will the potential participants be recruited?

Businesses, industries

Tender Fruit Producer's Marketing Board, Grape Growers of Ontario

b. Describe how and by whom the potential participants will be recruited. Provide a copy of any materials to be used for recruitment (e.g. posters(s), flyers, advertisement(s), letter(s), telephone script):

The student investigator will recruit volunteers for the survey by approaching people at public places (retail locations). Approval will be obtained from officials in charge prior to the commencement of the recruitment process. An information letter and consent form will be given to each volunteer outlining the details of the study. The investigator will ensure that all survey participants are aware of the time commitment, that they must be over 18, and that they are residents of the Niagara Region. Recruitment of farmers will be done through mailing lists obtained from both the Tender Fruit Producer's Marketing Board and the Grape Growers of Ontario. Actual surveys will be conducted with farmers on their farms where possible. Permission and scheduling of the interview will be made with each individual farmer. Key informants will be recruited by telephone and will be provided with a information letter and consent form.

c. Where will the study take place? Off campus: Public Locations/Planning Offices/ Farms

### **4. Compensation of Participants**

Will participants receive compensation (financial or otherwise) for participation? No

### **5. Feedback to Participants**

Briefly describe the plans for provision of feedback. Where feasible, a letter of appreciation should be provided to participants. This also should include details about the purpose and predictions of the study, and if possible, an executive summary of the study outcomes. Provide a copy of the feedback letter to be used.

Each of the participants will receive a feedback letter that will communicate to participants that they may access the final project summary by contacting me or my advisor. Key informants (interviewees) will be given an executive summary of the project when it is made available.

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## **D. POTENTIAL BENEFITS FROM THE STUDY**

### **1. Identify and describe any known or anticipated direct benefits to the participants from their involvement in the project:**

Agricultural land preservation programs are generally well received by the public. This project will allow participants to comment on a issue that is close to home. During the course of the project all participants will be encouraged to express their opinions and ask any questions. All participants in the project will be given information on how to contact the student investigator or the faculty advisor for further information. Key informants will be notified when the final project summary is available and will have direct access to it.

**2. Identify and describe any known or anticipated benefits to the scientific community/society from this study:**

Agricultural preservation programs usually take into account the agricultural side of the issue without acknowledging that other values are associated with the land. However, it is becoming increasingly evident that the public is putting value on the agricultural land and demanding access to it. As a result, researchers now point out the need to involve the public in the decision making process. By including the public, officials will be better able to design cost-effective programs. This project attempts to understand the values that the public is putting in agricultural land in the Niagara Region. Understanding the values associated with this land will allow the investigators to form conclusions that may be useful for local officials and those in other jurisdictions. Furthermore, it will provide solid research data on how the public values and attempts to use good agricultural land.

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**E. POTENTIAL RISKS TO PARTICIPANTS FROM THE STUDY**

**1. For each procedure used in this study, describe any known or anticipated risks/stressors to the participants. Consider physiological, psychological, emotional, social etc. risks/stressors.**

No known or anticipated risks

No risks are anticipated because the project is a request for information. The topic is not politically sensitive and all participants have been informed that they will not be identified in the report.

**2. Describe the procedures or safeguards in place to protect the physical and psychological health of the participants in light of the risks/stresses identified in E1:**

The specific answers from the surveys and interviews will not be shared with other groups. The findings from the surveys will be grouped together in the hope they will answer the research objectives. The project will refer to planning objectives of the municipalities but will not link these objectives to specific persons. People will not be named in the research project unless permission has been granted by the participants themselves. In addition, all documents obtained from surveys and interviews will be kept in a secure place.

---

**F. INFORMED CONSENT PROCESS**

*Researchers are advised to review the Sample Materials section of the ORE website*

1. What process will be used to inform the potential participants about the study details and to obtain their consent for participation?

Information letter with written consent form

2. If written consent cannot/will not be obtained from the potential participants, provide a justification for this.

All participants will be required to sign a consent form.

3. Does this study involve persons who cannot give their own consent (e.g. minors)? No

---

**G. ANONYMITY OF PARTICIPANTS AND CONFIDENTIALITY OF DATA**

1. Describe the procedures to be used to ensure anonymity of participants and confidentiality of data both during the research and in the release of the findings.

The specific answers from the surveys and interviews will not be shared with other groups. People will not be named in the report and all documents relating to the surveys or interviews will be kept in a secure location. The findings from the surveys will be grouped together in the hope that they will answer the research objectives. The project will refer to the planning objectives of the organizations associated with the key informants but will not link these objectives to specific persons.

2. Describe the procedures for securing written records, video/audio tapes, questionnaires and recordings.

The findings will be locked in a filing cabinet drawer for two years after the project has been completed. The drawer will be located at 4910 Maple Grove Road North, Beamsville, ON, L0R1B1

3. Indicate how long the data will be securely stored and the method to be used for final disposition of the data.

Paper Records

Confidential shredding after 2 year(s).

Electronic Data

Erasing of electronic data after 2 year(s).

Location: Filing Cabinet at 4910 Maple Grove Road North, Beamsville, ON L0R 1B1

4. Are there conditions under which anonymity of participants or confidentiality of data cannot be guaranteed? No

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## H. DECEPTION

1. Will this study involve the use of deception? No

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Researchers must ensure that all supporting materials/documentation for their applications are submitted with the signed, hard copies of the ORE form 101/101A. Note that materials shown below in bold are required as part of the ORE application package. The inclusion of other materials depends on the specific type of projects.

Researchers are advised to review the Sample Materials section of the ORE web site:  
[http://www.research.uwaterloo.ca/ethics/human/informed\\_consent.asp](http://www.research.uwaterloo.ca/ethics/human/informed_consent.asp)

Please **check** below all appendices that are attached as part of your application package:

- Recruitment Materials: A copy of any poster(s), flyer(s), advertisement(s), letter(s), telephone or other verbal script(s) used to recruit/gain access to participants.
- Information Letter and Consent Form(s)\*. Used in studies involving interaction with participants (e.g. interviews, testing, etc.)
- Information/Cover Letter(s)\*. Used in studies involving surveys or questionnaires.
- Data Collection Materials: A copy of all survey(s), questionnaire(s), interview questions, interview themes/sample questions for open-ended interviews, focus group questions, or any standardized tests.
- Feedback letter \*
- Research Proposal: A copy should be appended for faculty, undergraduate or graduate research if available.\*

\* Refer to requirements for content under Elements for Information Letters and Consent Forms, including suggested wording:  
<http://www.research.uwaterloo.ca/ethics/human/samples/ElementsInfoLtrConsentForm1.htm>

Please note the submission of incomplete packages may result in delays in receiving full ethics clearance. We suggest reviewing your application with the Checklist For Ethics Review of Human Research Applications to minimize any required revisions and avoid common errors/omissions.  
<http://www.research.uwaterloo.ca/ethics/form101/checklist.htm>

---

### INVESTIGATORS' AGREEMENT

I have read the Office of Research Ethics Guidelines for Research with Human Participants and agree to comply with the conditions outlined in the Guidelines. In the case of student research, as Faculty Supervisor, my signature indicates that I have read and approved the application and proposal and deem the project to be valid and worthwhile, and agree to provide the necessary supervision of the student.

\_\_\_\_\_  
Signature of Faculty Investigator/Supervisor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Student Investigator

\_\_\_\_\_  
Date

### FOR OFFICE OF RESEARCH ETHICS USE ONLY:

\_\_\_\_\_  
**Susan E. Sykes, Ph.D., C. Psych.**  
**Director, Office of Research Ethics**  
**OR**  
**Susanne Santi, M.Math**  
**Manager, Office of Research Ethics**

\_\_\_\_\_  
Date

**ORE 101**

**Revised August 2003**

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**UNIVERSITY OF WATERLOO - OFFICE OF RESEARCH ETHICS**

**Request for Ethics Clearance of a Revision or Modification  
to an Ongoing Application to Conduct Research with Human Participants**

**Principal Investigator(s):** Gideon Prins **ORE #: 11289**  
**Department:** Geography / Environmental Studies **Date of Full Ethics Clearance:**  
22/12/2003  
**Faculty Supervisor(s):** Judith Cukier **Student Investigator:**  
**Department:** Geography / Environmental Studies **Department:**

**Title of Project:** Identifying the values attached to agricultural land in the Niagara Region

---

**1. Previous Modifications Associated with this ORE 101 Application**

Have you previously submitted an ORE 104 for this project? Yes [ x ] No [ ]

If **Yes**, please provide the clearance dates for each previous modification under this ORE 101.

**2. Information Letter and Consent Form**

Do the proposed revised procedures require any change(s) to the Information Letter-Consent Form currently in use and that previously received ethics clearance? Yes [ x ] No [ ]

If **Yes**, briefly describe these changes on the following table and attach a copy of the revised version of the Information Letter-Consent Form.

**3. Summary of the Nature, Description and Rationale for Proposed Modifications**

On the following summary table, describe the nature of each modification requested under the current ORE 104. Provide a brief description and rationale for each proposed change.

**4. Revised ORE 101 Pages**

Attach any pages from the original application (ORE Form 101) that have been revised as a result of the proposed modification.

---

**Signature of Principal & Co-Investigators**

**Signature of Faculty**

**Investigator(s):** \_\_\_\_\_

**Supervisor(s):** \_\_\_\_\_

**Signature of Student**

**Investigator(s):** \_\_\_\_\_

**Date:** \_\_\_\_\_

**FOR OFFICE OF RESEARCH ETHICS USE ONLY**

*The modification request to an ongoing project involving human participants has been reviewed and received ethics clearance.*

\_\_\_\_\_ Date: \_\_\_\_\_

Susan E. Sykes, Ph.D., C. Psych.

Director, Research Ethics

or

Susanne Santi, M.Math. Manager, Research Ethics

<b>Summary of Changes In ORE 104 (Request for Modification)</b>	<b>√ If Yes</b>	<b>If Yes, Provide Additional Information and Append Documentation</b>
Study design or procedures? <i>(Provide detailed explanation /rationale for change)</i>	√	<b>Additional document attached.</b> <b>ORE # 11289 modifications 15DEC04</b>
Information Letter and Consent Form? <i>(Provide a copy of revised Information Letter and Consent Form with changes underlined or grey-shaded. Do not use coloured marker)</i>	√	<b>Changes to study design resulted to changes to information letter.</b>  <b>Revised documents attached.</b> <b>Consent letter – Survey (Fruit Farmers)</b> <b>Consent letter – Survey (General Public)</b>
Study instruments, questionnaires, interview questions etc? <i>(Provide copy of revised or additional questionnaires, interview questions, etc.)</i>		
Participant Sample <i>(Provide a detailed explanation/ rationale for changes to numbers of participants or sample characteristics).</i>	√	<b>Document attached.</b> <b>ORE # 11289 modifications 15DEC04</b>
Participant recruitment? <i>(Provide details on changes to recruitment procedures etc.)</i>	√	<b>Document attached.</b> <b>ORE # 11289 modifications 15DEC04</b>
Study end date? <i>(Provide revised date and detailed explanation /rationale for change)</i>	√	<b>Document attached.</b> <b>ORE # 11289 modifications 15DEC04</b>
Location of study <i>(Provide details on all new study locations)</i>		
Researcher changes? <i>(Include letter signed by investigator or supervisor stepping down and new investigator/supervisor)</i>		
Other Changes?		

## ***ORE# 11289 – Changes to Survey Methodology***

Previously, I wrote that I would recruit people for my survey in retail locations. The previous excerpt is included below. After much frustration in trying to secure a location to conduct surveys and a lack of response to my recruitment, I have decided to change my methodology.

I will instead distribute general public surveys in select neighbourhoods with a self-addressed envelope (Only neighbourhoods in the study area will receive the survey). Included with the survey will be a consent letter and a feedback letter. The mail will be addressed to a post office box that I will set up. I will record all the households that have been delivered too and send one reminder notice after a couple of weeks. About 500 surveys will be delivered during the first week of January. The information consent letter will encourage participants to return their surveys by the end of January.

The farmer surveys will be handled in the same way except that I will obtain addresses from lists I have obtained and through a list of contacts I have already made. The number of farmer surveys will depend on the number of addresses obtained. It is hoped that approximately 50 farmers will receive surveys.

As a result of the changes to the methodology I have made wording changes that make the survey documents more conducive to a mail survey (i.e. consent letters, feedback letters). I have included the consent letters for your reference. No changes were made to the survey introduction or structure.

### *Previous excerpt*

*“I will recruit volunteers for the general public survey by approaching people at public places (retail locations). Approval will be obtained from officials in charge prior to the commencement of the recruitment process. An information letter and consent form will be given to each volunteer outlining the details of the study. The investigator will ensure that all survey participants are aware of the time commitment, that they must be over 18, and that they are residents of the Niagara Region. I will approach potential volunteers and introduce myself along with the research project. The format for the introduction will follow the verbal script that I have provided with the ethics package. After finishing the introduction I will distribute the consent letter for them read along with the consent form. Once the volunteers have understood and accepted the invitation to participate, they will complete the survey. I will answer any questions that the participants may have during the recruitment process and questions they have regarding the survey.”*

*“Recruitment of farmers will be done through mailing lists obtained from both the Tender Fruit Producer's Marketing Board and the Grape Growers of Ontario. Actual surveys will be conducted with farmers on their farms where possible. Permission and scheduling of the interview will be made with each individual farmer by telephone or by visitation. Telephone recruitment will follow the script included with this ethics package. The recruitment and completion of the farmer surveys will follow the format explained for the general public.”*



## **Appendix C – Survey Packages**

### *Consent Letter – Non-Farm Resident*

Dear Niagara Resident

I am a Master's student in the Department of Geography at the University of Waterloo conducting research under the supervision of Judith Cukier. I am conducting this research as part of my thesis in order to understand how agricultural lands are being valued in the Niagara Peninsula Tender Fruit and Grape Area. Since you are a resident of this area, your opinions are very important to my research. Thus, I would appreciate it if you would complete the attached survey.

Participation in this project requires the completion of a 5 to 10 minute survey. I will also be asking farmers to complete a survey and requesting interviews with people who work with the policies guiding the use of agricultural land in the Niagara Region.

Survey respondents are asked to be Niagara residents and over the age of eighteen. The survey is made up of multiple-choice questions and is relatively short. You may decline to answer particular questions if you wish. If you would like to write additional comments on the questionnaire please feel free to do so. Participation in this project is voluntary and anonymous. There are no known risks associated with your participation in this study. All data collected from this study will be kept confidential and in a secure location for two years. Only the two researchers involved in this study will have access to the information that you have provided.

If you would like to complete the survey, please feel return the completed questionnaire in the self-addressed, stamped envelope by January 30, 2005. If you have any questions while you are filling it out, or would like additional information, please feel free to contact Professor Judith Cukier at (519) 888-4567 ext. 5490 or myself, Gideon Prins, at my mailing address or email at [pgprins@fes.uwaterloo.ca](mailto:pgprins@fes.uwaterloo.ca).

As with all University of Waterloo projects involving human participants, this project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Susan Sykes in the Office of Research Ethics at (519) 888-4567 Ext. 6005.

Thank you in advance for your interest in this project.

Yours sincerely,

Gideon Prins

### *Consent Letter - Farmer*

Dear Niagara Fruit and/or Grape Farmer

I am a Master's student in the Department of Geography at the University of Waterloo conducting research under the supervision of Judith Cukier. I am conducting the research as part of my thesis in order to understand how agricultural lands are being valued in the Niagara Peninsula Tender Fruit and Grape Area. Since you are a farmer in this area, your opinions are very important to my research. Thus, I would appreciate it if you would complete the attached survey.

Participation in this project requires the completion of a 5 to 10 minute survey. I will also be asking the general public to complete a survey and requesting interviews with people who work with the policies guiding the use of agricultural land in the Niagara Region.

Survey respondents are asked to be either tender fruit farmers or grape farmers in the Niagara Region and over the age of eighteen. The survey is made up of multiple-choice questions and is relatively short. You may decline to answer particular questions if you wish. If you would like to write additional comments on the questionnaire please feel free to do so. Participation in this project is voluntary and anonymous. There are no known risks associated with your participation in this study. All data collected from this study will be kept confidential and in a secure location for two years. Only the two researchers involved in this study will have access to the information that you have provided.

If you choose to complete the survey, please feel return the completed questionnaire in the self-addressed, stamped envelope by January 30, 2005. If you have any questions while you are filling it out, or would like additional information, please feel free to contact Professor Judith Cukier at (519) 888-4567 ext. 5490 or myself, Gideon Prins, at my mailing address or email at [pgprins@fes.uwaterloo.ca](mailto:pgprins@fes.uwaterloo.ca).

As with all University of Waterloo projects involving human participants, this project has been reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Susan Sykes in the Office of Research Ethics at (519) 888-4567 ext. 6005.

Thank you in advance for your interest in this project.

Yours sincerely,

Gideon Prins

***Non-Farm Survey***

Thank you for participating in this study. This survey is made up of multiple-choice style questions. Please circle one answer for each question unless the question indicates you may circle more than one. Some questions may ask you to make additional comments. If you are uncomfortable with any of the questions, please feel free to skip them. Please note that all background information will be kept confidential and will only be used for statistical purposes.

**A. Landscape Information**

1. *A. What rural land features in Niagara do you have a visual preference for? Please circle three land features that you have a visual preference for.*

- A. Beaches and other types of shoreline
- B. Crop and Pasture (Corn Fields, Cow Pasture)
- C. Orchards (Cherries, Peaches, Apples)
- D. Rivers, streams, creeks
- E. Vineyards
- F. Wetlands, marshes, swamp
- G. Woodlands/ Forest
- H. Other: \_\_\_\_\_

*B. Please rank your three choices in order of preference. (i.e. 1 = highest preference, 2 = second highest preference, 3 = third highest preference).*

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_

2. *What activities have you participated in within the Niagara tender fruit and grape area within the last year? (Circle **all** that apply)*

- A. Bike rides/ Hikes
- B. Purchased agricultural goods from roadside stands.
- C. Picked your own fruit
- D. Scenic Drives
- E. Tourist related activities (i.e. wine tours)
- F. Other: \_\_\_\_\_

3. *What do you think are the major challenges facing the fruit and grape industry in the Niagara Region? (Circle **all** that apply)*

- A. Conversion of farmland to other uses
- B. Lack of government support (financial)
- C. Lack of government support (technical)
- D. Land use regulations
- E. Poor access to labour
- F. Poor quality crops
- G. Price instability
- H. Transportation costs to major markets
- I. Other: \_\_\_\_\_

4. *Niagara is home to one of the largest fruit growing regions in Canada. This agricultural area provides us with many different amenities that are valued differently. For each of the following amenities, please circle the number on the scale that represents how important it is for you to preserve that amenity.*

<b>Amenities provided by the Niagara tender fruit and grape area.</b>	<b>Not Important</b>	<b>Somewhat Important</b>	<b>Important</b>	<b>Very Important</b>	<b>Extremely Important</b>
Keeps farming as a way of life	1	2	3	4	5
Preserves air quality	1	2	3	4	5
Preserves a unique agricultural terrain	1	2	3	4	5
Preserves natural places	1	2	3	4	5
Protects water quality	1	2	3	4	5
Protects wildlife habitat	1	2	3	4	5
Provides breaks from urban locations	1	2	3	4	5
Provides locally grown food	1	2	3	4	5
Provides scenic quality	1	2	3	4	5
Slows development	1	2	3	4	5
Sustains an important regional industry	1	2	3	4	5

5. *A. Suggestions have been made that Niagara tender fruit and grape area is shrinking. Do you agree with this statement?*

A. Yes

B. No

C. Unsure/ Do not know

***If you answered “yes” to part A, please continue to part B. If you answered “no” or “unsure/do not know”, please skip to question #6.***

***B. If the Niagara tender fruit and grape area is shrinking, what is the predominant land use replacing it? (Circle **one**)***

A. Greenhouses

B. Industry

C. Tourist facilities

D. Transportation Corridors (i.e. Highways)

E. Urban/ Residential

F. Commercial Developments

G. Other: \_\_\_\_\_





***Farmer Survey***

Thank you for participating in this study. This survey is made up of multiple-choice style questions. Please circle one answer for each question unless the question indicates you may circle more than one. Some questions may ask you to make additional comments. If you are uncomfortable with any of the questions, please feel free to skip them. Please note that all background information will be kept confidential and will only be used for statistical purposes.

**A. Perception of Industry**

1. A. How do you view the **present** economic stability of the Niagara fruit and grape industry?

Extremely Unstable                      Unstable                      No Opinion                      Stable                      Extremely Stable

B. Please explain your choice:

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2. How do you view the **future** economic stability of the fruit and grape industry in the Niagara Region?

Extremely Unstable                      Unstable                      No Opinion                      Stable                      Extremely Stable

3. What are the economic opportunities that you foresee for the fruit industry?

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4. What do you think are the major challenges facing the fruit and grape industry in the Niagara Region? (Circle **all** that apply)

- A. Conversion of farmland to other uses
- B. Lack of government support (financial)
- C. Lack of government support (technical)
- D. Land use regulations
- E. Poor access to labour
- F. Poor quality crops
- G. Price instability
- H. Transportation costs to major markets
- I. Other: \_\_\_\_\_

## B. Agricultural Fruit Lands

1. *Niagara is home to one of the largest fruit growing regions in Canada. This agricultural area provides us with many different amenities that are valued differently. For each of the following amenities, please circle the number on the scale that represents how important it is for you to preserve that amenity.*

<b>Amenities provided by the Niagara tender fruit and grape area.</b>	<b>Not Important</b>	<b>Somewhat Important</b>	<b>Important</b>	<b>Very Important</b>	<b>Extremely Important</b>
Keeps farming as a way of life	1	2	3	4	5
Preserves air quality	1	2	3	4	5
Preserves a unique agricultural terrain	1	2	3	4	5
Preserves natural places	1	2	3	4	5
Protects water quality	1	2	3	4	5
Protects wildlife habitat	1	2	3	4	5
Provides breaks from urban locations	1	2	3	4	5
Provides locally grown food	1	2	3	4	5
Provides scenic quality	1	2	3	4	5
Slows development	1	2	3	4	5
Sustains an important regional industry	1	2	3	4	5

2. *A. Suggestions have been made that Niagara tender fruit and grape area is shrinking. Do you agree with this statement?*

A. Yes

B. No

C. Unsure/ Do not know

*If you answered “yes” to part A, please continue to part B. If you answered “no” or “unsure/do not know”, please skip to question #3.*



**B.** *If the Niagara tender fruit and grape area is shrinking, what is the predominant land use replacing it? (Circle **one**)*

- A. Greenhouses
- B. Industry
- C. Tourist facilities
- D. Transportation Corridors (i.e. Highways)
- E. Urban/ Residential
- F. Commercial Developments
- G. Other: \_\_\_\_\_

3. *On the following scale, please circle how important you feel it is to preserve the Niagara tender fruit and grape area?*

Not Important                  Somewhat Important                  Moderately Important                  Very Important                  Extremely Important

4. Please rate the level of responsibility that you think each of the following groups should have when it comes to protecting and managing the Niagara tender fruit and grape area.

1 = No responsibility    2 = Slight responsibility    3 = Moderate Responsibility  
 4 = Considerable responsibility    5 = Major responsibility

Group	Rating				
Farmers/ Landowners	1	2	3	4	5
Municipal/City Councils	1	2	3	4	5
Niagara Regional Government	1	2	3	4	5
Ontario Provincial Government	1	2	3	4	5
Canadian Federal Government	1	2	3	4	5
Other: _____	1	2	3	4	5

5. *Please provide any suggestions that you might have for preserving the Niagara tender fruit and grape area. Please also feel free to make any additional comments that you may have in regards to this survey or the survey topic.*

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4. Please specify which fruit types you produce on your land. (Fill in **all** that apply)

- |                           |                 |           |
|---------------------------|-----------------|-----------|
| A. Apples                 | B. Cherries     | C. Grapes |
| D. Peaches and Nectarines | E. Pears        | F. Plums  |
| G. Strawberries           | H. Other: _____ |           |

5. In addition to fruit, what other agriculture uses occur on your land? (Fill in **all** that apply)

- |                             |                          |                                                 |
|-----------------------------|--------------------------|-------------------------------------------------|
| A. Cattle (Beef)            | B. Dairy                 | C. Field Crop                                   |
| D. Hog                      | E. Livestock Combination | F. Miscellaneous Specialty<br>(i.e. greenhouse) |
| G. Poultry and Egg          | H. Vegetable             | I. Wheat                                        |
| J. Other Combination: _____ |                          |                                                 |

6. How would you rate the overall quality of your agricultural land? Please **circle** the answer that most accurately reflects the quality of your land.

Poor Quality	Minimal Quality	Mediocre Quality	Good Quality	Excellent Quality
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***Thanks for participating!***

***Feedback Letter – Farmer***

Dear Niagara Fruit and/or Grape Farmer

I would like to thank you for your participation in this study. The purpose of the study is to determine the values people place in the agricultural lands of the Niagara Region

The data obtained through this study will help me formulate conclusions on how to better develop agricultural preservation programs in the Niagara Region. It is hoped that officials will recognize the findings and then implement them within their programs.

All the data pertaining to you and your farm will be kept confidential. When all the data has been collected and analysed for this project, I will share this information in the research community through various presentations and reports. If you have questions or concerns, please contact me by mail or by my email. If you would like a summary of the results, please provide me with your contact information and I will send it to you when the study has been completed. At the bottom of the page, I have included some related references that may be of interest to you.

As with all University of Waterloo projects involving human participants, this project was reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Susan Sykes in the Office of Research Ethics at (519) 888-4567, Ext., 6005.

Once again, if you have questions please contact Dr. Judith Cukier at (519) 888-4567 ext. 5490 or myself at my mailing address above or by email at [pgprins@fes.uwaterloo.ca](mailto:pgprins@fes.uwaterloo.ca).

Thanks for participating!

Gideon Prins

References

Agricultural Task Force. (2003). *Securing a legacy for Niagara's agricultural land: A vision from one voice: discussion paper*. Regional Niagara.

Hellerstein, D., Nickerson, C., Cooper, J., Feather, P., Gadsby, D., Mullarkey, D., et al. (2002). *Farmland protection: the role of public preferences for rural amenities*. Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 815.

Ministry of Municipal Affairs and Housing. (2005b). *Greenbelt plan*. Ontario: Queen's Printer for Ontario.

## ***Feedback Letter - Non-Farm Participant***

Dear Niagara Resident

I would like to thank you for your participation in this study. The purpose of the study is to determine the values people place in the agricultural lands of the Niagara Region

The data obtained through this study will help me formulate conclusions on how to better develop agricultural preservation programs in the Niagara Region. It is hoped that officials will recognize the findings and then implement them within their programs.

All the data pertaining to you will be kept confidential. When all the data has been collected and analysed for this project, I will share this information in the research community through various presentations and reports. If you have questions or concerns, please contact me by mail or by my email. If you would like a summary of the results, please provide me with your contact information and I will send it to you when the study has been completed. At the bottom of the page, I have included some related references that may be of interest to you.

As with all University of Waterloo projects involving human participants, this project was reviewed by, and received ethics clearance through, the Office of Research Ethics at the University of Waterloo. Should you have any comments or concerns resulting from your participation in this study, please contact Dr. Susan Sykes in the Office of Research Ethics at 519-888-4567, Ext., 6005.

Once again, if you have questions please contact Dr. Judith Cukier at (519) 888-4567 ext. 5490 or myself at my mailing address above or by email at [pgprins@fes.uwaterloo.ca](mailto:pgprins@fes.uwaterloo.ca).

Thanks for participating!

Gideon Prins

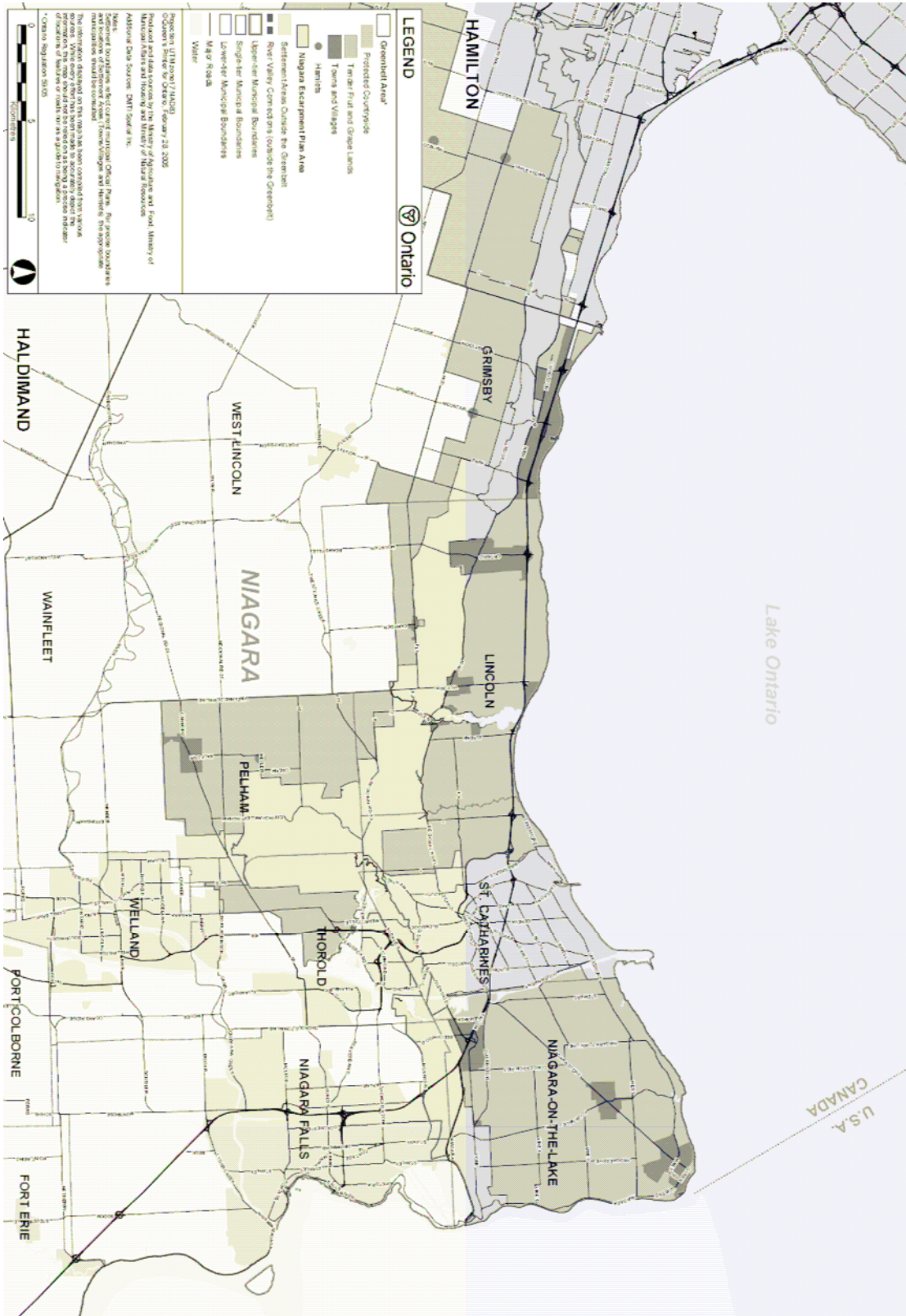
### ***References***

Agricultural Task Force. (2003). *Securing a legacy for Niagara's agricultural land: A vision from one voice: discussion paper*. Regional Niagara.

Hellerstein, D., Nickerson, C., Cooper, J., Feather, P., Gadsby, D., Mullarkey, D., et al. (2002). *Farmland protection: the role of public preferences for rural amenities*. Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 815.

Ministry of Municipal Affairs and Housing. (2005b). *Greenbelt plan*. Ontario: Queen's Printer for Ontario.

# Appendix D – Greenbelt Plan Map for Niagara



## Appendix E – Sample Demographic Data

### *Sample Demographic Data (Non-Farm)*

<b>Education</b>	<b>Count</b>	<b>% of Total</b>
Primary	6	3.3
Secondary	57	31.7
Community College	49	27.2
University (undergraduate)	26	14.4
University (graduate)	42	23.3
<b>Total</b>	<b>180</b>	<b>100.0</b>

<b>Income</b>	<b>Count</b>	<b>% of Total</b>
Less than \$10,000	8	5.2
\$10,000 to 19,999	5	3.2
\$20,000 to 39,999	40	26.0
\$40,000 to 59,999	42	27.3
\$60,000 to 79,999	38	24.7
\$80,000 to 99,999	11	7.1
\$100,000 or more	10	6.5
<b>Total</b>	<b>154</b>	<b>100.0</b>

<b>Area of Employment</b>	<b>Count</b>	<b>% of Total</b>
Agriculture	9	5.1
Educator	17	9.6
Homemaker	16	9.0
Manufacturing	15	8.4
Professional	25	14.0
Student	7	3.9
Technical Trade	21	11.8
Unemployed	0	0.0
Retired	29	16.3
Other	39	21.9
<b>Total</b>	<b>178</b>	<b>100.0</b>

<b>Living Location</b>	<b>Count</b>	<b>% of Total</b>
Farm	3	1.7
Rural	33	19.0
Rural small town	64	36.8
Suburb	26	14.9
Urban or city	48	27.6
<b>Total</b>	<b>174</b>	<b>100.0</b>

	<b>Count</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std. Deviation</b>
Years in Niagara	182	34.9	35	35	19

***Sample Demographic Data (Farmers)***

<b>Education</b>	<b>Count</b>	<b>% of Total</b>
Primary	4	7.8
Secondary	11	21.6
Community College	15	29.4
University (undergraduate)	8	15.7
University (graduate)	13	25.5
<b>Total</b>	<b>51</b>	<b>100.0</b>

<b>Income</b>	<b>Count</b>	<b>% of Total</b>
Less than \$10,000	2	4.8
\$10,000 to 19,999	4	9.5
\$20,000 to 39,999	12	28.6
\$40,000 to 59,999	10	23.8
\$60,000 to 79,999	2	4.8
\$80,000 to 99,999	4	9.5
\$100,000 or more	8	19.0
<b>Total</b>	<b>42</b>	<b>100.0</b>

	<b>Count</b>	<b>Mean</b>	<b>Median</b>	<b>Mode</b>	<b>Std. Deviation</b>
Years in Niagara	50	47.7	47.0	50	14
Years Farmed	48	33.5	34.5	35	14
Acres Farmed	48	142.4	59.0	50	244

***Farm Statistics of Sample***

<b>Fruit Crops</b>	<b>Count</b>
Apples	15
Cherries	22
Grapes	40
Peaches	28
Pears	24
Plums	24
Strawberries	7
Other	6

<b>Other Crops</b>	<b>Count</b>
Cattle	1
Dairy	0
Field Crop	4
Hog	0
Livestock	0
Miscellaneous	1
Poultry	2
Vegetable	5
Wheat	3
Other	0

<b>Farmer rating of Land Quality</b>	<b>Count</b>	<b>% of Total</b>
Poor Quality	1	2.0
Minimal Quality	0	0.0
Mediocre Quality	6	12.2
Good Quality	26	53.1
Excellent Quality	16	32.7
<b>Total</b>	<b>49</b>	<b>100.0</b>



## Appendix F – Open-Ended Questions

### 1. Number of Open-Ended Comments per Group

Municipality	Count	% of Total	Group	Count	% of Total
Lincoln	13	18.6	Farmers	41	36.9
NOTL	9	12.9	Non-Farm	70	63.1
Pelham	19	27.1	Total	111	100.0
St. Catharines	29	41.4			
Total	70	100.0			

### 2. Question 1B: Present Stability Question

The question asked farmers to comment on the present stability of the tender fruit and grape farming. The comments are categorized into the following themes.

Themes	Count <sup>2</sup>
Economics (High input costs/ product prices/Competition/ Global Markets)	27
Government Regulation / Lack of interest by officials (Greenbelt, policies, taxation)	14
Weather	8
Farm Demographics (Generation differences)	3
Disease (Plum pox)	3
Other	3

### 3. Question 3: Future Stability

The question asked farmers to comment on the future stability of the tender fruit and grape farming. The comments are categorized into the following themes.

Themes	Count <sup>2</sup>
Positive approach to future stability	6
Negative approach to future stability	15
Connects stability with value-added activities	4
Connects stability with Government Regulation	11
Connects stability with consumer change	2
Connects stability with changed economics (i.e. imports)	8
Connects stability with something else	4

<sup>2</sup>Counts may be higher than sample size because some comments contained more than one theme

#### 4. Question 5

The question asked both farm and non-farm participants to give any suggestions regarding the preservation of farmland in Niagara and for additional comments regarding the survey or survey topic. The comments are categorized into two parts. The first part lists the different farmland preservation themes and the second part lists the general comments.

<b>Farmland Preservation Themes</b>	<b>Farmers<sup>3</sup></b>	<b>Non-Farm Population<sup>3</sup></b>
Wine content act/ taxation on wine industry	8	0
Technical Assistance (irrigation, chemical access)	7	1
Financial Assistance (subsidies, fair pricing)	20	24
Promotion of product (LCBO, supermarkets)	13	3
Educate / Change consumer preferences (Buy local)	8	9
Land use regulation (Greenbelt, put development above escarpment)	8	30
Control of imports (free trade, imports are cheaper, longer shelf life)	5	6
Smart Growth (mentions good planning, smart growth)	3	13
Other	7	9

<b>General Comments</b>	<b>Farmers<sup>3</sup></b>	<b>Non-Farm Population<sup>3</sup></b>
Preserve the farmer/viability (mentions that farmers must be preserved – businesses must be viable)	27	17
Concern over loss of farmland (mentions urban development)	2	24
Support for agricultural preservation (comment is outright support for preservation)	11	25
Concern over future of industry (concern over younger generation taking over farming)	3	4
Perception of regulatory movement (urban bias, lack of adequate representation by appropriate groups)	5	4
Environmental (pesticides, lack of concern by farmers for homeowners, value environmental benefits of land)	1	15
Others (personal stories etc.)	5	9

<sup>3</sup>Counts may be higher than sample size because some comments contained more than one theme.

## Appendix G – Comparison Charts

The ratings for the grouped amenities and the importance of preservation were compared with several demographic statistics. The following charts show the results of several comparison tests. One-way ANOVA and Two Sample T-Tests were completed to determine the level of significance between the groups.

### A. Municipal Responses

The non-farm responses were grouped together in municipalities to determine if significant differences existed between the results. The following charts show that no significant differences existed between the ratings.

#### *i. Municipal responses to the grouped amenities*

<b>Grouped Amenity</b>	<b>Municipality</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Environmental	Lincoln	36	4.35	0.75	0.12
	NOTL	25	4.40	0.66	0.13
	Pelham	41	4.62	0.54	0.08
	St. Catharines	68	4.47	0.67	0.08
	Total	170	4.47	0.66	0.05
Agrarian	Lincoln	36	4.29	0.57	0.09
	NOTL	24	4.44	0.53	0.11
	Pelham	40	4.24	0.70	0.11
	St. Catharines	66	4.23	0.64	0.08
	Total	166	4.28	0.62	0.05
Aesthetic	Lincoln	36	4.05	0.61	0.10
	NOTL	23	4.11	0.67	0.14
	Pelham	39	4.02	0.86	0.14
	St. Catharines	63	3.89	0.81	0.10
	Total	161	3.99	0.76	0.06

<b>One-way ANOVA</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Environmental	Between Groups	1.553	3	0.518	1.201	0.311
	Within Groups	71.550	166	0.431		
	Total	73.103	169			
Agrarian	Between Groups	0.889	3	0.296	0.758	0.519
	Within Groups	63.326	162	0.391		
	Total	64.215	165			
Aesthetic	Between Groups	1.124	3	0.375	0.639	0.591
	Within Groups	92.101	157	0.587		
	Total	93.225	160			

The one-way ANOVA test reveals that there are no significant differences in how each municipality rated the grouped rural amenities.

*ii. Municipal responses to the importance of preservation*

	<b>Municipality</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Importance of Preservation	Lincoln	32	4.72	0.52	0.09
	NOTL	21	4.48	0.75	0.16
	Pelham	40	4.60	0.55	0.09
	St. Catharines	65	4.51	0.69	0.09
	Total	158	4.57	0.63	0.05

<b>One-way ANOVA</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Importance of Preservation	Between Groups	1.181	3	0.394	0.985	0.401
	Within Groups	61.553	154	0.400		
	Total	62.734	157			

The one-way ANOVA test reveals that there is no significant difference in how each municipality rated the importance of preservation.

**B. Rural and Urban Municipalities**

The non-farm responses were grouped according to categories: Rural and Urban. St. Catharines was the only municipality that is mostly urban so it was labelled “urban” while the others were grouped together and labelled “rural”.

*i. Rural and urban municipal responses to the grouped amenities*

<b>Grouped Amenity</b>	<b>Municipality</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Environmental	Rural Municipality	102	4.47	0.65	0.06
	Urban Municipality	68	4.47	0.67	0.08
	Total	170	4.47	0.66	0.05
Agrarian	Rural Municipality	100	4.31	0.61	0.06
	Urban Municipality	66	4.23	0.64	0.08
	Total	166	4.28	0.62	0.05
Aesthetic	Rural Municipality	98	4.05	0.73	0.07
	Urban Municipality	63	3.89	0.81	0.10
	Total	161	3.99	0.76	0.06

Two Sample T-test	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Environmental	0.005	0.943	0.059	168.000	0.953	0.006	0.103
			0.059	141.726	0.953	0.006	0.104
Agrarian	0.239	0.625	0.802	164.000	0.424	0.079	0.099
			0.794	134.975	0.428	0.079	0.100
Aesthetic	2.485	0.117	1.318	159.000	0.189	0.162	0.123
			1.287	121.838	0.200	0.162	0.126

The two sample T-tests reveals that there are no significant differences in how each type of municipality rated the grouped amenities.

ii. *Rural and urban municipal responses to the importance of preservation*

	Municipality	N	Mean	Std. Deviation	Std. Error
Importance of Preservation	Rural Municipality	93	4.613	0.590	0.061
	Urban Municipality	65	4.508	0.687	0.085
	Total	158	4.570	0.632	0.050

Two Sample T-Test	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Importance of Preservation	0.924	0.338	1.030	156.000	0.305	0.105	0.102
			1.002	124.052	0.318	0.105	0.105

The two sample T-tests reveals that there is no significant difference in how each type of municipality rated the importance of preservation.

**C. Living Location**

Non-Farm responses were grouped according to their living location. On each survey, participant was asked to indicate their living location. Three participants indicated that they lived on a farm. Since grouping would have been too small, those responses were grouped into the rural category.

i. *Living location responses to grouped amenities*

<b>Grouped Amenity</b>	<b>Municipality</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Environmental	Rural	33	4.45	0.65	0.11
	Rural small town	59	4.43	0.71	0.09
	Suburb	25	4.29	0.83	0.17
	Urban or city	45	4.58	0.50	0.07
	Total	162	4.46	0.67	0.05
Agrarian	Rural	32	4.38	0.59	0.10
	Rural small town	58	4.30	0.60	0.08
	Suburb	23	4.16	0.58	0.12
	Urban or city	45	4.18	0.70	0.10
	Total	158	4.26	0.62	0.05
Aesthetic	Rural	33	4.08	0.72	0.13
	Rural small town	55	3.98	0.78	0.11
	Suburb	24	3.79	0.73	0.15
	Urban or city	42	4.02	0.81	0.12
	Total	154	3.98	0.77	0.06

<b>One-way ANOVA</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Environmental	Between Groups	1.455	3	0.485	1.090	0.355
	Within Groups	70.284	158	0.445		
	Total	71.738	161			
Agrarian	Between Groups	1.075	3	0.358	0.921	0.432
	Within Groups	59.890	154	0.389		
	Total	60.965	157			
Aesthetic	Between Groups	1.214	3	0.405	0.684	0.563
	Within Groups	88.675	150	0.591		
	Total	89.888	153			

The one-way ANOVA test reveals that there are no significant differences in how each living location group rated the grouped amenities.

ii. *Living location responses to the importance of preservation.*

	<b>Municipality</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Importance of Preservation	Rural	30	4.700	0.466	0.085
	Rural small town	55	4.618	0.593	0.080
	Suburb	23	4.565	0.507	0.106
	Urban or city	43	4.465	0.797	0.122
	Total	151	4.583	0.626	0.051

<b>One-way ANOVA</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Importance of Preservation	Between Groups	1.084	3	0.361	0.921	0.432
	Within Groups	57.632	147	0.392		
	Total	58.715	150			

The one-way ANOVA test reveals that there is no significant difference in how each living location group rated the importance of preservation.

**D. Income**

Non-Farm responses were grouped according to their reported incomes. Several income categories were combined to increase the number of responses in each category. The three lowest categories combined to form “under \$39 999” and two highest categories combined to form “over \$80 000”. The remaining categories remained the same.

i. *Grouped income responses to the grouped amenities*

	<b>Municipality</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Environmental	Under \$39 999	49	4.43	0.64	0.09
	\$40 000 to 59 999	42	4.46	0.66	0.10
	\$60 000 to 79 999	33	4.51	0.64	0.11
	Over \$80 000	20	4.50	0.63	0.14
	Total	144	4.47	0.64	0.05
Agrarian	Under \$39 999	48	4.15	0.63	0.09
	\$40 000 to 59 999	41	4.27	0.63	0.10
	\$60 000 to 79 999	32	4.31	0.64	0.11
	Over \$80 000	18	4.13	0.65	0.15
	Total	139	4.22	0.63	0.05
Aesthetic	Under \$39 999	44	3.81	0.79	0.12
	\$40 000 to 59 999	41	3.96	0.73	0.11
	\$60 000 to 79 999	33	4.06	0.71	0.12
	Over \$80 000	17	4.15	0.80	0.19
	Total	135	3.96	0.76	0.06

<b>One-way ANOVA</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Environmental	Between Groups	0.151	3	0.050	0.122	0.947
	Within Groups	57.925	140	0.414		
	Total	58.076	143			
Agrarian	Between Groups	0.780	3	0.260	0.647	0.586
	Within Groups	54.267	135	0.402		
	Total	55.047	138			
Aesthetic	Between Groups	1.886	3	0.629	1.105	0.349
	Within Groups	74.515	131	0.569		
	Total	76.401	134			

The one-way ANOVA test reveals that there are significant differences in how each income group rated the grouped amenities.

ii. *Grouped income responses to the importance of preservation*

	<b>Municipality</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Std. Error</b>
Importance of Preservation	Under \$39 999	47	4.45	0.65	0.10
	\$40 000 to 59 999	39	4.56	0.79	0.13
	\$60 000 to 79 999	31	4.68	0.48	0.09
	Over \$80 000	16	4.75	0.58	0.14
	Total	133	4.57	0.65	0.06

<b>One-way ANOVA</b>		<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Importance of Preservation		1.084	3	0.530	1.244	0.297
		57.632	129	0.426		
		58.715	132			

The one-way ANOVA test reveals that there is no significant difference in how each income group rated the importance of preservation



## **Appendix H – List of Key Informant Interviews**

Informant No. 1	Member of the local academic community	March 10, 2004
Informant No. 2	Senior staff member of Regional planning office	April 16, 2004
Informant No. 3	Member of public advocacy group	April 28, 2004
Informant No. 4	Senior staff member of municipal planning office	May 14, 2004
Informant No. 5	Senior staff member of municipal planning office	May 14, 2004
Informant No. 6	Senior staff member of municipal planning office	May 14, 2004
Informant No. 7	Senior staff member of municipal planning office	May 31, 2004
Informant No. 8	Member of the tender fruit organization	May 31, 2004
Informant No. 9	Member of the grape organization	October 4, 2004
Informant No. 10	Senior staff member of municipal planning office	October 4, 2004
Informant No. 11	Member of the greenhouse industry	November 19, 2004