EDIBLE BACKYARDS:

RESIDENTIAL LAND USE FOR FOOD PRODUCTION IN TORONTO

by

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Abstract

Edible backyards: Residential land use for food production in Toronto
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Food security is a fundamental element of community health. Informal house-lot food growing, by providing convenient access to diverse varieties of affordable and nutritious produce, can provide an important support for community food security. With the objective of developing an exploratory assessment of the contribution home food gardening makes to community food security in Toronto, in-depth interviews were conducted with gardeners in two contrasting neighbourhoods. A typology of food gardeners was developed, and this qualitative understanding of residential food production was then assessed from a community food security perspective. It was found that growing food contributes to food security at all income levels by encouraging and enabling a more nutritious diet. The sustainability of household food sourcing and gardeners' overall health and well-being also increased with food production. Secure access to suitable land to grow food and gardening skills were the most significant barriers to residential food production found.

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Chapter One: Introduction

Introduction

In seeking to build and support healthy communities, food security is one of the fundamental cornerstones of health that must be addressed. Food security, however, is a complex variable, encompassing not only economic but also physical and social dimensions of access to appropriate and healthy food (FAO 1996). Community food security, therefore, has been defined as a situation in which all community members are able to access a safe, nutritious and culturally acceptable diet, achieved sustainably and in a way which maximizes community self-reliance (Levkoe 2006; Hamm and Bellows 2003).

One successful approach to supporting community food security in all its multiple dimensions is the establishment of community gardens, broadly defined as cooperative enterprises which provide the space and resources so that urban dwellers who may or may not have access to land are able to care for gardens in the city (Lawson 2005). This can include allotment gardens with individual plots as well as gardens that are tended in a more communal fashion. Small plots of land, intensively planted, can be incredibly productive, even in less than ideal conditions. Community garden studies have found yields to be in some cases more than five times the national standard for mixed vegetable production (Baker 2004). Across Toronto, community gardens enable access to diverse varieties of fresh fruits and vegetables in a manner that fosters community self-reliance. For lower-income gardeners, community gardening is a healthy and nutritious food access strategy (Baker et al 2003).

However, community gardens are only one possible form of urban food production that can address food security concerns. A similar opportunity lies in every sunny back garden and patio that could be used to produce food. Very little is currently known about the contribution of such house-lot food growing practices to food security in Toronto. However, we do know that a significant proportion of Toronto's population is engaged in food production in some form, if not on a commercial level. In 2002 an Ipsos-Reed poll commissioned by a Vancouver based non-profit organization found that 40% of the

people living in the greater Toronto area live in households that produce some of their own food (City Farmer 2002a).

Urban house lots are small, but nonetheless are often larger than the average community garden plot. House-lot food production can encompass produce grown in back yards, front yards, in pots on patios, on balconies and even along fire escapes. Informal house-lot food growing, by providing an opportunity to access unique and diverse varieties of affordable and nutritious produce, has the potential to provide an important support for individual, household, and community food security. In Toronto, research has been conducted on community garden participation and food production (Baker 2002), but has not examined informal house-lot gardens, though clearly these exist in some numbers. If we wish to achieve a better understanding of the evolving urban food system, the continued lack of information on informal food production practices is problematic. From a Community Food Security (CFS) perspective, house-lot gardens are an important if overlooked opportunity for informal food production to contribute to food security at a number of scales.

Research objectives

Very little is currently known about the contribution of house-lot food growing practices to food security in Toronto. This gap in our understanding of the urban food system must be addressed in order to enable an effective and knowledgeable assessment of future directions for food security research and policy development. Given the state of current knowledge on the topic, the goals of this research were largely exploratory, intended to provide a direction and context for future research.

The objective of the research was to achieve a better understanding of the contribution of informal house-lot garden food production to Toronto community food security. This goal necessitated a two part approach. First, the focus of the research was on developing a qualitative portrait of home food gardeners in the context of their homes and communities. Through a series of interviews, the research examined where and how food is grown in Toronto home gardens, and what place the food grown occupies within the lives of the gardeners who grow, eat, and share it with others. Given this qualitative understanding of the diversity of food production practices in the city, it was then

possible to explore how home food gardens can contribute to Toronto community food security.

This research was also employed to pilot a survey designed to assess home food production practices. The survey was piloted in the context of the interviews, allowing for a contextual evaluation of the survey instrument. As a result, it has become possible to make changes based on this assessment before the survey is deployed on a larger scale.

Thesis outline and format

This thesis is divided into five chapters. The current chapter, Chapter One, gives a brief introduction to the topic and presents the objectives of the research. It also gives a brief overview of the content of the following chapters.

In Chapter Two, the diverse literature which provides the context for the research presented here is reviewed. There is little research available on home food garden practices in North America, particularly in terms of food security. Therefore this literature review takes a broader view, reviewing and evaluating academic perspectives on the social and physical environments within which backyard food gardening takes place. First, current understandings of urban agriculture are reviewed in the context of increasing urbanization and a globalized food system. Second, issues relating to food security in urban neighbourhoods are examined, along with the potential for community and home gardens to act as a response to these issues. Third, the literature available on home gardens is reviewed, particularly in relation to the health and well-being of gardeners. Finally, the literature on social ties and alternative food networks is reviewed and explored in relation to the foregoing literature on urban food security and home gardening practices.

In Chapter Three, the methods used in this research are explored. An initial overview of the decisions made in designing the research protocol is given, exploring the pros and cons of qualitative methodology, in depth interviewing and grounded theory as well as discussing issues of scale in research. Details of the methods used are then presented, from the choice of the neighbourhoods in which the research took place to the procedures used in analyzing the interviews.

The results of the research are presented in Chapter Four. Presented first are the results of the screening, in which 125 residents of the two neighbourhoods were asked a few brief questions about their gardening practices. The screening was used to recruit interview participants, and also allowed for a rough assessment of the prevalence of home food growing practices in the two neighbourhoods. Following this, the interview respondent sample households and gardens are described in terms of general characteristics. A typology of the gardeners interviewed is then presented and the five types of gardens identified (the Cook's Garden, Teaching Garden, Environmental Garden, Hobby Garden, and Aesthetic Garden) are described and illustrated with maps of the participants' gardens. Given the portrait presented of home food gardeners in the city, the results of the research in terms of community food security are then explored. The impact of gardening on the health and well-being of the interview participants is also examined, and facilitators and barriers to home food growing in the city are identified. Finally, the effectiveness of the survey piloted with the interview participants is assessed, and specific recommendations for changes are made with the expectation that it may in future be administered at a larger scale.

In the concluding chapter, the key findings of the research are presented. The implications of the findings are then discussed in the context of the literature reviewed in Chapter Two. Following the discussion of the results, the limitations of the current research are explored. Future directions for research are also examined, from a larger scale implementation of the survey to broader themes emerging from this still exploratory stage in the research on this topic. The ways in which this research indicates policy-makers and planners can support household food production and urban food security are then examined. The chapter concludes with final thoughts on the contribution that home food gardening can make to community food security in the city.

Chapter Two: Literature Review

Introduction

What we eat, where we get our food and who we share it with are central questions that structure human life. Food is what Winson (1993) calls 'the intimate commodity.' Through its dietary value and spiritual, social and cultural meanings, food sustains people and communities unlike any other commodity. However, many of us living in large urban centres have become distanced from the source of our food and the kind of support which good food can represent. In North America today, the prevalence of diet related diseases continues to rise and obesity is being called an epidemic (Dubois 2006). Lower income groups, within which children are disproportionately represented, have been found to be more vulnerable than the average Canadian to poor health and diet related disease (Ross et al 2006). Canada's recently released revised food guide strongly emphasises the importance of fresh fruits and vegetables to a healthy diet (Health Canada 2007). However, in low income neighbourhoods it can be difficult to access an adequate selection of affordable and culturally appropriate fresh foods (Curtis 2004). One way that these intersecting issues may be addressed is through the promotion of urban agriculture and specifically house-lot food production.

Home food gardens have the potential to address issues of food security not only in terms of dietary nutrition, but also through their contribution to the development and maintenance of social ties. 'To break bread' is to be among friends. Sharing food can be as central to our social health as eating is to our physical health. Sharing food, particularly that which gardeners have grown themselves, is a way to show care and respect, what Offer (1997) terms 'regard'. Through reciprocal exchange and relations of regard, social ties can be established and enhanced.

Through an investigation of urban house-lot food gardens and their place within the lives of gardeners, their households, and their communities, a more complex understanding of urban food security can be developed. Gardens can function as sites of consumption and exchange, use and pleasure, status as well as subsistence. In this chapter I will review and evaluate academic understandings of the social and physical environments within which backyard food gardening practices take place.

Urban agriculture

According to the latest UN report on urbanization, published in 2006, 3.2 billion people now live in cities across the globe. That number represents 49 per cent of the world's population (DESA 2006: 9). By this time we may already have reached the point where over half of all human beings are urban dwellers. Urbanization is a fact of modern life, and cities around the world are growing at a rapid pace (White 2002). Urban life brings many benefits. Living at higher densities is convenient in terms of transportation, and facilitates business and social life. However, this continuing growth carries with it the potential for serious environmental and social costs.

With their bourgeoning populations, modern cities require large quantities of resources. Natural systems operate in a fairly local manner so that there is a dynamic balance of nutrients within an ecosystem. By contrast, modern urban systems obtain resources from sources worldwide and dispose of their wastes in concentrated form far from the original sources (Nelson 1996). As a result, cities 'short-circuit' ecological cycles globally, harming both nutrient sources and sinks through accelerated processes of depletion and pollution.

The globalized system of food distribution is an excellent example of the unsustainable levels of consumption and waste on which modern urban centres currently rely. As cities have grown, advances in food storage technology and agriculture have enabled the sourcing of foods farther and farther afield. The average American food item today travels between 2,500 and 4,000 kilometres before it arrives on a diner's plate (Halweil 2002: 6), and generates as much as 1000 times more CO_2 along the way than its locally sourced equivalent (Bentley and Barker 2005: 10).

The low price of fossil fuels means there is little economic incentive to change the environmentally inefficient global food distribution system. At the same time the viability of agriculture near urban centres in the developed world has become increasingly threatened by low commodity prices and sustained demand for 'greenfield' land for new development. As a result, the loss of farmlands near cities continues despite farmland preservation policies such as 'smart growth' and greenbelt initiatives established at the provincial and state level across North America (Bunce and Maurer 2005). This lack of

support for local farmers and poor enforcement of preservation policies has significant consequences. The continuing development of farmlands results not only in the loss of the means with which to feed urban appetites in future, but also carries a social cost in terms of the impact of loss of livelihood and community on farming families.

Living in large urban centres we are distanced from the food we eat not only by the physical kilometres the food travels, but also by our lack of knowledge about the foods we consume. Sourced worldwide by trans-national corporations through complex networks of distribution, our food travels through long commodity chains before it arrives, anonymous, on our local supermarket shelves (Watts and Goodman 1997). Today it is possible, and even likely, for urban children to grow up without knowing that Wonderbread is made from wheat seeds. Eating shrink-wrapped food in cities where it is possible to go days without leaving a climate controlled indoor space, modern urban dwellers have become psychologically distanced from the environment on which they depend. As White puts it, "as our society becomes technologically more sophisticated it also becomes biologically more ignorant. We no longer know what we eat or drink, or where our wastes are taken" (White 2002: xi). Restoring this connection to the natural world is imperative if our society is to find a more equitable and sustainable balance in our relationship with the Earth.

One promising approach to this problem is re-visioning the city as a site of production as well as consumption, localizing urban food systems through the development and support of urban agricultural practices. Given that one of the most basic structuralist binaries is that of city and country (Lévi-Strauss 1967), the idea of an urban agriculture may seem to be a contradiction in terms. However, while it may remain largely overlooked, urban agriculture is an established practice both here in North America and globally (Lawson 2005, Mougeot 2005). Worldwide, it is estimated that 600 million people are informally engaged in urban agriculture. This does not include another 200 million people employed in formal urban agricultural enterprises (Petts 2005: 66). Informal urban agriculture is practiced in small areas such as allotments, neglected land such as verges and vacant lots, private gardens and balconies where residents grow crops or, where possible, raise poultry and livestock for home consumption or local sale (Petts 2005). Small plots of land intensively planted can be incredibly productive, even in less

than ideal conditions. Community garden studies have found yields to be in some cases more than five times the national standard for mixed vegetable production (Baker 2004). These yields are, however, dependent on sufficient labour time and inputs such as soil amendments and water. Nevertheless, urban agriculture makes a significant contribution to meeting the needs of urban residents in cities worldwide. For example, Companioni, Hernandez, Paez, and Murphy (2002) estimate that 90% of the fresh produce consumed in Havana, Cuba is grown in and around the city. Similar figures have been found for a number of cities in Africa, including Accra in Ghana, Antananarivo in Madagascar, and Dar es Salaam in Tanzania (Mougeot 2005: 5).

Informal urban agricultural practices have been studied and promoted by development organizations such as the United Nations Development Program (UNDP), the United Nations Food and Agriculture Organization (FAO) and the World Bank in developing countries worldwide since the 1980s (Madaleno 2000). There are a number of environmental benefits to encouraging informal urban agricultural practices. First and foremost, urban agriculture can aid in re-localizing food systems, reducing the food miles and consequent fossil fuel emissions associated with the long distance transport of produce. In addition, depending on the location and practices used, urban agriculture has the potential to result in other environmental benefits. For example, urban agricultural practices can act to preserve agro-biodiversity, prevent soil erosion and slow and filter stormwater flows (Mougeot 2005, Winklerprins 2002). Urban food gardens can also reduce pollution associated with waste by encouraging composting, purify polluted urban air and reduce the rising temperatures associated with the urban heat island effect (Mougeot 2005, Winklerprins 2002, Akbari et al 2001).

While in terms of re-localization of food systems urban agriculture is an environmentally positive practice, there have been some concerns raised about agriculture in the city. First of all, if agriculture in its industrial input-intensive form is brought into the city, for example by commercial gardeners producing high value crops for profit near the urban market, it could also bring with it the pollution issues associated with chemical agriculture (Smit et al 1996: 199). With so many people depending on the local water supply, contamination with chemical pesticide or fertilizer runoff is a serious matter. Concerns have also been raised that home gardeners, not being professional

farmers, may use agricultural inputs incorrectly and thereby do harm to themselves or others (Smit et al 1996: 201). However, home gardeners growing for subsistence or pleasure rather than profit may be less likely to invest in expensive and risky inputs for their home garden.

Water usage by home gardeners is also a concern. Most gardeners in Toronto use treated, potable water from the municipal system on their gardens rather than rain barrels (Statistics Canada 2007: 44). No independent figures are available for food growing. Demand for water in the city peaks in the summertime, largely due to use of water for irrigation. The peak in summer water usage today almost reaches transmission capacity (City of Toronto 2004: 31). Approximately 70% of the total irrigation demand is for single family residential use on private lawns and gardens (City of Toronto 2002: 35). While Lake Ontario offers an ample supply of freshwater, the energy used to process that water and transmit it to householders is not negligible. However, it is possible that even if food was not grown, similar quantities of water would be used to nurture ornamental plants and/or lawn in spaces currently used for food production.

Finally, while urban agriculture can have important environmental benefits, it can also conflict with other environmental goals. An extensive shade canopy in the city can be very environmentally positive, reducing the urban heat island effect by filtering and cooling the air (Akbari et al 2001) The urban forest canopy in Toronto currently covers about 20% of the city, and Toronto's urban forestry services is striving to increase that figure to 35% (City of Toronto 2007a). A large proportion of the urban forest grows on private property (Fraser and Kenney 2000). However, food production and large shade trees do not easily co-exist in small urban backyards. One study on perceptions of the urban forest found those respondents who grew the most food were much less likely to plant shade trees than those who were not interested in food growing (Fraser and Kenney 2000).

It is important to acknowledge these constraints and drawbacks to urban food growing as well as the benefits so that they can be dealt with effectively. Issues of pollution and water use can be addressed through education programs, and a 35% shade canopy would still allow for substantial urban agricultural production. Community gardens can also be promoted as an important alternative for those without appropriate

land access. On the whole urban agriculture is likely to be environmentally beneficial. However, arguably more important than its environmental benefits, particularly internationally, is the role informal urban agriculture can play as a livelihood strategy available to the urban poor.

Food security in urban neighbourhoods

Poverty in urban areas is a very significant issue in the developing world, where the number of new migrants to the largest cities has swelled the global informal working class to almost 1 billion members (Davis 2006: 24). These are the 'active' unemployed, sustaining themselves by income pooling and sharing of resources, begging, small item sales, urban agriculture and other informal survival strategies (Davis 2006). These kinds of informal income strategies may seem unnecessary in a country as comparatively wealthy as Canada. However, urban poverty is a serious and growing problem in Canada as well. Through the 1990s the number of individuals living below Statistics Canada's low income cut-offs increased, particularly in urban areas. Aboriginal people, recent immigrants, visible minorities, children and youth are all disproportionately likely to live below the poverty line (Lee 2000: 15).

The increasing incidence of poverty and income inequality is a serious issue not only in terms of social justice but of public health. Income and socio-economic position (SEP) are major determinants of health, though the degree to which SEP affects health varies with place and other factors. At the individual level this relationship can be found in most disease groups, no matter how socio-economic position is measured (Ross et al 2006). While there are many factors which contribute to this relationship, one key aspect may be the impact of a poor quality diet on the health of individuals living in poverty.

Of the 10 leading causes of death in North America today, four are diet related. These contribute to the 65 to 70 percent of all premature mortality in North America which is connected to dietary factors, including at least one third of all annual cancer deaths (Dubois 2006: 141). Obesity is now commonly referred to as an epidemic, with nearly one quarter of all Canadians suffering from obesity and at significant risk of developing serious illnesses such as type 2 diabetes, arthritis, cancer and various mental health

disorders (Tjepkema 2005: 2, Dubois 2006). The impact of poor nutrition in childhood is especially severe, and can have lifelong effects (Dubois 2006).

A high quality diet is difficult to achieve on a low income. According to the recently revised Canada Food Guide, a healthy diet largely consists of vegetables, fruits, and whole grain products (Health Canada 2007). However, fresh fruits and vegetables are expensive compared to highly processed foods high in starches and sugars. Individuals living at lower incomes tend to have a diet that includes fewer fruits and vegetables, more fat and less fibre than that of the average Canadian, which is itself well below Health Canada's recommendations (Dubois 2006: 148, Statistics Canada 2005c). This is especially problematic when it is considered that despite their high vulnerability to negative health impacts due to poor nutrition, children are more likely to be living in low income households, with 15.6 percent of Canadian children living in poor families in 2001. In large metropolitan areas, the percentage of children living in poverty is even higher (Dubois 2006: 152).

In seeking to build and support healthy communities, therefore, food security is one of the fundamental cornerstones of health which must be addressed. However, food security is a complex variable, encompassing not only economic but also physical and social dimensions of access to adequate quantities of safe, nutritious and culturally appropriate food. According to the United Nations Food and Agriculture Organization (FAO), "food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (FAO 1996). Food insecurity is a reality in Canada. According to Statistics Canada, more than 10% of Canadian families experienced food insecurity in 1998 and 1999 (Che and Chen 2001: 13). Food insecurity was disproportionately common in children, aboriginal people living off-reserve, single parent families, and low income households. However, 14% of people in middle income households also experienced some degree of food insecurity (Che and Chen 2001: 13).

While income levels are a key determinant of food insecurity, poverty is not the only factor influencing access to an appropriate diet. Physical and social opportunity structures also play a role in determining the prevalence and degree of food insecurity experienced by individuals and communities. Studies have shown that poor diet is related to area of

residence as well as purchasing power (Curtis 2004:144). Fixed costs, such as housing, vary with geographical location. In major metropolitan centres, rents can be very high in comparison with social assistance and minimum wage levels. Shelter is an essential cost in a cold climate, and individuals will often choose to pay the rent first, even if it means compromising their nutrition (Tsering 2006).

Supermarkets are also often unwilling to locate in less wealthy neighbourhoods. Over the past fifty years there has been a trend toward fewer, bigger food retail stores. The industry became increasingly competitive and consolidated, with just a few chains controlling the majority of the food retail market. Retailers found it to be less cost-effective to locate in downtown neighbourhoods which tended to have a higher incidence of poverty and therefore moved to lower cost, higher profit suburban locations (Eisenhauer 2001). As a result, within these 'food deserts' it has become difficult for those without access to private transportation to secure an adequate diet. Healthier foods are often more expensive and less available in poorer areas. The small grocery stores which may remain are more likely to sell foods with poor nutritional value (Curtis 2004). In a study by Morland, Wing and Diez Roux it was found that the presence of neighbourhood supermarkets significantly increased fruit and vegetable intake among Americans (Morland et al 2002).

Clearly, something must be done to support urban community food security in terms of both access and nutrition. Over the last few years one of the principal ways that communities have attempted to address this issue has been through the establishment of food banks. The first food bank in Canada opened its doors 25 years ago (Tsering 2006). Demand has risen substantially over the years, more than doubling through the 1990s (Teron and Tarasuk 1999: 382). However, the support provided by food banks is limited by the stigma associated with their use and also by the difficulty of providing fresh fruits and vegetables in food bank hampers (Teron and Tarasuk 1999). In addition, there are serious issues with the appropriateness and adequacy of food banks as a response to food security concerns. Food banks have always been intended as a stopgap measure, a response to immediate needs, not a solution. Food banks strive to meet the needs of their clients, but often are unable to adequately respond to aspects of food security such as self-reliance, quality of food, and nutritional value. One measure which may be more

effective in addressing the multiple dimensions of food security, including nutrition and geographical access to food, is the promotion and support of food production within the city. By providing urban residents with the means to produce for themselves diverse varieties of high quality produce, urban gardens can make contribute to the food security of individuals, households, and communities.

For lower-income people, community gardening is a healthy and nutritious food access strategy which can act as an alternative and supplement to the food available through food banks (Baker et al 2003). Developing world studies have found home gardens to be a crucial means of subsistence in Latin America, Africa, and Asia (Winklerprins 2004). For example, in 1997 home gardens supplied 30 percent of Vietnam's total agricultural production (Trinh et al 2003: 319). As Trinh and his colleagues note, a broad base of local production can be very important in filling gaps in food supply in times of scarcity and disruption. This can be seen in terms of large scale events, from natural disasters in Honduras to disease outbreaks in Malawi, but it is equally true at the smaller scale of the individual life course (Mougeot 2005). In today's economy, substantial job security is becoming less and less common. In addition, far fewer workers are eligible for unemployment insurance. In 2006, the federal government's Employment Insurance (EI) program supported only about 40 percent of unemployed workers, down from 80 percent in 1990 (Tsering 2006: 34). For the other 60 percent, informal access to garden produce could potentially reduce the risk of food insecurity in times of need.

Community and home gardens can provide a geographically and economically accessible source of food. For many people, another important aspect of gardening is the ability to grow a more diverse range of produce than may be available locally, particularly in neighbourhoods poorly served by food retail outlets. Canada's urban centres have a highly multi-cultural population, with many new immigrants who may be unfamiliar with the types of fresh produce offered for sale in their neighbourhood stores (Schellenberg 2004). Preparing nutritious meals is easier if the foods with which we are familiar are available to us. Many types of produce which are difficult to find in grocery stores here in Canada may be available in seed form and in fact grow well in Toronto's climate. The Afri-Can FoodBasket, a community agency based in Toronto which is

committed to supporting food security in the Caribbean-Canadian community, has had some success growing foods we normally associate with more tropical climates. For example, they grow hot peppers, Jamaican pumpkins, and large quantities of a leafy green known as callaloo, which is rarely seen in supermarkets but is a staple in both the Caribbean and South Asia (Baker et al 2003).

By improving gardeners' access to higher quality culturally appropriate foods, urban agriculture can have a significant impact on the diets of gardeners and their families. In a study of urban gardeners in Philadelphia, Blair, Giesecke, and Sherman (1991) found that urban gardening is related to an increased frequency of vegetable consumption and a decrease in the consumption of dairy products, sweets and sweet drinks. The gardeners' consumption of more meatless meals and fewer sweet foods and dairy products than non-gardeners living in the same neighbourhood moves them in line with the recommendations of the Canada Food Guide for a healthy diet (Health Canada 2007). In addition, sixty-two percent of the gardeners in Philadelphia were able to extend their consumption of produce from their gardens by freezing, canning or drying a portion of their harvest. Home preserved food was consumed by the Philadelphia gardeners and their families for an average of 7.2 months of the year (Blair et al 1991).

In some cases gardeners may grow food organically, since it is a simpler process at the scale of the home garden than in commercial production (Smit et al 1996). For these gardeners, home food growing may have additional health benefits, providing access to pesticide-free produce. Organic produce may also be nutritionally more valuable. Studies have found significantly higher levels of the secondary plant metabolites known as phenols in organic produce when compared to that which has been conventionally grown (Asami et al 2003, Carbonaro and Mattera 2001). Phenolic metabolites are antioxidants which research has shown may have anticarcinogenic properties and may inhibit the aggregation of platelets which is associated with heart disease. Researchers have attributed the higher levels in organic produce to the more complex soil in which organic foods are grown (Asami et al 2003).

While food growing is a promising means of addressing issues of food security in urban neighbourhoods, there are also barriers to be overcome in facilitating urban gardening practices. These include, first, the fact that those at risk for food insecurity

often do not have easy access to the time or land required for food production. In addition, the knowledge and skill required to successfully grow and utilize foods from a small garden is substantial. Individuals who have arrived in urban areas as rural migrants are likely to have more successful harvests than those who come to gardening with little practical knowledge. In a study of community gardening in Toronto, some of the most successful gardeners were Chinese-Canadian retirees who had cared for small farms in China. Using trellising and other intensive techniques they produced large quantities of food from their tiny 2.7 meter square plots (Baker 2004: 315).

Also, some gardeners may have difficulties accessing seeds, plants, tools, and other supplies. These are often not locally available but must be obtained at nurseries, through seed trading fairs, or through personal networks. The initial costs in purchasing these supplies can also be a barrier (UGROW 2006). In an urban context there is also the potential for soil contamination by heavy metals due to past uses. In older neighbourhoods there is the potential for lead to enter the soil and be taken up into food crops (Niagara Region Public Health 2005). This can occur with the presence of paint chips, as when exterior paint was scraped off before repainting. Former garages and spaces near them can also be a concern due to the potential for contamination from leaded gasoline. While it is possible to create raised beds with new soil or replace the soil in existing beds, this can be prohibitively expensive for some households. Other measures can also be taken, such as adding compost and other organic matter, to reduce the uptake of lead from the soil (Niagara Region Public Health 2005). Tests for the various potential contaminants are expensive and many gardeners may ignore or be unaware of the risk that contaminants may pose. Organic gardening practices, particularly the addition of large quantities of compost to the soil, can reduce the uptake of heavy metals by food crops (Lawson 2005). However, the danger of contaminants remains of significant concern for community gardeners (UGROW 2006).

Home gardens

Despite the potential barriers and drawbacks to urban agriculture, many people are involved in growing food in the city. The most visible element of this is in the growth of the community gardening movement. As of 1999, the American Community Gardening

Association represented over half a million people engaged in community gardening across the United States (Lawson 2005: 238). According to the City of Toronto's community garden co-ordinator, there are currently approximately 126 community gardens across Toronto (Boye 2007). In addition, the City leases plots in 13 allotment gardens. The plots are in high demand and obtaining one generally involves some time on a waiting list (Chislett 2007). Many people are also actively involved in home food production within the city, but this is much harder to pinpoint and quantify, since home food gardening takes place on private land. However, the extent of home food gardening in urban areas is suggested by a 2002 study commissioned by a Vancouver based non-profit organization, which found that 40% of the people living in the greater Toronto area, and 44% of those living in Vancouver, produce some of their own food (City Farmer 2002a, City Farmer 2002b).

Home gardens receive less attention from academic researchers in contrast with community gardens or commercial enterprises in part because they are less visible, and also because they tend to be dismissed as remnants of rural traditions carried over by migrants (Winklerprins 2002). Food growing practices in urban areas do not conform to discourses of modernity which see such organic activities as existing in direct opposition to modern cities with their tidy lawns and straight streets (Wilson 1992). What literature does exist on urban home food production largely deals with the developing world, with a number of studies from Africa, Asia, and Latin America. Work in Africa has been centered around discourses of development and quantifying the contribution of informal urban agriculture and market gardening to the alleviation of food distribution and scarcity problems in ever growing cities. Home gardens are included in this, but they are not generally a specific focus (Mougeot 2005). In Latin America the emphasis has been less on the food produced and its contribution to health and nutrition than on rural – urban links, the variety of species grown within gardens and their contribution to preserving agro-biodiversity (Ban and Coomes 2004, Winklerprins 2002).

In Australia there has been some work done on the gardens of migrants and the importance of these food gardens in the process of adapting to life in a new place (Head et al 2004). Andrea Gaynor (2006) has also written an intriguing history of home food gardens in suburban Australian communities, examining the diverse motivations that

drive food production in urban and peri-urban places. One important element she highlights is that while urban agriculture can be and is for many an important food access strategy, this is not necessarily a primary motivation among gardeners. In the communities Gaynor discusses, food growing is instead a largely middle class occupation, valued as a thrifty way to increase the independence of the household and eat higher quality food. While the food security of individuals and households in likely enhanced through these gardens, subsistence is not necessarily their goal (Gaynor 2006).

In North America there exists a considerable body of literature examining the history of gardens and garden design as well as some work on the cultural significance of gardening practices, but again the food produced is not the focus (see for example Wilson 1992, Pollan 1991, Hunt and Wolschke-Bulmahn 1993, Westmacott 1992). However, it is clear that home food gardening does take place in North America, and it seems that there is considerable scope for investigation into food production practices, particularly in terms of their health impacts and socio-cultural significance.

The health benefits of food growing practices are not limited to their contribution to gardeners' diets. Interacting with natural spaces over time has been associated with significant improvements in mental health and well-being. While positive associations between health and 'natural' environments can be said to be based in cultural and individual preferences, the fact remains that for many people the presence of green space in their local environment is associated with increases in self reported health (Curtis 2004). This is especially true for the elderly and the poor, perhaps because they are not as mobile as other members of society and so are more greatly affected by neighbourhood factors (Mass et al 2006). Contact with nature has been associated with therapeutic benefits in a number of areas, including improved attention spans among children with attention deficit disorder and decreased mortality among senior citizens (Frumkin 2003: 1453).

Garden views and other interactions with natural environments have also been connected with reduced stress and better performance by workers. However, the validity of such work is not easy to evaluate. It is difficult to measure and quantify 'contact' with green space and there are many potential confounders to consider such as the pleasure and freedom of taking a vacation, a change of scene and the impact of physical activity

(Frumkin 2003). Nevertheless, studies examining gardeners have found similar results. In a comparative study of gardeners and non-gardeners living in the same neighbourhoods, the gardeners gave significantly more positive responses to questions exploring their psychosocial well-being and the frequency of meaningful life events (Blair et al 1991). When asked for their reasons for gardening, the study participants gave more weight to quality of life improvements rather than the economic and subsistence value of their gardening practices. The benefits of gardening, for them, were primarily recreational opportunities, mental health and physical health or exercise (Blair et al 1991).

Gardens can be described as 'therapeutic landscapes', defined as landscapes which promote mental and physical well-being (Gesler 1992). Landscape and place, within this framework, are understood as relational. A therapeutic landscape is an inter-relational construct created through the interaction of environmental, social and individual factors. Therefore, claiming gardens to be therapeutic landscapes is not to say that all gardens promote well-being for all people in all circumstances. Rather, it is in the interaction between the place, the individual and their circumstances that the therapeutic landscape comes into being. In a study conducted in Northern England, Milligan, Gatrell and Bingley (2004) found that gardening promoted health and well-being among older community gardeners. The gardeners gained a sense of achievement, satisfaction and aesthetic pleasure as well as physical activity benefits from their work in the garden. Individuals who did not enjoy gardening would, however, likely have experienced the community garden differently.

Home gardens, as distinct from other forms of urban green space, occupy an interesting cultural space. Home gardens are liminal places, existing on the blurred edges between nature and culture, public and private, urban and rural. Gardens are what Yi-Fu Tuan would call the "world as opposed to environment" (quoted in Kimber 2004: 265). Gardens form a 'thirdspace' in which individuals express themselves and their relationship to their environment (Sibley 2001). By examining such liminal places we can increase our understanding of nature and culture, private and public, and their meanings in a specific place and time. According to some theorists, through such bridges between

private and public along urban streets, not only individual but also neighbourhood level safety and confidence can be increased (Blomley 2004).

Gardens are a way of making what bell hooks refers to as 'homeplace' (hooks 1990). Through the process of gardening individuals place themselves in relation to their social and physical environment and build a site of resistance and sanctuary. The spaces of the home and garden nevertheless are not unqualified refuges, and can be sites of tension as well as sanctuary. Bhatti and Church (2000) have explored home gardens as places where gender relations are reinforced and renegotiated. They identify a number of different meanings which home gardens can have for individuals. Depending on the dynamic interaction between individuals and their socio-environmental setting, gardens can be private havens, spaces of work, shared social spaces, settings for creativity or connections with personal history. They can also be a combination of some or all of these things. For example, as Bhatti and Church (2000) point out, for some, gardens can be hard work and a chore to maintain, but also for those same people gardens can represent a retreat due to their distinctiveness from the other work of daily life.

Social ties, reciprocity and alternative food networks

In the limited research available on home food growing, one element stands out. Many gardeners, even those with precarious levels of food security, seem to value the produce they grow as much or more for its social value than for its contribution to their and their families' subsistence (Winklerprins 2002, Ban and Coomes 2004, Thomasson 1994). Gardens and gardening are not just ways to grow food or enjoy the calming effect of beautiful green spaces. They are also ways to build and maintain relationships with places and people.

Gardens and the foods that are grown in them can be an important way for people to maintain cultural identities and embodied knowledges carried to new places or threatened where they first developed (Kimber 2004). Through gardening, people can recreate past landscapes and patterns of life. Often the reason why immigrants to a new place begin gardening is out of practical need, in order to maintain elements of the traditional diets they left behind. For many people, the foods they remember can be their strongest link to the past. Because food engages all the senses it is often what we remember the most

strongly, as the madeline cakes which inspired Proust's monolithic work *Remembrance of Things Past* so vividly illustrated (Proust 1981). The food we eat can be a way of celebrating group identity, and expressing the maintenance or adoption of group membership (Kalčik 1984).

Gardens are a link to the past, but in this again they are liminal places. In the process of recreating past landscapes, gardening can also be a way of coming to terms with a new space and a new pattern of life. Gardens, particularly food producing gardens, require attention. The temporal rhythms of small daily walkabouts establish a strong sense of connection to a particular place (Head et al 2004). The iterative experience of daily and seasonal interaction gives gardeners the opportunity to negotiate a new relationship with the place in which they find themselves. And by eating the food produced in their garden they symbolically and physically affirm their ties to that particular small place. In this way vernacular house-lot gardens can be seen as "geographical manifestations of human-environment interactions" (Doolittle 2004: 402). They are a way of placing oneself within society, creatively expressing a gardener's relationship to the land and their community. Particularly in places of poverty, urban home gardens can be an important means of self expression and source of aesthetic pride (Winklerprins 2002)

As Bell and Valentine point out, community is more a "structure of feeling" than a mappable territory (Bell and Valentine 1997: 15). Gardens can be a way to re-affirm membership within a community, reflecting common cultural values and needs. In public spaces such as the front garden, the community membership affirmed may be that of the majority culture and aesthetic. However, in the back garden, the community membership affirmed is often a more personal one, what Bell and Valentine term a 'community of affinity' (Bell and Valentine 1997). In a space taken from the disruptions and migrations of modern life, gardens allow individuals and communities a way of maintaining ethnic continuity and passing on cultural identity. By sharing garden and hospitality practices with younger generations, parents and grandparents pass on social obligations and moral values, such as the importance of reciprocity, thriftiness, self-sufficiency, respect for land and for living things. In many cases gardens may not make a large contribution to subsistence, but by enabling the continuation of subsistence practices and control over

diet, gardens can make a substantial contribution to the maintenance of identity and cultural values (Christie 2004).

Food production is also a way of developing and maintaining prominence within communities. Through informal food sharing individual gardeners build community ties and sustain reciprocity relationships (Christie 2004). Such social networks are important in terms of food security, with reciprocal exchange acting as a kind of 'stored credit'. By building up this 'social capital' of interdependent relationships, food security can be strengthened (Martin et al 2004). In times of scarcity those to whom one has given gifts in the past can be looked to for support (Winklerprins 2002). There is a considerable literature on such food security enhancing social networks in developing countries, with studies conducted in Brazil (Winklerprins 2002), Peru (Ban and Coomes 2004) and Montserrat in the Caribbean (Thomasson 1994).

The food gardeners exchange through their social networks is not, in most cases, a form of barter. Rather, it is reciprocal giving, where the value of the food given is not simply or largely monetary but instead is imbued with the symbolic value of respect and acknowledgement of an interpersonal relationship. Even if the same type of produce is available for purchase locally, 'home grown' food has a personal value which places it in a different category in many people's minds (Head et al 2004). Growing food oneself is a way to personalize food and render it appropriate as a gift which can be used to establish and strengthen social relationships. Social relationships and affiliation have a powerful effect on physical and mental health, as has been shown through a considerable body of work in social science and medicine. Social networks support health through informal support, social influence, attachment, and improved access to resources (Berkman et al 2000). By exchanging gifts we establish and strength these links. To have value and be perceived as authentic, however, gifts must be personalized (Offer 1997). Produce and other garden products such as seeds or cuttings are a personal and accessible means of transmitting regard, even in very low income communities.

Within geography there is an extensive literature examining the short food supply chains of alternative food networks such as those centred around farmer's markets and community shared agriculture (CSA) schemes (Hughes 2005, Hinrichs 2000). Alternative food networks have been a focus of critical geography in part because they show

potential for re-embedding economic relations. By examining the relations of regard operating within systems of local, personal exchange, the assumptions behind conventional neoliberal economic structures can be challenged. However, the issue remains that both symbolically and materially, the conventional continues to be embedded in the alternative (Hughes 2005). Farmer's markets are socially structured institutions. Cultural norms and meanings are integral to their existence and performance. Nevertheless, price concerns and the self interest of participants, or what Hinrichs terms marketness and instrumentalism, remain essential elements of even such 'alternative' economic transactions (Hinrichs 2000).

Further investigation of home gardens and the non-market exchange of food are a way to potentially extend this discussion through a better understanding of types of exchange which are more clearly situated outside the market. Both formal and informal food sharing within communities certainly exists among urban home gardeners in North America as well as in the developing world contexts described above, though there is little work from an academic perspective on the topic situated in North America. The Philadelphia study conducted by Blair, Giesecke, and Sherman (1991) did investigate the sharing of produce, finding that many gardeners shared their produce with neighbours and relatives, often on a weekly basis. In addition, more than forty percent of the gardeners interviewed also shared produce more formally, through a church or community organization.

Local community based formal food sharing programs exist across North America, many of them coordinated through Plant A Row, Grow A Row (PARGAR) in Canada and Plant a Row for the Hungry in the United States. Both of these umbrella organizations do not distribute food themselves. Instead, they publicize the practice and enable the donation of surplus produce to various local agencies such as food banks, shelters, and soup kitchens (PARGAR 2007a, GWAA 2007). Gardeners anywhere in Canada interested in donating food can contact PARGAR through their webpage or toll-free phone number (PARGAR 2007a). According to the Garden Writer's Association of America (GWAA), which co-ordinates Plant a Row for the Hungry in the United States, more than 1.5 million pounds of produce representing 5.5 million meals was donated by backyard and commercial growers through their organization in 2005 (GWAA 2007).

Here in Toronto, PARGAR has an active campaign, encouraging gardeners to plant a little extra and donate the surplus. All fresh produce donations are welcome. Root vegetables are most easily stored, but tomatoes, peppers, any kind of fruit, herbs, even zucchini are much appreciated (PARGAR 2007b, Lowes 2007). Drop off locations have been established across the city at community recreation centres (PARGAR 2007b). Gardeners can also donate food to community food programs in their neighbourhood directly. Second Harvest is a Toronto organization which helps to broker these relationships, directing gardeners to organizations in need in their community. They work to ensure that fresh food across the city isn't wasted by partnering with an extensive list of grocery stores, restaurants and catering companies (Second Harvest 2007). Second Harvest's refrigerated trucks drive daily routes, picking up large quantities of fresh and prepared foods and delivering it to community food programs across the city. However, for small lots of food such as those produced by most home gardeners, Second Harvest is also happy to act as a broker so that gardeners can donate food directly. Toronto home gardeners contact Second Harvest which will then direct them to the shelter, community kitchen or food bank nearest their home which will be able to use the food promptly (Lowes 2007). While a few lettuces or extra tomatoes may not seem very substantial, these donations add up and are much appreciated by cooks for community programs with too many mouths to feed on limited funding. Second Harvest co-ordinated the donation of 4.7 million pounds of food to community food programs in 2006, and more is still needed (Second Harvest 2007, Lowes 2007). The most inexpensive food available for purchase is often the least nutritious (Drewnowski and Specter 2004). Lettuce with dressing is not the healthiest salad possible, but it is affordable, and that is what is served at times when funding is limited and fresh produce donations are unavailable (Lowes 2007).

Conclusion

In summary, in the context of increasing urbanization, urban agriculture offers a way to partially reconnect and relocalize the complex food chains that currently supply urban appetites. Household food gardens offer the opportunity to address issues of food insecurity in urban neighbourhoods. By growing food at home or in a community garden,

households can access high quality, culturally appropriate and sustainably produced fruits and vegetables on their own terms. However, there are barriers, particularly for low income households in terms of access to land. While there is far more research on urban food growing in developing countries, food production in home and community gardens is also an element of urban life in wealthier nations. Food production can be undertaken with motivations other than subsistence, such as thrift and independence. Positive benefits of food gardening can include not only an improved diet but also relaxation and mental health, though this is dependent on individual situations and preferences. Gardens can be a way for gardeners to connect to the past, to a particular place, and to express identity and share values with younger generations. Food growing can also be a way to support food security through reciprocal exchange within social networks and by formal sharing within the larger community.

From this review it is clear that there is considerable scope for further investigation of the dynamics of urban backyard food growing and its contribution to food security within a community context. The potential of house-lot food production to play a part in supporting the physical, social and environmental health of urban communities is promising. Greater understanding of urban food production practices and reciprocity networks is needed in order to effectively support house-lot food gardening practices and the food security of gardeners at the individual, household, and community scale.

Chapter Three: Methods

Introduction

This thesis is an exploratory assessment of the contribution of residential-level food production to food security in the city of Toronto. Through in-depth interviews, this study develops a qualitative portrait of home food growers in two contrasting Toronto neighbourhoods, exploring what their gardens and the food they grow means to them and their communities. Interview participants were recruited through a random screening process, in which residents of the two neighbourhoods were asked a few brief questions about their gardening practices. This also allowed for a rough assessment of the prevalence of home food gardening in the two neighbourhoods.

The interview process began with an exploration and documentation of the participants' gardens. Garden spaces were mapped and photographed, in order to document the different uses made of the outdoor space and the proportion of that space devoted to food crops. The in-depth semi-structured interviews that followed explored the reasons why the interview participants chose to grow food and the impact of gardening on the gardeners' health and well-being. The sharing of produce through community reciprocity networks was also explored in some depth. In addition, study participants were asked to complete a pilot survey developed to gather more quantitative data on the practice of informal food gardening. The survey questions covered food production practices as well as basic demographics, nutrition, self-rated health, neighbourhood characteristics and food security indicators. In piloting the quantitative survey, the primary purpose was to test the survey's clarity and effectiveness for future use in a larger study.

The interview transcriptions along with the researcher's field notes were analysed utilizing a grounded theory approach (Corbin and Strauss 1990). In accordance with the principles of grounded theory, analytical categories were developed from the material throughout the data collection period. This analysis was used to direct subsequent interviews and observations so that all relevant aspects of the topic were captured through the research process. Key themes and linkages were then identified by examining characteristics of various elements such as volume, universality, differentiation,

importance, and emphasis. A negative case analysis approach was used to ensure an accountable, rigorous examination of the data (Judd et al 1991).

In this chapter the methods used in this study and the reasons why they were chosen are explored. I begin by presenting my own interests and background in pursuing this research. Following this, further background on the methods chosen is given, and the decisions made in designing the research protocol are examined. Finally, specific details of the procedures used are specified, from the choice of the neighbourhoods in which the research took place to the methods used to analyse the interview transcripts.

Methodological issues

Positionality

An important part of assuring the validity of qualitative social science research is a reflexive foregrounding of the researcher's own background and personal perspective (Mays and Pope 2000). Research, as Krug and Hepworth point out, is tripartite in nature, made up of relationships between the researcher, the part of the world being studied and the place where it is presented and funded. Any approach to methodology which does not take into account all three of these elements will necessarily privilege one part over another (Krug and Hepworth 1997).

In undertaking this study, it was important to remember and recognize my own perspective and interests in this topic as an academic and as an individual. While my academic education has largely been in the social sciences, my previous research work has been quantitative in nature, pursuing ecological research questions from a positivist perspective that seeks to uncover facts about the natural world. The epistemological perspective that I bring to this study, therefore, is informed by both an understanding that reality as experienced by human beings is socially constructed and a conviction that an external reality does exist independent of human understanding. This perspective can be characterised as a form of critical realism. Critical realism attempts to bridge the gap between subjective and objective approaches to social science research (Bhaskar 1998). In pursuing qualitative research I affirm the importance of the concepts and understandings of social actors in shaping the world in which we live. However, I also recognize the existence of an objective reality. Our perception of that reality may be

perceived in ways which are historically and socially produced. Nevertheless, I believe it is worth approaching through a diversity of methods, including quantitative scientific approaches. In this my perspective differs from that of many social science researchers, particularly those employing qualitative methods. Qualitative researchers often work from a more purely phenomenological perspective which sees "the important reality" as that which is socially constructed, and some reject the concept of objective reality outright (Taylor and Bogdan 1998: 3).

In pursuing this research it is also important to acknowledge that I am a Caucasian woman, born to middle class, well educated parents. I have only a respectful outsider's understanding of poverty and environmental racism. I have not faced the barriers the study participants may have experienced in terms of discrimination based on poverty, education, race or language barriers. I come to this research with the goal of understanding the perspectives of others and the strategies they use to deal with the pressures of daily life.

I grew up in the city of Toronto, in a household where social justice and environmental issues were considered of primary importance. Growing up, I always loved plants and gardening. I was also fascinated with food. I was especially interested in food cultures, how different people relate to the food they eat and the meanings and rituals they attach to it. My studies for my Bachelor of Arts at Trent University ranged through ecology, anthropology, international development, and environmental studies, exploring different aspects of ecological agriculture and global food systems. I became especially interested in cities like the one I grew up in, and the challenge of environmental sustainability within urban social and physical structures. Having briefly pursued a career as a professional gardener, I came back to the academic life with an interest in private land and how it is used in the city. As an undergraduate I had previously conducted research on green roof agriculture. However, private gardens are much more personal places. This study came about because I wanted to know more about the people who use those spaces to grow food, and what that food means to them.

The research I have pursued here does significantly benefit me as a graduate student completing the requirements for a degree which will increase my earning potential and even my life expectancy (Ross et al 2006). The fact that it has been conducted in an

academic context certainly influences the structure of the research and even to some extent the focus of the research. The same can be said of the funding support the Centre for Urban Health Initiatives provided to support the research. However, I would argue that on the balance the context within which this research is being conducted has a positive influence on the research. Working within an academic context has encouraged me to be more balanced and thoughtful in my approach than if the research had been pursued independently or through a community organization. More likely, it would simply not have been conducted at all, to the detriment not only of my academic success but also of food security policy and programs in Toronto and the communities which they affect. In order to engage in developing policy and programs to support and facilitate food security in low income neighbourhoods it is necessary to understand the current context. What are the strategies residents are currently using to deal with food insecurity? What contribution does home food gardening make to their lives? Answers to these questions are essential if decisions are to be made on interventions in these communities which take into account complex situations and the specific needs of community members.

Qualitative versus Quantitative Data Collection

Methodology encompasses the ways in which we approach questions and look for answers. Every seemingly dry procedure is shaped by our assumptions, purposes, perspectives and theoretical stance (Taylor and Bogdan 1998). The methods used here were informed by the goals of this study, which were largely exploratory. Little previous research has been done on home food growing in North America, particularly in terms of food security. Therefore it would have been premature to formulate a hypothesis and test it through the current research project. Instead this research has aimed to develop a portrait of home food growers in order to illuminate the contribution of food production to food security and its broader role in the lives of gardeners. In this way it will provide a direction and context for future research. For this reason, qualitative methods were chosen as the most appropriate of the available options for the current study, and interviews with individual gardeners made up the bulk of the research.

In the course of the research some quantitative data was also gathered through the screening and the survey that was piloted in conjunction with the interviews. The use of the survey in the current study is qualitative only, due to the small sample size involved. Likewise, the screening was primarily employed as a recruitment tool and allowed for only a rough estimate of the prevalence of food growing in the study neighbourhoods. The survey was piloted in this study with a view to future larger scale implementation, and will benefit from the results of this research. While quantitative research approaches, such as surveys, are not often combined with qualitative methods, the two can enhance each other. Quantitative methods are often useful for suggesting relationships and correlations, while wider ranging and more flexible qualitative methods provide explanatory power and descriptive depth (Eisenhardt 2002). The division between qualitative and quantitative methodological approaches tends to be more absolute in research conducted from either a strictly phenomenological perspective on the one hand or, conversely, a rigorously positivist approach on the other. A more flexible methodological approach can be a way to access demographic and other 'informational' data in an efficient manner. The data collected here through the pilot survey might more commonly have been collected in qualitative studies in the form of a brief checklist. Using the survey, however, allowed for a contextual evaluation of the survey instrument. Changes can now be made to the survey in light of this evaluation before it is used on a larger scale. In addition, the multiple data collection methods used here (interviews, photographs, garden sketches, field notes, and survey results) allowed for triangulation of the study data and a stronger substantiation of the theory built from that data (Eisenhardt 2002).

In-depth interviews

In-depth interviews were the primary data gathering tool in this research. The open-ended approach of in-depth interviewing allowed for a greater equality in the relationship between the research participants and the researcher than would be possible with the exclusive use of a survey instrument. While time constraints dictated the use of some guiding questions (see Appendix C for gardener interview guiding questions), within that framework gardeners were able to direct the conversation to those aspects of their

gardening practices which they perceived to be of the greatest importance. In this way the research aimed to perceive the world from their frame of reference (Taylor and Bogdan 1998). By situating the research in their homes and gardens the interview process attempted to understand the participants in terms of their past and their current physical and social environment. In-depth interviewing seeks to be as naturalistic as possible, creating a respectful and yet informal atmosphere which simulates a genuine conversation in order minimize disruption through research process (Taylor and Bogdan 1998).

Grounded theory

The in-depth interviews and the subsequent analysis followed an exploratory grounded theory approach. Grounded theory is a term coined by Glaser and Strauss (1967) to describe an inductive approach to qualitative research which works to develop understanding from patterns in the data. A grounded theory approach involves overlapping data analysis as much as possible with data collection. In this way it becomes possible for researchers to make changes to the data collection process in response to emerging themes in analysis, for example by adding questions or probes to the interview protocol, adding or altering survey questions, and adding more or different interviews (Eisenhardt 2002). This 'controlled opportunism' represents not the freedom to be unsystematic but the flexibility to allow for more genuinely exploratory and comprehensive research than is possible when all the details of the research design are fixed before entering the field (Eisenhardt 2002: 16).

Neighbourhood-level research

When considering the appropriateness of the methods employed in research, an important factor is the scale at which the research takes place. While the majority of social science research operates at the individual level, in recent years there have been an increasing number of studies which have investigated 'place effects' on health and well-being at the neighbourhood level (Macintyre et al 2002). Neighbourhood level research examines the effect features of the social and physical environment which are general to a community have on individual residents of that community. These are not derived

variables which are based on the aggregate properties of individual residents, but rather integral variables which are not reducible to the group, such as built form and the availability of community services (Macintyre et al 2002). While we tend to think of health as a discrete individual level variable, individuals do not exist in a vacuum. They are influenced by social and physical features of the places in which they live. Place enables and restricts life patterns, and this influence of place of residence on health has been seen in numerous studies (Pickett and Pearl 2001, Dunn et al 2006).

There are some drawbacks to neighbourhood level study. Neighbourhoods and communities are difficult to bound and conceptualize. Unlike individuals their borders are fluid and perceptions of the boundaries can differ between residents. As a result, neighbourhood boundaries for research purposes are often imposed by census tracts or municipal administrative areas. These administrative neighbourhoods may not be the same as those residents experience. However, a study by Ross, Tremblay and Graham comparing 'naturally' defined neighbourhoods with standard census tracks in Montreal found census tract definitions to be fairly accurate proxies for naturally defined neighbourhoods in terms of health status (Ross et al 2004). In addition, it is important to remember that what happens in a place is connected on many levels with the space around it. Many communities these days are defined more by affinity than by physical locale, particularly in urban areas. However this may be a more accurate statement in terms of younger and wealthier residents, who are more mobile. Place based areas are still an important way in which urban people in Canada experience community.

Methods

Study neighbourhoods

The study was conducted in two Toronto neighbourhoods: North Riverdale and Weston-Mount Dennis (as defined by the city of Toronto - City of Toronto 2007b). The two Toronto neighbourhoods were selected as representative of low and middle income communities with relatively low densities. The neighbourhoods were also selected to take advantage of synergies with the Intensive Research On Neighbourhood Health Initiative (IRONHI), a collaborative research initiative on Toronto neighbourhoods facilitated by the Centre for Urban Health Initiatives. The research described here aims to contribute to

a collaborative effort to build a detailed in-depth understanding of the neighbourhoods and facilitate future research efforts.

The six neighbourhoods which are included in the IRONHI initiative are all middle and low income neighbourhoods. Banbury-Don Mills and North Riverdale have the two highest median household incomes, at $65 800 and $61 700 respectively according to the 2001 Canadian census. However, in comparison with the Toronto census metropolitan area (CMA) this is not very wealthy, and in fact quite similar to the median household income for the city as a whole of $60 000 (Maaranen 2006). To select the target neighbourhoods for the current study, the six neighbourhoods were compared on the basis of a number of factors. These included average individual income; median household income; apartments (condos and rentals) as percentage of total dwellings; single detached houses as percentage of total dwellings; recent immigrants, previous six years as percentage of total population; and persons with a university degree as percentage of total population.

The two poorest of the IRONHI neighbourhoods were South Parkdale and St. Jamestown, with individual average incomes of $22 500 and $22 600 respectively (Maaranen 2006). Lower income housing in Toronto tends to be correlated with high dwelling intensity and indeed in St. Jamestown 94% of dwellings are apartments. Only 1% of the dwellings located within St. Jamestown are single detached houses (Maaranen 2006). South Parkdale has a slightly lower ratio of apartments at 85%, but still only 8% are single detached homes (Maaranen 2006). It was decided that at this level of intensification the likelihood of successfully recruiting house-lot food producer interview participants was very low, and both Parkdale and St. Jamestown was rejected as possible focus neighbourhoods for the study.

Of the remaining four neighbourhoods, the one with the lowest median household income, at $40 100 per year, is Weston-Mount Dennis (Maaranen 2006). While the dwellings in Weston-Mt. Dennis are still more than half apartments, the percentage is much lower here, at 62% (Maaranen 2006). 32% of the homes are single detached houses (Maaranen 2006). Weston-Mt. Dennis, as a relatively low density and low income neighbourhood, was therefore chosen as one of the target neighbourhoods investigated in this study. Of the two wealthiest remaining neighbourhoods, Banbury-Don Mills and

North Riverdale, the one with the lowest number of apartments as a proportion of the total number of dwellings was North Riverdale, at 46% (Maaranen 2006). This neighbourhood was therefore chosen as a suitably contrasting middle income, low density focus neighbourhood.

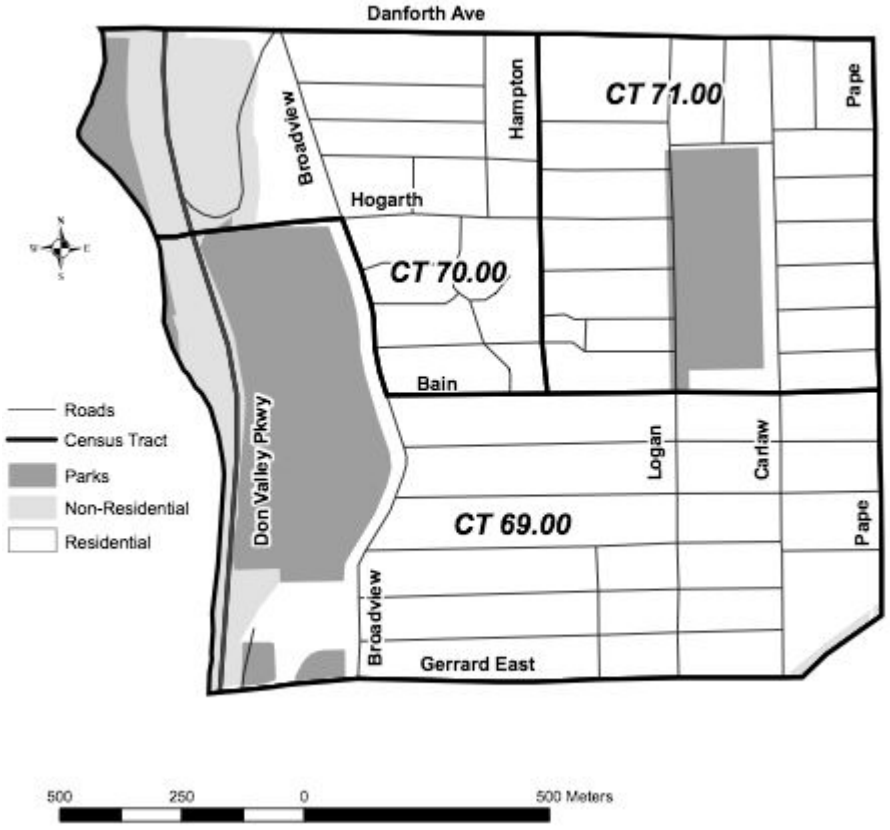
While the choice of the target neighbourhoods was governed by numbers such as the neighbourhood median household income, the percentage of recent immigrants, and the percentage of residents with a university degree, these do little to locate the people and places described here for the reader. This is not a statistical research paper but rather a qualitative portrait and assessment of home food growing in Toronto. Therefore it seems appropriate to introduce the neighbourhoods in a more in-depth and descriptive fashion as well.

North Riverdale

North Riverdale is a compact community of Victorian homes situated just east and across the Don River Valley from the downtown core (for map, see Figure 1). Divided from the centre of the city by the river, the area was largely working class when it was first settled in the late 1800s. Two and three storey closely spaced Victorian style homes characterise the neighbourhood. Many of the homes are over 100 years old, built between 1884, when the land was annexed by the City of Toronto, and 1924, just before the Depression (Toronto Neighbourhoods 1999a).

Over the years a large Greek community settled near Danforth Avenue, the northern boundary of the neighbourhood. Danforth Avenue is now a lively stretch with plenty of Greek restaurants, European clothing stores and delis, and an upscale shopping complex anchored by a large co-operative natural foods store. The neighbourhood boasts a thriving arts community, in part thanks to the Bain Cooperative, which when established was among the first social housing in Canada. The housing complex, in the centre of the neighbourhood, was completed in the 1920s with support from the Toronto Housing Authority. The apartments were later purchased by a private landlord, and left to deteriorate. The complex was purchased by the members in 1974, and has been managed as a cooperative since then. The apartments continue to be rented at lower than market rates (Bain Apartments Cooperative 2007).

Figure 1: North Riverdale neighbourhood map (Maaranen 2006)



To the south there is also a significant Chinese community. This segment of Gerrard Street, near Broadview Avenue, at the southwest corner of the neighbourhood, is known as Chinatown East. However, while Chinese and Greek are still the most common non-English languages spoken at home by residents, fewer immigrants are moving here these days (Figure 2). The tall maples shading the streets and the two large parks make this a beautiful neighbourhood to call home. There is a choice of large supermarkets and small green grocers within walking distance anywhere in the small, compact neighbourhood. Transit into the rest of the city is also conveniently available, with not only the Danforth subway line to the north but also frequent streetcars going south and west to the central business district. As a result, North Riverdale has become a popular neighbourhood to move to for young affluent professionals, and the housing prices reflect this. The average home was valued at over $300,000 in 2001 (Figure 2). Current market prices can be much higher (Realosophy 2007a). Since the 1960s the neighbourhood has undergone gentrification, with younger and wealthier residents moving in and increasing property values and taxes. It has become difficult for new immigrants and others without significant capital to purchase homes in the neighbourhood, and the number of rental units is decreasing (Figure 2). As a result, recent immigrants are renting or purchasing homes elsewhere, often further from the downtown core (Hulchanski 2007).

Weston-Mt. Dennis

One of the inner suburbs these newer immigrants are currently moving to is Weston-Mt. Dennis. Weston-Mt. Dennis is located west and north of the downtown core, on the banks of the Humber River. The neighbourhood is centered on the Georgetown railway line which runs from Guelph to Union Station in downtown Toronto. Weston Road runs parallel to the tracks and serves as the main street of the neighbourhood (for map, see Figure 3).

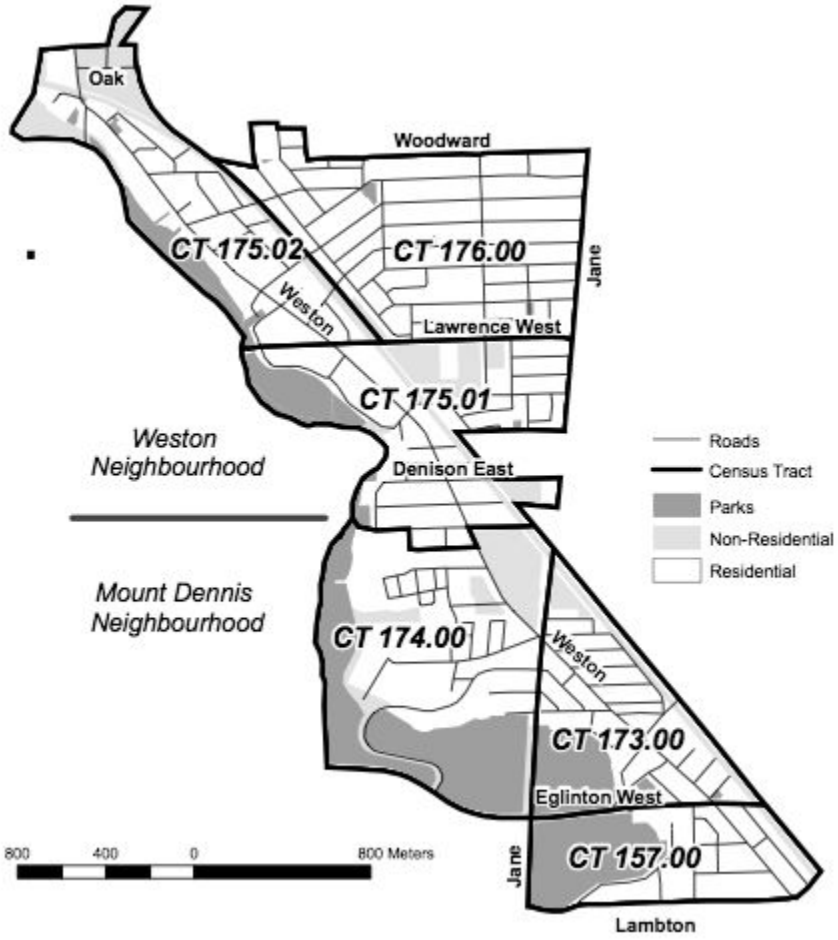
Both Weston, to the north, and Mt. Dennis, to the south, were settled beginning in the late 1700s and early 1800s by industrialists attracted by the Humber River, which produced energy for their mills (Toronto Neighbourhoods 1999b, Toronto Neighbourhoods 1999c). Weston developed into a small village which was incorporated in 1881, and became a town in 1915. It was not incorporated into the Borough of York

Figure 2: Neighbourhood Change in North Riverdale and Weston-Mt. Dennis with Toronto Census Metropolitan Area (CMA) comparison

	North Riverdale			Weston-Mt. Dennis			Toronto CMA		
	1971	**2001**	**Change**	**1971**	**2001**	**Change**	**1971**	**2001**	**Change**
Population	18,345	12,469	-32%	18,495	30,435	65%	2,626,000	4,683,000	78%
Households	5,375	5,045	-6%	6,255	11,840	89%	774,000	1,635,000	111%
Persons Who Moved, Previous 5 Years	61%	42%	-19%	59%	50%	-9%	53%	45%	-8%
Born in Canada	57%	66%	9%	66%	47%	-19%	66%	44%	-22%
Recent Immigrants, Previous Six Years	19%	4%	-15%	11%	12%	1%	10%	9%	-1%
Median Household Income (constant 2001 dollars)	$37,700	$61,700	$24,000	$41,100	$40,100	-$4,000	$49,000	$60,000	$11,000
Average Dwelling Values (constant 2001 dollars)	$143,000	$330,000	$187,000	$124,300	$192,900	$68,600	$155,000	$273,000	$118,000
Rented Dwellings	54%	46%	-8%	56%	56%	0%	42%	37%	-5%
Apartments (condos and rentals)	29%	40%	11%	51%	62%	11%	32%	38%	6%
Single Detached Houses	22%	21%	-1%	43%	32%	-11%	49%	45%	-4%
Persons With a University Degree	5%	42%	37%	3%	14%	11%	8%	28%	20%

Source: Statistics Canada, Census 1971, 2001 (Excerpted from Maaranen 2006).

Figure 3: Weston-Mt. Dennis neighbourhood map (Maaranen 2006)



until 1967. In 1998, along with the rest of York, it became part of the new, amalgamated city of Toronto (Toronto Neighbourhoods 1999c).

Weston-Mt. Dennis welcomes more recent immigrants, new Canadians who have arrived within the last five years, than the city of Toronto average. It also has a much lower median household income than the residents of the city as a whole (Figure 2). As a result of concerns that the neighbourhood is becoming an area of concentrated poverty, the city of Toronto has designated the area a priority neighbourhood for targeted programs (City of Toronto 2006). Homes are much less expensive here than in Riverdale, with the average home valued under $200,000 in 2001 (Figure 2). However, Weston-Mt. Dennis is still a very mixed neighbourhood. Away from the main streets, Weston retains the atmosphere of an old heritage neighbourhood, with many mature trees and large older homes. There is also a large park along the Humber.

However, because of the industry upon which this neighbourhood was based, the neighbourhood is characterised by a number of small residential pockets rather than a cohesive and more compact whole. On one street you can find substantial homes, where circle drives do not look out of place. Around the corner, on Weston Road, dusty strip malls prevail. Small businesses such as hair salons and inexpensive clothing stores dominate the retail mix. Further south, a small town home subdivision is unexpected at the end of a road which first passes a large scrub filled empty lot, still awaiting development. Mt. Dennis has been described as a "quiet understated enclave" (Toronto Life 2007). Nevertheless, it is also held back by uneven development. Long and narrow, bordered and divided by large roadways and the rail line, a lack of good transit can make life difficult for those living without private transportation in Weston-Mt. Dennis. Buses are frequent but slow, and the GO trains are expensive. In addition, the GO train service to Union Station downtown runs only during rush hour, going into the city in the morning, and returning in the evening (Go Transit 2007). This limits its usefulness as a link to the city. There are two large supermarkets in the neighbourhood, but few small greengrocers.

Still, there are a number of small storefronts along Weston Road and an active Business Improvement Area association. The BIA operates a farmer's market as well as holding an art festival and a Santa Claus parade in the neighbourhood every year (Weston

Village BIA 2007). A number of residents are actively striving to maintain the vitality of the neighbourhood, by protecting its heritage and environment. The Weston Community Coalition most recently has been protesting a proposed high speed rail link between Toronto's airport and Union Station downtown. Currently, there is no plan for a stop in Weston, and the diesel traffic on the railway would increase fourfold. Citizens are concerned about the noise, fumes, and also the further division of the neighbourhood by the far more active rail line, which currently has a number of level pedestrian crossings which may be replaced by less accessible alternatives. The coalition has proposed a 10 stop rapid transit line as an alternative (Weston Community Coalition 2007).

The neighbourhood is not wealthy, and without good transit links to the city it is difficult for the neighbourhood to develop further. The additional programs that the city has dedicated to support the neighbourhood as well as the actions of its committed residents are both good signs that the neighbourhood will be able to continue to offer a welcoming home and community to both new and existing residents into the future.

Participant recruitment and selection

In each neighbourhood, study participants were recruited by first designating random census blocks within the target neighbourhoods. In order to select individual households, a systematic sample of residences within those blocks was then approached. In Riverdale, every fifth residence was approached starting from a randomly chosen corner of the block. In Weston-Mt. Dennis, due to the large size of the neighbourhood and the relatively low density of housing on most residential streets, every third residence was approached. While food production on apartment balconies may be an important future area of research, time and resource limitations precluded the inclusion of residences within apartment buildings in the current study. Houses that contained three or fewer multiple units were, however, included in the research sample. In such cases a random unit was chosen and approached for screening.

Households were approached in person in order to explain the study and increase the participation rate. The researcher first requested to speak to an adult who resides at that address. The study was then described and identified with the University of Toronto. Permission was verbally requested to ask a few questions. With the householder's

consent, he/she was then asked three screening questions (see Appendix A for screening questions). Only households which grew food on their property were recruited as study participants after the initial screening. In total, 125 households were screened.

When a food growing household was encountered, the study was explained further and a detailed information letter was given to the potential participant. A consent form was also given to participants at the time of the interview in order to ensure that informed consent was obtained (see Appendix B for information documents and consent form). Participants were not pressed to conduct the interview immediately, although interviews were occasionally conducted at the time of the screening. Most interviews however were arranged for a later date. In either case, consent was only given by, and the interview arranged with, the resident adult principally responsible for food production in the household. If the residents of a designated household were unavailable a copy of the information letter was left at the residence with a note highlighting the researchers' contact information and the purpose of the study so that they would also have the opportunity to participate.

Sampling in qualitative research is generally not random, but rather purposive, stratified sampling directed by theoretical considerations and the goals of the study (Miles and Huberman 1994). Stratified sampling can be a way to obtain a range of informants within the small samples typical of qualitative research. However, the exploratory nature of the current study and the available methods of contacting home gardeners would likely have meant that a stratified sample for the current research would also have been biased, for example by membership in gardening groups. Therefore, a random sampling procedure was chosen in order to access a variety of gardeners including those without organizational or other affiliations, those who do not grow large quantities of food, and those who grow food for a variety of reasons. Otherwise, preconceived and speculative notions of gardeners and gardening practices could have biased the choice of informants. However, while the majority of the participants were designated randomly, three of the twenty-three households were included in the study as a result of chance conversations with randomly approached households during the screening process. Occasionally the households approached through the screening pointed out neighbours who grew large amounts of food. In these cases the households

indicated were approached, and in three cases the residents agreed to participate in the study. In this way a greater diversity of respondents was reached. All three non-randomly selected gardeners interviewed grew fairly large quantities of food and were representative of gardener types which were relatively uncommon within the sample.

As Judd, Smith and Kidder (1991) point out, systemic random sampling procedures such as the one used here can be problematic if there are regularities or systematic cycles in the distribution of households. In this case, however, the only regularity was the association of odd numbers with a specific side of the street, and the use of census blocks (which include all four sides of a block of land bounded by streets rather than the standard 'face block') negated this issue. The use of a multistage area sample also facilitated an even distribution of informants throughout the target neighbourhoods. Largely random sampling allowed the study to better reflect the prevalence of food garden practices within the neighbourhoods than would have been possible with a stratified sample, though the small sample size precluded any definitive conclusions.

The research sample was, however, limited by the exclusion of the perspective of non-food growers from the study. The inclusion of non-food growers and an exploration of the reasons why they do not grow food and the impact this has on their lives would be valuable in developing a more nuanced understanding of urban food gardening. However, due to the scale and preliminary nature of the current study, the research presented here focuses only on food producing households.

Timeline

All of the interviews were conducted for the study between May 15 and June 20, 2007. Conducting the study within a fairly narrow window of time restricted the variation between gardens. It also limited the variation between the participants' perceptions of their gardens, which may change through the seasons.

Sample size

The study included twenty-three in-depth interviews, twelve in Riverdale and eleven in Weston-Mt. Dennis. Within grounded theory the ideal sample size is determined by theoretical saturation. Interviews continue until no new insights emerge from additional

data collection (Eisenhardt 2002, Taylor and Bogdan 1998). Analysis proceeds in tandem with data collection as much as possible in order to make the most of each interview. The analysis presented here reflected all of the participants interviewed, and multiple participants were categorized within each typological category developed. There were no single or miscellaneous cases that were unaccounted for within the analysis. Therefore it was judged that a level of theoretical saturation was reached which was appropriate to achieve the exploratory goals of the current study. If it had been possible to conduct many further interviews, a more detailed if not substantially different presentation of home food gardening practices may have been presented. Realistically, time and financial constraints limited the number of interviews that it was possible to conduct within the scope of the study. The data gathered from the 23 interviews completed was judged to be sufficient in terms of theory building within the present study. This research is exploratory, and future research to replicate and investigate in further detail the questions raised by this research would be valuable to strengthen the findings presented here. The sample size was similar in scale to other comparable studies. In a study by Head, Muir and Hampel (2004), which examined Australian backyard gardens and immigration, a much larger sample size (82 gardens) was used. However, of the four groups examined within the Australian study, two had only 10 and 16 participants respectively, which approximates the scale of the current study (Head et al 2004: 327). Other researchers have recommended much smaller maximum sample sizes for qualitative research of between 10 and 15 cases (Eisenhardt 2002: 26, Miles and Huberman 1994: 30).

Documentation of gardens

The interview process began in the participants' gardens, where the use of garden space and the diversity of foods grown were explored. Gardeners were asked to lead the researcher through their garden. It was hoped that beginning with a focus on the gardens rather than the gardeners themselves would help the gardeners feel comfortable and facilitate the interview process. Gardeners were asked to identify and speak about the foods that they grow. At the same time, the researcher photographed and sketched the garden, asking questions when necessary to ensure that the diagram produced was accurate and complete. For some early interviews, participants had not completed their

food plantings for the season. In these cases, only definite plans for specific plantings were included in the garden mapping process.

While a participatory mapping process was considered for the garden documentation, it was decided that this would not be appropriate for the current study. Participatory mapping, while potentially valuable, requires a considerable time commitment to be done well. In addition, some studies have found that participants can feel awkward or threatened when asked to draw such maps, despite previous research which found such methods useful to overcome communication barriers (Doyle and Krasny 2003).

Accordingly, this project followed the procedure developed by the Toronto pesticide project (Jermyn 2007). The researcher sketched the garden using graph paper. A regular pace was used to roughly measure the garden and any large structures. Colour coded pencils were used to designate areas of lawn, herb plantings, different types of vegetable plantings, ornamental plantings, fruit trees, shade trees and garden structures. In this way a rough map could be constructed quickly, in order not to bore the participants with the process, and cleaned up following the interview. Photographs were also taken from several vantage points. The photographs further documented the garden and strengthened the accuracy of the mapping process (Jermyn 2007). Permission was specifically requested for the maps and photos to be shown publicly. The maps produced provide an estimate of the scale of the gardens and the extent of food production, as well as a sense of the types of foods grown and the character of the gardens.

Interviews

After the garden was documented, an in-depth semi-structured interview was conducted. Open-ended questions focused on developing a qualitative portrait of the gardener, exploring who they are and what growing food means to them (see Appendix C for gardener interview guiding questions). In addition, the interviews examined the participants' perceptions of their gardening and the contribution their produce and gardening practices make to their and their families' diet and well being. The broader impact of informal food production practices was also examined through an investigation of gardeners' sharing of food through personal reciprocity networks as well as formal food sharing programs. Finally, the interviews addressed the factors which might hinder

home food production. The use of prepared questions and probes helped to anchor and guide the conversation without being intrusive and while still allowing the gardener to elaborate on areas they felt to be important. Questions were not asked in order and were responsive to the course of the conversation and the topics raised by the interview participant. If the conversation veered away from the topic of interest or flagged, questions from the guide were used to redirect the flow of the interview.

The interviews, as well as the remainder of the methods, were tested through trial runs with peers to reveal any repetitions and holes in the protocol. This also offered an opportunity for the researcher to become more practiced in the interview process. Overburdening the participants was a consideration and the length of the interview was therefore limited to no more than one and a half hours in length. Permission was requested for further contact in case of future questions due to emerging theoretical concerns. Names and contact information were collected to enable future contact with the permission of the participants. However, a pseudonym was used for each participant throughout the data collection, analysis and reporting stages. A list of the pseudonyms together with the participants' names and contact information was kept secure and separate from the remainder of the data to ensure confidentiality and anonymity.

All but one of the interviews was conducted in English, and the survey and other study materials were not be translated prior to entering the field. While both the target neighbourhoods of North Riverdale and Weston-Mt Dennis are culturally diverse, the percentage of residents who speak neither English nor French in 2001 was, in both cases, less than 5% of the neighbourhood population (City of Toronto 2003a: 4, City of Toronto 2003b: 4, City of Toronto 2003c: 4). Recent immigrants who would likely fall into this category were likely to be excluded from the current study in any case, due to the sampling bias against apartment buildings. As a result, the decision was made not to invest in translation for either the interviews or the study materials prior to beginning the research process. While the interviewer was capable of conducting an interview in French if a Francophone household was encountered during the sampling, this did not occur. However, one Spanish-speaking household was encountered in Weston-Mt. Dennis. Since the research assistant hired to assist with the screening process in that neighbourhood was multi-lingual and capable of speaking Spanish fluently, the interview

was conducted in Spanish and translated by the research assistant. The principal researcher was also present and able to ask additional questions throughout the interview. In this way it was possible to ensure that the interview material was comparable to that collected from the remainder of the interviews conducted.

Field notes

The interview material was supplemented by field notes. These took the form of an interview journal made during or immediately subsequent to the interview. The notes recorded striking elements of the discussion, commented on emerging themes, noted salient gestures, and so on. The notes acted to enrich the interview transcript, enhancing and facilitating the ongoing process of analysis (Taylor and Bogdan 1998). Following Eisenhardt's suggested practice, the notes were used to 'push' thinking immediately after the interview by asking questions such as "What am I learning?" and "How does this case differ from the last?" (2002: 15).

Pilot survey

At the conclusion of the interview, the interview participants were asked to answer a series of pilot survey questions developed to gather more quantitative data on the practice of informal food gardening. The survey was conducted orally in most cases. Occasionally the interview participant completed all or part of the survey as a written text depending on the circumstances and the preferences of the participant. The survey questions covered basic demographics, tenure, dwelling type, mobility, nutrition, self-rated health, food security indicators and neighbourhood characteristics dealing with social cohesion and trust, using the Canadian Community Health Survey as a model (Statistics Canada 2005a, Statistics Canada 2005b). In addition, the survey examined food production, investigating the type and quantity of food being grown as well as its impact on food budgets and diets (See Appendix D for the pilot survey).

Conducting the survey with this small sample allowed the survey questions to be piloted with a view to future larger scale quantitative application of the survey. The sample size was clearly insufficient for any analytical work. However, piloting the survey in conjunction with the in-depth interviews allowed questions to be assessed for their

ability to accurately reflect the multiple dimensions of home food growing revealed through the interview portion of the study. Questions will be added or refined based on the evaluation of the pilot given in Chapter Four before the full survey is deployed.

Analysis

Interview transcripts, along with field notes, were coded with N-VIVO software using a grounded theory approach (Corbin and Strauss 1990). In accordance with the principles of grounded theory, a constant comparative method was used, and analysis proceeded as much as possible in tandem with the research. Analytical typologies and concepts were developed from the material throughout the data collection period. The process of writing and reflecting on the field notes was particularly useful in this regard. The emerging analysis was then used to direct subsequent interviews and observations so that all relevant aspects of the topic were captured through the research process. Typologies and concepts developed were progressively unified into themes and developed into coding categories. As the data was sorted and coded, the categories were refined in order to ensure that the coding categories fit the data rather than the other way around. In this way the analysis proceeded through an iterative process of building constructs and then returning to the data (Eisenhardt 2002).

Key themes and linkages were identified through matrix analysis of categories and concepts (Miles and Huberman 1994). Characteristics of various elements within and across cases, such as volume, universality, differentiation, importance and emphasis were examined in the analysis. Searches for cross case patterns were used to reveal any patterning overlooked in the initial analysis. For example, individual interviews were sorted by various dimensions and then a search for similarities and differences within and between groups was made. These techniques were useful to highlight less obvious patterns and avoid being influenced by particularly vivid or well spoken respondents which can lead to inadequately supported conclusions early in the analysis (Eisenhardt 2002).

A negative case analysis approach was used to ensure an accountable, rigorous examination of the data (Judd et al 1991). Special attention to negative cases forces revision and rethinking of theories to accurately reflect the data. Results must be

continually revised until an explanation for not just the general trends but also the exceptions is reached. In this way validity is strengthened and constructs can be verified (Eisenhardt 2002). A comparison with the available literature can also sharpen the limits of generalizability and strengthen the internal validity of the research analysis (Eisenhardt 2002). Similar literature was limited in this case, however literature with similar themes but contrasting subjects can also be useful. For example, Head, Muir and Hampel (2004), in their analysis of the study mentioned above, compared their work to a study of attitudes towards national parks involving the same immigrant groups as were involved in the gardening study. The comparison enhances and deepens our understanding of these new immigrants to Australia and extends the original research to a broader context.

Validity and communication

Validity of research design and analysis is a crucial element of qualitative research. Despite the fact that qualitative methods are widely used in the social sciences today there are still lingering questions as to the legitimacy of the knowledge produced by such research, particularly in the health sciences. In part this is because there is no one way to guarantee validity in qualitative research. However, there are a number of ways of increasing the legitimacy of research findings. Several are outlined by Mays and Pope in an article for the British Medical Journal (2000). These include triangulation, a clear exposition of methods, incorporation of reflexivity into the account of the research, and attention to negative cases, which have all been incorporated into the current research.

Communicating the results of the data collected and recognizing the contribution of the participants to the research is an important part of social science research ethics (Cook 1991). The burden which the time and effort required by the research process places on participants must be recognized and respected. This is particularly relevant to research with those living on low incomes whose lives may be very busy making ends meet. The benefits of research must be weighed against the cost to the participants. After the interview was conducted, a card with a note of thanks and a gift certificate to a local neighbourhood supermarket (which included a garden centre) was given to each of the participants. A summary of the results of this study will also be sent to all of the participants with thanks for their participation and a request to respond with any

comments or concerns. The participants may request a copy of the full report, and if necessary changes will be made in response to their comments prior to final publication. It is hoped that this will lead to their involvement in the research being remembered as a positive experience.

In weighing the costs and benefits of research, the benefits to the researcher are often easier to see than those to the participants. One way to increase the value of research at the community level is to promote the utilization of the research conducted not only to governments and academics but also to community groups. The benefits of the current study include a better understanding of the diversity of food production practices in the city and their contribution to household and neighbourhood food security. From this it is hoped that an effective and knowledgeable assessment of future directions for food security research and policy development will be enabled. The effective use of this research will be facilitated by the communication of the final results through distribution to interested parties. These will include FoodShare Toronto and The Stop Community Food Centre, two non-profit organizations which work to promote food security in Toronto through the promotion of food gardening, among other means (FoodShare 2007, The Stop 2007). The final report and/or a summary will also be provided to the general public and other academics through the internet via the Centre for Urban Health Initiatives website and also the website of City Farmer, a non-profit organization based in Vancouver dedicated to disseminating information about urban agricultural practices (CUHI 2007, City Farmer 2007). It is hoped that in this way the research presented here can make a valuable contribution, not only to our understanding of the context within which house-lot food production takes place but also to the policy and programs which govern, facilitate and constrain the activities of home food producers in Toronto and elsewhere.

Chapter Four: Results

Introduction

The primary objective of this study was to investigate the contribution of informal house-lot garden food production to Toronto neighbourhood level food security. Since there has been little research available regarding the forms and practices of home food gardening in Toronto, in presenting the results, it is appropriate to first focus on developing a portrait of the respondents as home food growers, exploring who they are and what growing food means to them. This improved understanding of home food growing practices and their place in the lives of diverse respondents can then be examined from a community food security perspective. In this way the contribution of home food gardening to community food security will be assessed, along with the facilitators and barriers to home food growing in the city.

A number of different sources of data were collected in order to develop a multi-faceted portrait of home food growing in the city. As was explained in Chapter Three, the brief initial screening survey was conducted with 125 residents of the two Toronto neighbourhoods of North Riverdale and Weston-Mt Dennis (see Appendix A for screening questions). The screening yielded a sense of the overall prevalence of home food growing in the two neighbourhoods and its basic character in terms of the types of crops grown.

It also allowed for the recruitment of a random selection of interview participants (n=23). The interview participants grew food in their backyards for a variety of reasons and at a diversity of scales. Some grew only small numbers of potted tomatoes, while others maintained substantial gardens which allowed them to be self-sufficient throughout the harvest season in tomatoes, lettuce, and a number of other crops. In total, 23 people participated in the in-depth portion of the research, including 12 respondents from Riverdale and 11 from Weston-Mt. Dennis. The gardens and their place within the respondents' lives were assessed through a variety of methods. As described in Chapter Three, each garden was mapped and photographed, in-depth, semi-structured interviews were conducted with each respondent, and the respondents were also asked to complete a

pilot survey. Field notes were also completed by the researcher after each interview in order to reflect on and analyse the data collected throughout the research process.

In this chapter the results of the research are presented. The initial screening results are presented first. While the primary purpose of the screening was the recruitment of research participants, it did allow for a rough assessment of the prevalence of residential food production in the two target neighbourhoods. Subsequently, the general characteristics of the interview respondent households and their gardens are described. The first goal of the study, the qualitative portrait of the gardeners, is then presented in the form of a typology. Each of the five types of gardeners identified is described. The descriptions are illustrated with maps of gardens representing each of the five types. In light of the qualitative portrait presented, the contribution of these gardens to community food security is then assessed. Beyond community food security, the impact of gardening on the health and well-being of the gardeners interviewed is then explored along with the facilitators and barriers to residential food production in the city. The final goal of the study was to assess the effectiveness of the survey piloted with the interview participants. The results of the assessment, along with specific recommendations for changes, can be found at the conclusion of the chapter.

Initial screening results

125 residents of the two Toronto neighbourhoods of North Riverdale (n = 64) and Weston-Mt Dennis (n = 61) responded to the initial screening survey. Of those surveyed, just over half (54%) grew food, defined as vegetables, fruits, nuts, or herbs (See Figure 4 for results of screening). Of these, almost three quarters grew herbs, nearly two thirds grew vegetables, and just over a quarter grew fruits. None reported growing nuts as food during the screening.

Of those who responded that they grew food at home, substantially more of those surveyed in Weston-Mt Dennis grew either fruits or vegetables (n = 27) than the Riverdale residents (n = 19). Many food growing residents in Riverdale grew only herbs, while this was true of very few Weston-Mt. Dennis residents. The difference may be reflective of prevalent tastes, or the amount of space available. Unsolicited comments from the respondents in Riverdale indicated that the space available, along with shade

Figure 4: Home food growing prevalence with types of food grown.

	Respondents (n)	Food growers	Type of food grown				
			Vegetables	Fruits	Herbs	Vegetables or Fruits	Herbs only
Total	125	67	42	19	50	46	21
%	100	54	34	15	40	37	17
Riverdale	64	34	18	7	30	19	15
%	100	53	28	11	47	30	23
Weston-Mt Dennis	61	33	24	12	20	27	6
%	100	54	39	20	33	44	10

from large trees, were seen as barriers to food growing, as were concerns about the quality of their soil and the potential for lead contamination. In both neighbourhoods, food was overwhelmingly grown in backyard locations, either in the ground (76%) or in pots (30%). Only 3 of the 125 respondents grew food in their front yards, and only 2 respondents reported growing food in a community garden.

Interview Respondents

The two neighbourhoods of North Riverdale and Weston-Mt. Dennis were initially chosen for their similarity in structure, with many residents residing in low rise residential neighbourhoods rather than high rise apartment buildings. They were also chosen for their dissimilarity in other areas such as median household income, percentage of recent immigrants, and persons with a university degree. As was discussed in the previous chapter, the average Riverdale household is relatively well off, with an average income just over the Toronto median household income, at $61,700 in 2001. By contrast the Weston-Mt Dennis median in 2001 was more than a third less than that of Riverdale (Figure 2). Despite the fact that these neighbourhoods are quite different when their characteristics are averaged together, the residents of both communities appear to be quite diverse. The within neighbourhood variation, at least within the sample of interview respondents, is in most areas far greater than that which exists between the two communities. This was true of the demographics and also for the results in terms of food growing patterns and motivations. Several Riverdale interview participants had incomes as low as the lowest in Weston-Mt. Dennis, and a number of the Weston-Mt. Dennis interview respondents were university educated. Likewise, gardeners corresponding to all of the five types of gardeners identified were found in both neighbourhoods.

However, there were some patterns in the sample of in-depth interview respondents as a whole and between neighbourhoods. Due to the small sample size, the characteristics of this sample cannot be assumed to be representative of all the gardeners in these neighbourhoods. They are being presented here solely to illuminate and characterise the research results that follow. Further research will be needed in order to determine if these results are in any way reflective of a larger whole.

The home food gardeners who participated in the interviews were fairly evenly divided in terms of gender, with 10 women and 14 men, though there were far more male than female gardeners in Weston-Mt Dennis (9:2). Interestingly, the majority of the gardeners interviewed in both neighbourhoods (13 total) were under 50 years of age. There were only 3 interview respondents over 65, all in Riverdale. Gardening is often examined as an older person's pastime (Milligan et al 2004, Bhatti 2006). However, the gardeners interviewed here were by and large employed and in their middle years. Almost all were couples, about half with children at home. In Riverdale the gardening households interviewed included largely younger children under the age of ten, while in Weston-Mt Dennis children at home in the households interviewed tended to be older teens or young adults. While most of the gardeners interviewed were under 50, there was no pattern of declining area of land devoted to food gardening with advancing age seen, with some of the largest and most productive gardens cared for by older interview respondents. However, again, these are characteristics of a small sample of 23 gardeners and cannot be taken to be representative of the neighbourhoods as a whole.

All but two of the interview respondents owned their own home, and the remaining two were owned by family members. Most of the gardeners interviewed, particularly in Riverdale, had owned their own home for over six years and the majority were long time residents of their neighbourhood. By contrast, half of all Weston-Mt. Dennis residents and nearly as many (42%) in Riverdale moved in the past five years (Figure 2). Similarly, while nearly all of the interview respondents were owners, only 44% of all Weston-Mt. Dennis households own their own home. This figure is higher in Riverdale, at 54%, but still not close to the 100% ownership in the sample of Riverdale interview respondents (Figure 2).

The interview respondents' gardens in Weston-Mt Dennis, located farther from the downtown, were almost twice as large on average as those in Riverdale. However the respondents devoted a similar percentage of their land to food, with large scale food growers residing in both neighbourhoods. The Riverdale residents interviewed tended to devote a higher percentage of their food growing area to potted plants and intensive growing. Trellises and multiple layers of plants were used to make the most of the space, in contrast to the extensive beds of plants in well spaced rows which were more common

in Weston-Mt Dennis. Most respondents within the interview sample devoted a fairly large area of garden to food, with 41 m^2 being the average. To put this in perspective, in a study of Toronto community gardeners the average plot cultivated by the respondents was only 5.8 m^2 (Baker 2002: 52). Only a small number of respondents in the present study (5 in total) had devoted smaller areas of their gardens to food than those who participated in the community garden study. In each of these cases the land they had available for potential food growing was substantially larger, with no more than 5% of their gardens being used for food growing. These are characteristics of the interview sample alone and are not representative, but they do illustrate the potential land available in home gardens in comparison to community garden plots.

Types of gardens and gardeners

While it was not possible to document the gardens of all 67 food growers encountered in the screening, the garden of each of the 23 interview participants was mapped and the various types of food grown recorded. The interview participants' gardens included a wide diversity of crops. 27 different types of vegetable were grown, with tomatoes being by far the most common crop, with virtually all (20 of the 23) gardeners growing some tomatoes. Beans, cucumbers, lettuce and onions were also popular. Fruit growing was less common, but nevertheless 20 different types of fruit were found to be cultivated by the interview respondents. Apples, grapes, figs, raspberries and strawberries, as well as rhubarb (which was classified as a leafy vegetable within the study), were also grown by several of the interview participants. But the participants also grew a number of more unusual fruits, including a bonsai lemon tree and several potted olive trees, all of which bore full sized fruit. Despite being the most popular type of food to grow, the choice of herbs was less diverse. 16 different types of herbs were grown by the interview participants, with basil, chives, mint, parsley and rosemary being the most frequently cultivated. As can be seen from this overview, most of the food crops grown in the interview participants' gardens are widely available. However, almost half of the interview participants did grow at least a few foods which they did not consider to be readily accessible. This may be because they are unusual or rare varieties, such as striped

heritage tomatoes or purple potatoes, or simply because very fresh local, organic produce is not always easy to find.

The interview participants' gardens could generally be divided into four primary uses, each taking up about a fifth of the space: food production, ornamental plants, lawn, and outdoor living space (patios, decks, and play spaces). The remaining space was used for pathways, storage, and compost production. However, as is illustrated by the sample garden maps included here (Figures 2-6), each garden was a distinct variation of this theme. Each gardener interviewed had their own priorities for their garden space. However, there were a number of basic motivations to grow food found among the interview participants, and distinctive garden forms and practices followed from these motivations. Each of these gardeners is an individual with their own history which they express through their garden. Nevertheless, creating groupings of the gardeners interviewed can help us to understand some of the basic reasons these gardeners grow food and give us a sense of the different roles food gardens can play in people's lives. One of the goals of this study is to create a qualitative portrait of food gardening in the city. One way to present this portrait is through the grouping of gardeners into a typology. In this way general themes can be illustrated and understood. In analysing the results of the interviews it became clear that the gardeners interviewed could be grouped into five different types. These types were based principally on the gardeners' motivation for growing food as well as other factors. The types, therefore, were the Cook's Garden, the Teaching Garden, the Environmental Garden, the Hobby Garden and the Aesthetic Garden. These typological categories cannot be considered strict divisions, and there was some overlap between categories. Some gardeners were cooks, but with a little of the hobbyist or the teacher. All the gardeners interviewed fell fairly easily into one category or another. Still, some characteristics were common across multiple categories. The gardeners interviewed all exhibited a desire to control what goes into the food they eat, valued being in touch with the earth, and found satisfaction in nurturing plants to harvest.

1. The Cook's Garden

The largest group, accounting for fully half of the interview respondents, was made up of cook-type gardeners, those who grew food in their gardens primarily for the food, as food. These were practical gardens, built and maintained for the convenience of access to fresh and delicious produce (see Figure 5 for an example of a cook's garden). As Derek[1], a cook-type gardener with a number of potted tomatoes said:

> . . . it's a big reward to have fresh tomatoes. It's a treat. It's a real treat to have something that bursts with the taste that it should be. No store bought tomato will ever match something you've grown yourself, because the smell of a tomato when you're working on or picking them gets all over your hands, and then when you eat it and it hasn't been stored, it just bursts right away. So I don't think there's anything that can replicate having food that comes directly to you when it's ripe. (Derek, cook gardener, Weston-Mt. Dennis)

These gardeners often sought out somewhat unusual and less available foods, such as a variety of herbs or unusual heritage tomatoes. Many of the respondents in this group also emphasized the importance of being able to access organic, pesticide and preservative free foods. Generally small scale, these gardens could sometimes be larger, even approaching the size of the hobbyist gardens, if there was some economic motivation or the space to grow a large quantity of food.

2. The Teaching Garden

This type of garden was cultivated by those respondents with children at home who grew food in their garden in large part as a teaching opportunity (see Figure 6 for an example of a teaching garden). This type did not include all the respondents with children, only those interview respondents for whom their children were a clear motivation to grow food. While the amount of food this type of garden produces is usually fairly small, it can still be a good way to encourage children to get involved in the garden and the process of growing food. Gardening allows children to learn about where their food comes from in an appealing way. They can help choose what foods to grow, water them, watch them grow, and harvest them when they are ready. Peas, cherry tomatoes, apples, a leaf of sorrel ("Juicy!" according to the three year old daughter of one Riverdale household, who offered a leaf for me to taste) these can all become exciting

[1] Pseudonyms are used to refer to the gardeners interviewed throughout this chapter.

Figure 5: An example of a cook's garden.

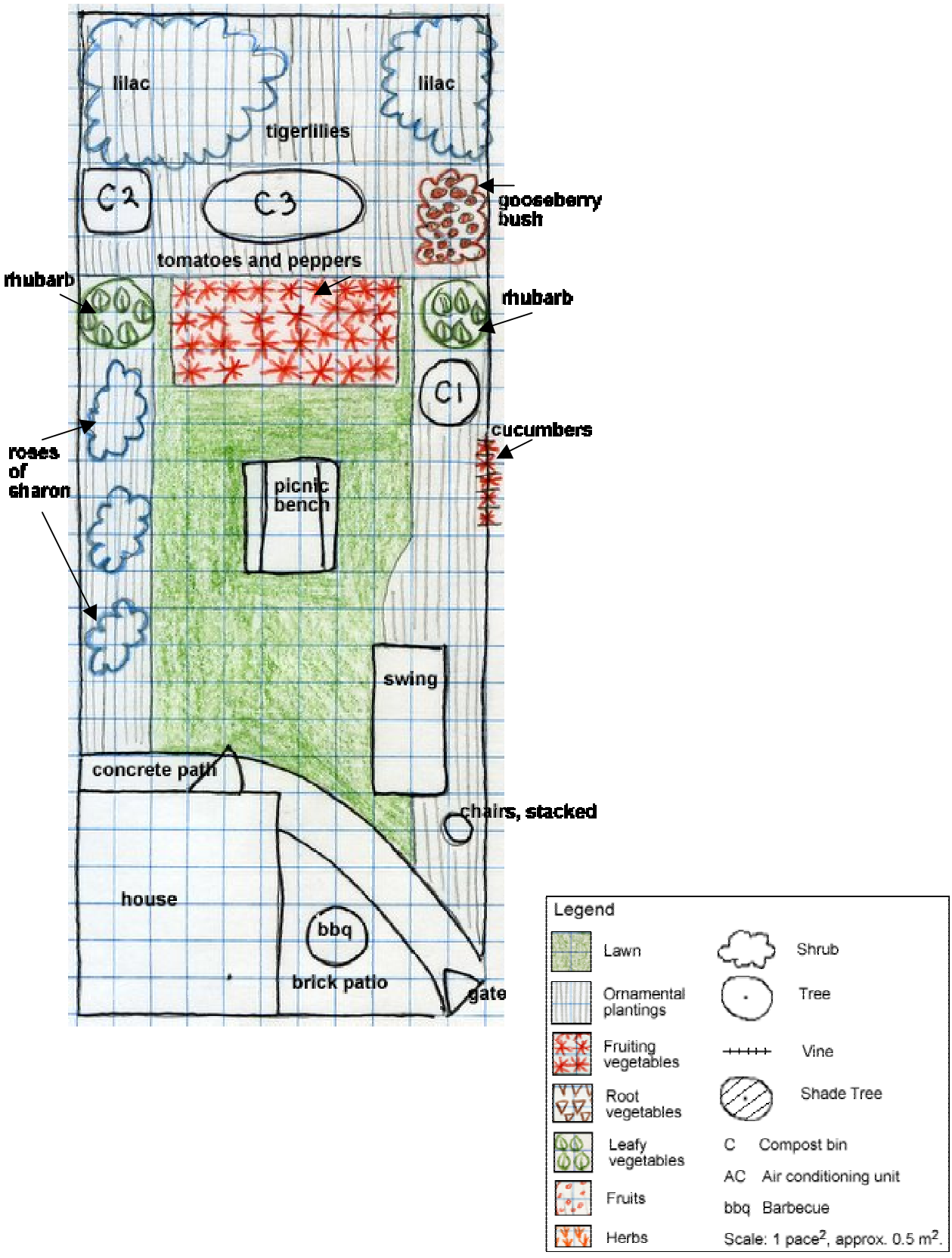
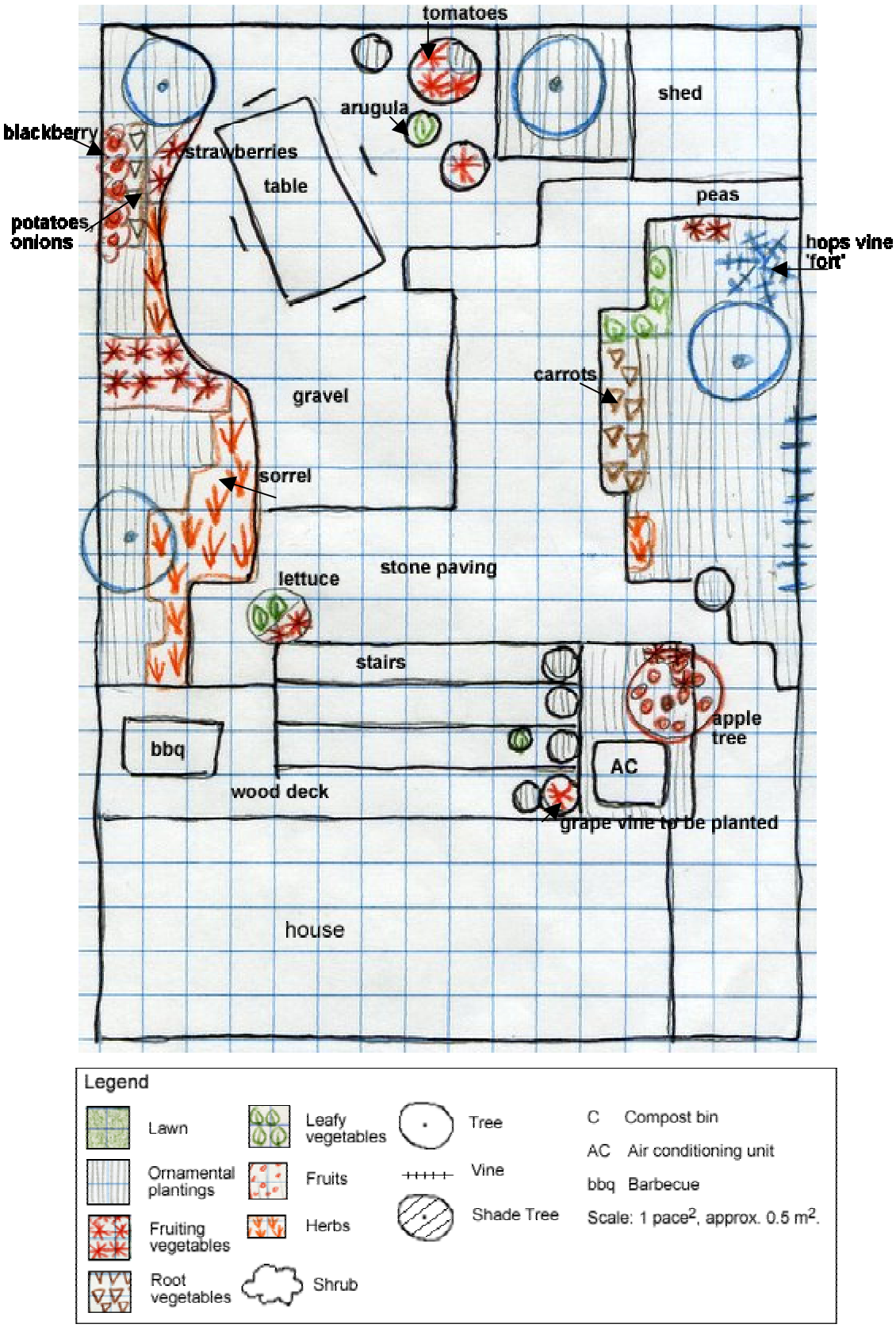


Figure 6: An example of a teaching garden.



events in a child's life. Through experiences and memories of fresh fruits and vegetables, these respondents hoped to encourage a healthy relationship with food in their children. When asked why he grows food, Allan, the father of two, replied:

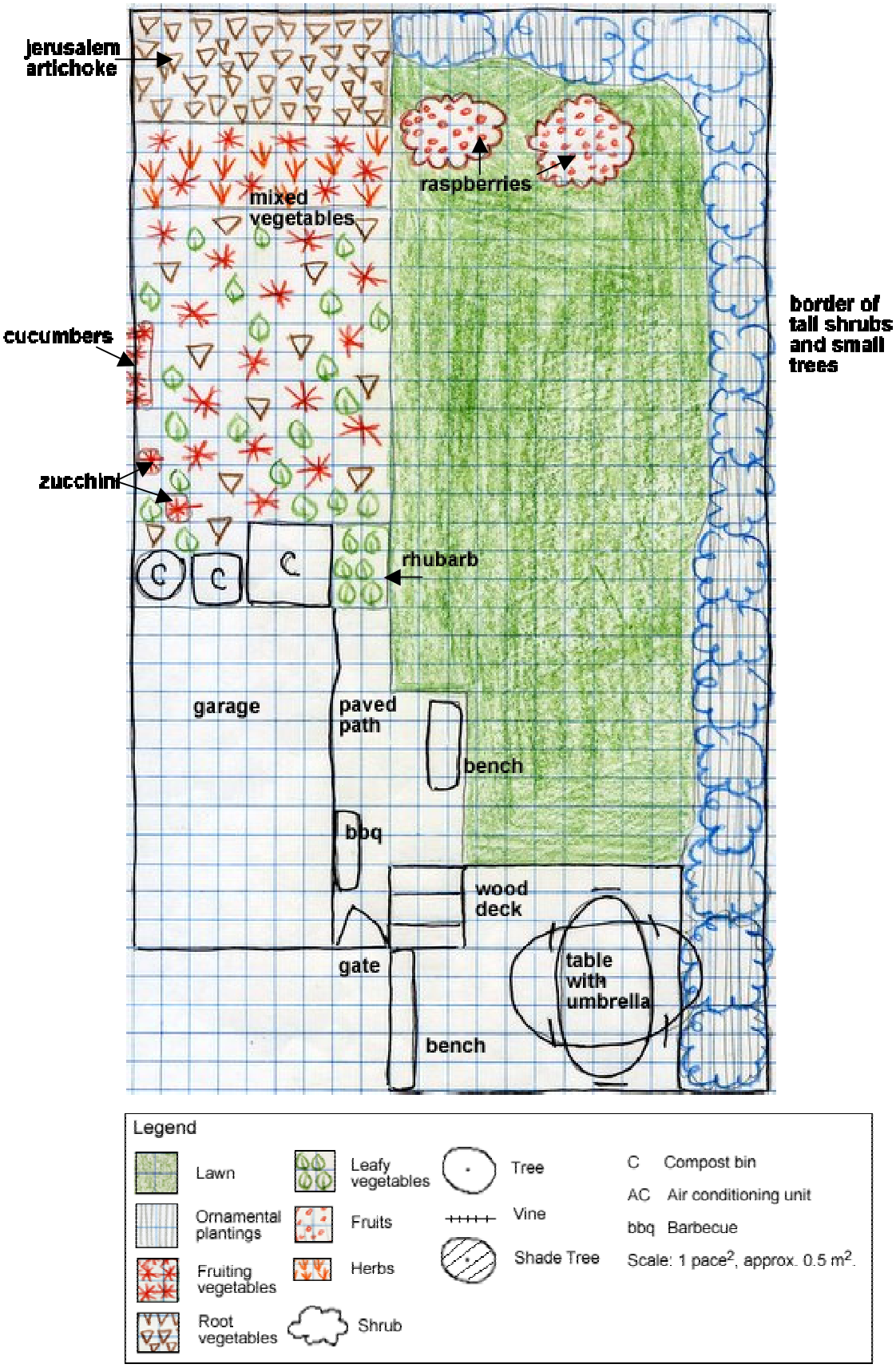
> . . . for me it's to give the kids an interaction with the natural world. It's the same reason we get involved in some sort of urban renewal projects where you plant trees or pick up garbage. It's just a way to say that even in the city there's lots of natural life and there's a whole wild world that you can get involved in . . . (Allan, teaching gardener, Riverdale)

3. The Environmental Garden

The third type of interview respondent included those gardeners who were motivated less by taste and more by the impact their tastes have on the world (see Figure 7 for an example of an environmental garden). Growing often fairly substantial gardens, with varying degrees of expertise, these gardeners grew food to do what they could to reduce their ecological footprint. Food cannot be sourced more locally than in one's own backyard. Gardening is also an opportunity to access organic foods which these gardeners may support in principle but find difficult or expensive to purchase on a regular basis. Since these gardeners were motivated to supply their diet as much as possible from the garden, they were more likely than those classified as cooks to grow root vegetables and other foods which can be stored. All of the environmental type gardeners identified also used water barrels and composters in an effort to increase the sustainability of their gardens. The composting process could at times be a fairly elaborate system, as in the example below (Figure 7). In this garden there are 3 compost bins (identified with a 'c'). The compost is turned and sifted from one bin into the other, and yields, according to Doug, whose Weston-Mt. Dennis garden provides this example, a bounty of twenty bags of usable compost per year. These gardeners feel, as Doug put it, that "land is to use." Patrick, another committed environmentalist, has just recently purchased a home in part so he could garden. When asked why he grows food, he said:

> The main reason for growing food is environmental. I think we all have a duty…all of us who have a bit of land have a duty to try to contribute to reducing the number of trucks spewing carbon dioxide and other pollutants into the atmosphere as they make their way from California to our grocery stores. (Patrick, environmental gardener, Weston-Mt. Dennis).

Figure 7: An example of an environmental garden.



4. The Hobby Garden

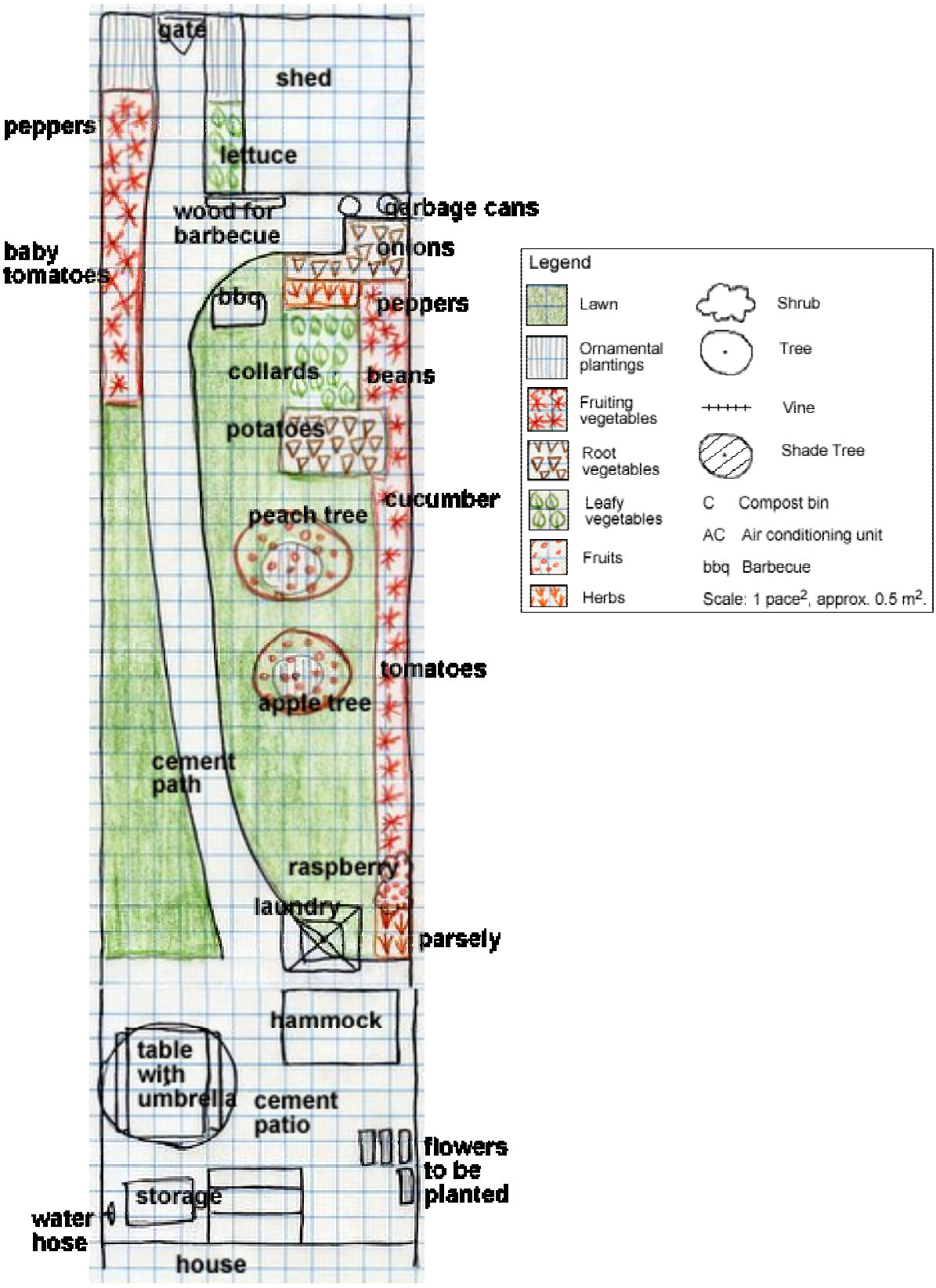
The fourth group of interview respondents identified were those who see their garden as their hobby (see Figure 8 for an example of a hobby garden). These gardeners take pleasure in nurturing and caring for food plants for their own sake. This is something that they enjoy, that they do because it is part of who they are. They actively enjoy the process of planting and caring for the food plants as well as harvesting. Sometimes they enjoy the fruits on the vine so much that they don't even want to pick them. As Mario, a hobby gardener in Riverdale said,

> But the best I like when they grow and make fruits. Sometime I don't even like to pick up. I'm jealous, I like to see." His wife added, "Especially when they start to, to produce the very first, beginning, you know, three, four. They're hanging there eggplant, tomatoes nice red and I'm afraid to go pick up and he says 'no!' (Mario, hobby gardener, Riverdale)

Though their focus is more on the process of growing food and the plants themselves rather than the production of large quantities of food, these gardeners were among the largest producers of food, particularly of vegetables, encountered in the study. They were also the most likely to share food with others, since unlike may other respondents they do not consciously limit what they grow to what the household can consume or what they can manage on limited time. For some enjoying growing food may also be a way to connect to their past and cultural identity. Unlike most of the study respondents, gardeners of this type were all born outside Canada, and each grew up on a farm. For Miguel, who was born in the Azores and now lives in Weston-Mt. Dennis, this is an explicit reason for him to grow food. As he said:

> I only do this for memories. That's the only reason. It doesn't pay the work. Because it's a lot of work. It's like I remember when I was a kid again. Start it, I clean it, if there's going to be grass coming out I pull it, I turn the earth again. I don't know, if you love something, to be there doing it, enjoying doing it. A good hobby. A lot of guys have a hobby to go to the bar and drink. For me, this is my enjoyment. I enjoy being here. You're in your house. It's a beautiful thing. I couldn't say better. I feel nice about it. You know, healthy. It's nice to be home. Sometimes I'm over here looking at my vegetables, and thinking about my past, when I was a kid. It's a good feeling. (Miguel, hobby gardener, Weston-Mt. Dennis)

Figure 8: An example of a hobby garden.



5. The Aesthetic Garden

The final type of gardener identified among the interview respondents encompasses those gardeners who grow food plants, especially herbs and fruit trees, as much for their beauty as for the food (see Figure 9 for an example of an aesthetic garden). For these gardeners, the food is a bonus, rather than the goal of the inclusion of food producing plants in a garden. George is a gardener with an eye for the beauty of trees. His hobby is caring for his bonsai and his beautifully maintained garden (Figure 9). He grows a few fruit trees, but it is not the food that motivates him to do it. As he said of his apricot tree:

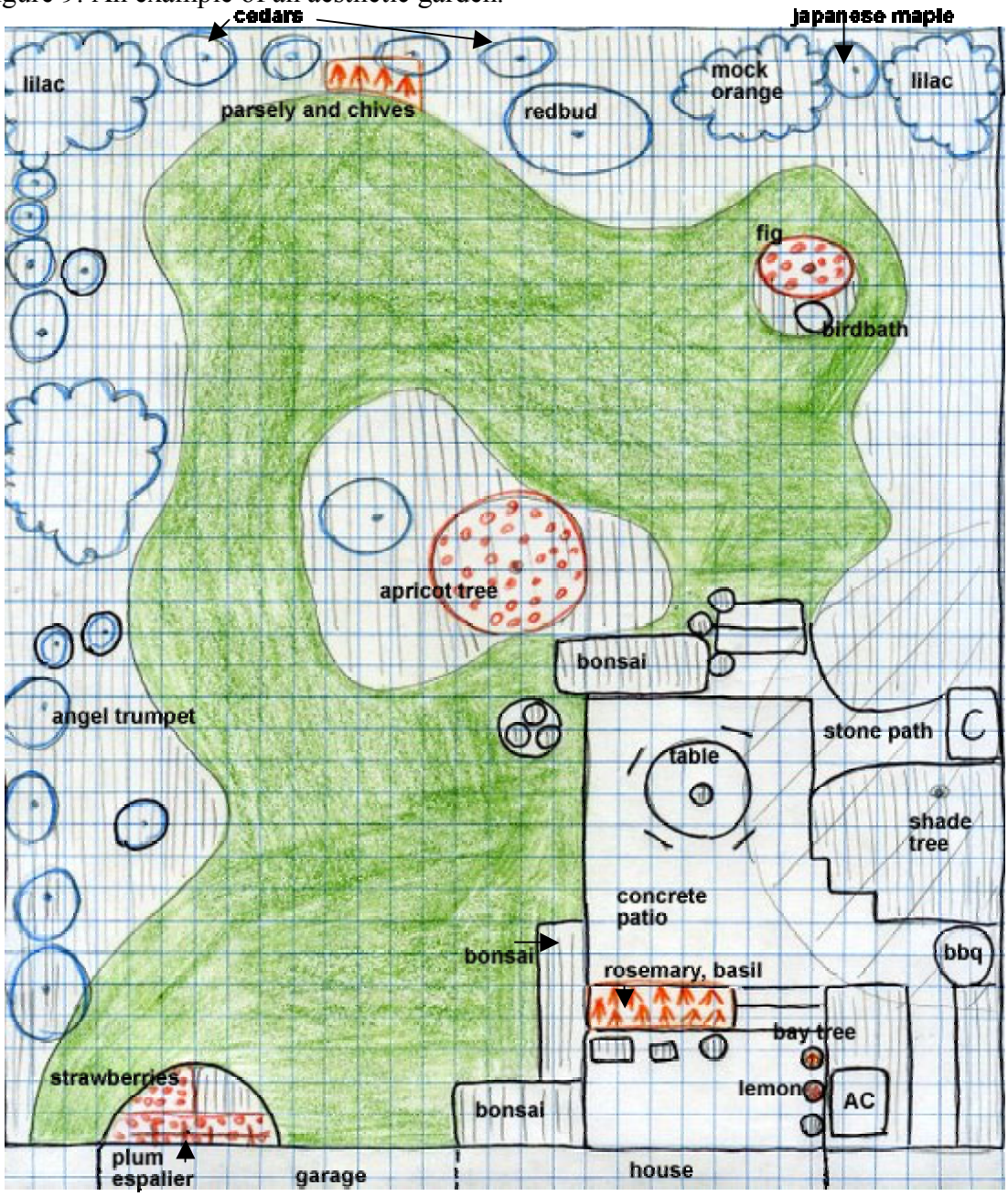
> I grow it because I like to shape it. It's not going to grow very tall. I'm not growing it for the fruit. That's the least on the list. (George, aesthetic gardener, Weston-Mt. Dennis)

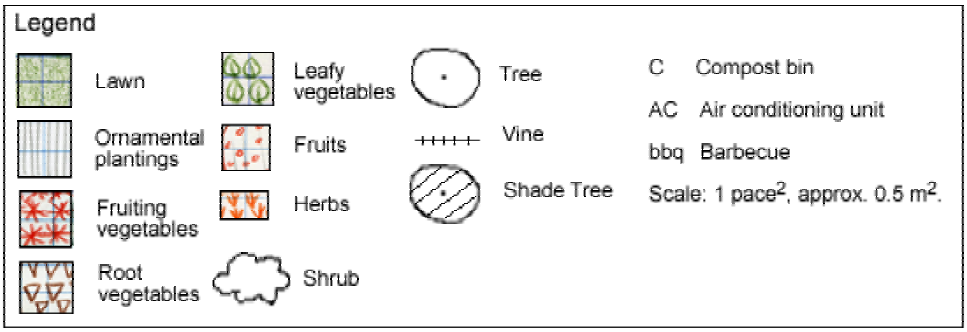
Gardeners in this category used a fairly small percentage, less than 5%, of their garden to grow food, though they may spend substantial amounts of time on the garden as a whole.

Home food gardening and community food security

With a clearer understanding of the diverse home food gardens to be found in the city and their place in the lives of the respondents, we can now turn to the central question of this study: What is the importance of household food production to community food security in Toronto? In order to begin to answer this large and complex question we must first understand what is meant by 'food security'. As was discussed in Chapter 1, food security is not defined only by the absence of hunger. Community food security (CFS) is more than that, encompassing the kinds of food we eat and the way we obtain them. CFS has therefore been defined as a situation in which all community members have access to a safe, nutritious and culturally acceptable diet, achieved sustainably and in a way which maximizes community self-reliance (Levkoe 2006; Hamm and Bellows 2003). Home food gardening in different ways addresses each of the elements of community food security. Drawing primarily on the interviews conducted during the course of the study as well as the rest of the study materials, this analysis will explore the impact of home food gardening on CFS. Beginning with nutrition, each critical component of CFS will be explored in turn, including accessibility, cultural acceptability, community connections, safety and the environment. Finally, the impact of gardening on the respondents' own health and facilitators and barriers to home food growing will be examined.

Figure 9: An example of an aesthetic garden.





Nutrition

Most of the gardeners who participated in the interviews do not grow a sufficient volume of food to sustain themselves and their families. However, approximately one third of the gardeners interviewed did grow a substantial quantity of fresh produce. Growing food in both large and small lots, these gardeners devoted everything from 16 m^2 to a full 121 m^2 of their gardens to food production. At least 14 m^2 of that space in each case was devoted to vegetable beds alone. Some were cooks with practical, farmhouse-style gardens, others grew food with an environmental motivation or as their hobby, but all were self-sufficient in at least some foods through the harvest season:

> It comes now, the end of next month, I don't buy tomatoes maybe for two months . . . We want a salad, we just go to the backyard and pick up what we need. (Miguel, hobby gardener, Weston-Mt. Dennis)

For most, there is considerable satisfaction in eating from the garden. However, most respondents, when asked, said that they would buy the same foods that they grow if they were no longer able to garden. The garden has an impact on their food budgets, but it is nevertheless not a necessity. Almost all of the respondents reported strong food security, saying that they always had enough of the kinds of food they wanted, whether purchased or from their own garden. Only one respondent stated that he and his household sometimes did not have enough to eat. In fact, if they didn't have the garden they would eat substantially fewer vegetables:

> When we have the garden, I'll be honest to you, we eat almost everyday vegetables. But if we don't have, we don't eat everyday. We eat maybe every two days or every other day. (Manny, cook gardener, Weston-Mt. Dennis)

Despite the fact that almost all of the respondents stated that they would buy the same foods if they were not able to garden, a substantial number also said that having the garden changes the way they eat. In part this was because, as many participants emphasized, foods available for purchase, while similar, cannot replace the foods they grow themselves in terms of freshness, flavour, and accessibility.

> . . . you can buy organic, but it's nice to have stuff that you just take out of the ground and cook right away, and you know it's fresh, and hasn't had pesticides on it, and you know the environment it's been raised in. And it's just, the freshest, you smell it when you're walking through the garden, and then you just take it up, and you take it

> inside, and you wash it off and put it in the food. I don't know - it just seems better that way. (Darryl, cook gardener, Weston-Mt. Dennis)

However, it was clear that for some participants their garden has in fact increased their consumption of fresh produce. This can occur through an increase in vegetable consumption due to garden availability. Having convenient, fresh, unusual varieties of organic produce available makes it easier to eat vegetables and fruits more often. A number of the interview participants described going out to the garden and just eating tomatoes or beans straight out of the garden, as a snack and a treat. For example the six year old daughter of Ken and Colleen, cook-type gardeners in Riverdale, will eat cherry tomatoes straight out of the garden. She "pops them like candy" as Ken says. Similarly, having the food in the garden is a convenience which can quickly increase the frequency that fresh salads appear on the table, as Miguel described:

> If I buy one piece of lettuce, maybe it's enough for me two or three times. But from now on everyday we have some. It does change the way you eat. There's always fresh, you take it, you bring it to the sink with the water, you wash it, and you have fresh salad every day. It does change things, yes it does. (Miguel, hobby gardener, Weston-Mt. Dennis)

Growing food and the interaction with the earth that it fosters can not only make fresh foods more accessible but also change people's overall approach to food. Growing food encourages an increasing awareness of the passing seasons. The first leaves of spring are highly anticipated, as are the fruits of summer and the long awaited fall winter squashes. As a result, even when purchasing food, fresh produce, rather than processed pre-prepared meals, becomes more attractive. Participants said that their experience gardening made them more likely to choose produce in season and in some cases, organically grown. Angela maintains a small patch of garden in space taken from the disused unpaved laneway behind her Riverdale home. She also grows herbs in the beautifully landscaped back garden. When asked whether her relationship to food had changed through her growing it over time, she said:

> I think so. I think I look at it differently. I'm more particular about . . . So, okay, the organic thing. Initially not buying organic because it was simply too expensive. I also worked in a health food store . . . and felt that people who were fanatical about their diet were not healthy people . . . I'm not one of those people who is fanatical about eating in season either but I'm feeling a bit more like that, like I'm crazy for strawberries and asparagus right now. (Angela, cook gardener, Riverdale)

Several respondents shopped at farmer's markets and therefore chose to grow less for themselves. A number also buy at the height of the harvest season every year and preserve foods. In this way even a small food garden can be an inspiration and a grounding point for a different pattern of eating. Whether the produce they eat is home grown or purchased, the study participants did as a whole consume larger quantities of fruits and vegetables than the average Canadian. More than half of the participants consumed fruits and vegetables more than five times per day, which is more than the average Canadian according to data gathered for the Canadian Community Health Survey in 2005 (Statistics Canada 2005c).

The teaching garden, outlined above, follows from this idea that a garden can be a path to healthy eating. Kelly is the mother of three young children and maintains a diverse back garden which includes small quantities of a number of food crops, as well as a fort made of hops vines for her oldest son. The sprinkler is in the shape of a monster head, which the children can set up themselves. When asked what impact the garden has on her health she said:

> . . . digging in the dirt is inherently valuable for people and I think that's the primary benefit, truly. I think it also causes us all, as a family, even the kids to some extent, to think about what they eat. (Kelly, teaching gardener, Riverdale)

That early experience with gardening seems to be important in later choices to grow food. All of the respondents had family who gardened when they were growing up, and in all but one case their families grew food. As one gardener said,

> I think it's important if you grow up with it, it becomes natural. Kinda hard to like playing in dirt if you didn't play with dirt when you were little. (Genevieve, environmental gardener, Riverdale)

When asked what sparked their interest in gardening, a number of the participants spoke about growing up watching fruit or vegetables develop, and picking the food themselves. Apples, carrots, and peas were all mentioned more than once, for the magical beauty of the fruit ripening perhaps, and for the interaction of pulling up the carrots and cracking open the pea pods. Michael recently moved from a condo to a house in Riverdale with his wife Mia. They have been in the house less than a year but already they have established a large cook's garden in the backyard. He grew up on a farm and is

looking forward to a large harvest from the garden now that he has the space to grow more food. When asked what his favourite vegetable to grow as a child was he named carrots: "I just liked pulling them out, washing them, and eating them right there." Another respondent, Derek, grew up in the city but his father nevertheless maintained a large garden. He also had fond memories of eating straight from the garden:

> We grew up with the whole place alive with edible food. I remember as a child waiting for the plums to get just under-ripe, because I don't like them when they're soft. And then just go out and eat as much as you can, eat as much as you can because they have a very short period, like bananas when they're just right. (Derek, cook gardener, Weston-Mt. Dennis)

Accessibility

Accessibility can encompass proximity and convenience as well as economic factors. As noted above, healthier eating is facilitated by having interesting, flavourful foods immediately available and always fresh. Greens, herbs and especially tender vegetables such as tomatoes were among the most widely grown foods perhaps for this reason, particularly in the cook's type gardens described above. Busy lives mean that it is difficult to find the time to shop, and purchased produce sometimes rots in the fridge. As one Riverdale gardener said when asked if he shops at the local farmer's market:

> I don't. That's the problem. We would love to go shopping daily. And with Chinatown being this close, we could probably do it. But the nature of our jobs . . . two weeks will go by and you haven't gone out of the house yet. (Greg, cook gardener, Riverdale)

Also, while financial need may not be an issue for the majority of the gardeners interviewed, not having to pay for particular foods makes them a more regular feature of diets. This is especially true of tender greens which spoil quickly. Meredith lives in a beautiful home in Riverdale with her husband, who is an architect. Finances are not an issue and nevertheless the garden adds some variety and dark greens to their diet that they might not otherwise purchase.

> I think I'm too cheap to buy the herbs and I like having it, you know, just as much as I need . . . And then I play with it a little bit too. I won't go grocery shopping and buy five different herbs, because I won't use them, but here, you know, I'll throw a little bit into something, or you know, something else. So it's good that way. (Meredith, aesthetic gardener, Riverdale)

However, as was mentioned briefly above, some respondents did not find it easier or more convenient to grow much food, and have reduced the amount of food they grow since other options, such as neighbourhood farmer's markets, are available. Susan, a retired gardener with a large flower filled garden in Weston-Mt. Dennis, only grows a small amount of food in proportion to the remainder of her garden. She used to grow more, but the farmer's market makes it unnecessary.

> I go to the farmer's market every early Saturday morning, and you can pick up whatever you like . . . Oh, it's lovely, having the market right there. I love it when the Ontario farmers come in. Right now there's a lot of US produce there, but ah. I love going there every Saturday. That's basically really when I started cutting back on what I was growing, when that market started. And that was years, and years, and years ago, over 30 years now they've been doing that. (Susan, cook gardener, Weston-Mt. Dennis)

Both Riverdale and Weston-Mt Dennis have thriving farmer's markets. Riverdale's farmer's market is on a weekday afternoon and evening and is not convenient for everyone. However the neighbourhood has, in addition, a major grocery store as well as large numbers of small grocers including a number selling specialty Asian produce. Weston-Mt Dennis has a more accessible farmer's market, since it takes place Saturday morning as opposed to Riverdale's Tuesday afternoon schedule. There are also at least two major grocery stores in the neighbourhood. There are fewer small greengrocers and so the availability of specialty produce may be limited, but both neighbourhoods are certainly amply supplied with fresh produce for those without physical mobility limitations. These results may not be reflective of neighbourhoods where fresh produce availability is more limited.

Nevertheless, many respondents continued to emphasize that truly fresh foods were inaccessible to them. Several also emphasized the expense associated with organic produce, which caused even those with above average incomes to be reluctant to purchase substantial amounts of organic produce. A number also raised doubts as to the validity of health claims associated with organic produce, and only truly trusted the produce they themselves grew.

> I don't go to the store and buy organic. I'm just now beginning to believe that yeah maybe it really is organic, I just thought well, it's just really expensive food. (Angela, cook gardener, Riverdale)

Culturally appropriate foods

Community food security encompasses not only access to nutritious food, but also food which is culturally appropriate. Food and memory, for many of us, are inextricably linked. People strive to replicate the tastes of their childhood, particularly in times of celebration (Kalčik 1984). To do so is to create a bridge between the past and the present and to honour and celebrate one's heritage. Such foods are an integral ingredient, binding families and communities together (Kimber 2004). In many places, even in a city as multi-cultural as Toronto, it can be difficult to access the authentic taste of home. The ability to grow foods unique to one's individual heritage has been highlighted as a central contribution of food gardening to community food security in community garden studies such as FoodShare's Seeds of Our City project (Baker 2002).

However, the desire to access and grow culturally appropriate foods unique to the gardeners' heritage was not a significant factor for most of the interview participants in the current study. While many grew foods they felt would be difficult to access elsewhere, this was generally because gardening gave them access to fresher and more unique varieties of foods that are otherwise commonly available, such as fresh heirloom tomatoes. Most of the gardeners interviewed grew plants that are special to them, and many recall the flavours of childhood in, for example, steamed swiss chard or a baby carrot. A few the gardeners who participated in the study did grow less available foods that are associated with their heritage, such as collards, figs and okra as well as culturally specific varieties of beans and pumpkins. A number also grew herbs commonly available only in dry form, such as savory, marjoram, and chamomile, as well as fruits for jams and jellies such as gooseberries, currants, and crabapples. However, the ability to access these foods did not act as a primary motivation to grow food, and these foods made up only a small portion of any one participant's garden.

A few of the gardeners interviewed did recognize and cherish specific foods they grew as a connection to their family and community. Exotics like fig and lemon trees require considerable effort to maintain in Toronto's climate, but some consider it worthwhile. George is a long time Weston-Mt Dennis resident who grew up in Toronto but whose family background is Italian. When asked what his favourite plant is, he names his fig tree, saying "it reminds me of my dad, because he gave me the cutting." Another

gardener cherishes the heritage pear tree which was planted on his property by an elderly neighbour when she was a child:

> The main reason that it was even more precious, other than that we enjoy the shade is that our neighbour Dorothy, at #18, planted it when she was a girl . . . she told us that she planted this in their summer garden when she was a girl, a little girl and she passed away about three years ago . . . they're unlike anything I've ever tasted. (Derek, cook gardener, Weston-Mt. Dennis)

The flavours are unique, but more important is the way that they embody the connection of the past to the present. The interview participants' gardens and the foods they grew were an important part of their identity, whether as cooks, as gardeners, as environmentalists, as part of a particular family, community or culture, or all of the above. Few of the participants grew what might be typically thought of as 'culturally appropriate foods' yet their gardens were a way of maintaining their cultural and personal identity, which may not have been deeply rooted in a particular ethnic tradition. Nevertheless, moral values and philosophies, in terms of a reverence for life and the importance of caring for one's environment, were embodied in the participants' gardens.

> Well, I just think it's a good idea for people to try to grow some food, because you eat all the time. It's only in the last, maybe, 150 years, or 100 years, where most of the population has nothing to do with the food that they eat before it gets into their hands. So I think it's kind of a part of being a living organism. Just the interplay and the cycle of life. It's good to tend to some of your food at least . . . You eat things that were once alive, so that you can live. And then when you die, some other things eat on you. So I think it's good to at least have a little bit of a hand in it. (Darryl, cook gardener, Weston-Mt. Dennis)

Community connections

Home food gardening can impact food security at the individual and household level through improvements in nutrition and the accessibility of fresh and culturally appropriate foods. It can also have a broader community impact. A number of international studies have focussed on this aspect of home food gardening, examining the way that the sharing of food cements relationships within communities (Winklerprins 2002, Ban and Coomes 2004, Thomasson 1994). Food can be a way to connect with others, through reciprocal giving and as a mutual occupation which links neighbours through shared experience. These links with family, friends, and neighbours are what is known as 'social capital', and they can be a crucial support in times of need, when food

security is at risk (Martin et al 2004). Community connections and sharing are also an important way in which the other benefits of gardens in terms of nutrition and accessibility can be felt not only in the household but in the broader community as well.

Most of the interview participants in Riverdale and Weston-Mt. Dennis, particularly the cook, teaching, and aesthetic gardeners, viewed food gardening as something that is done for family or oneself rather than within and impacting on a broader context. More than half of the gardeners interviewed did share food. However, the small amounts of excess foods shared were not generally considered part of the purpose of the garden. Hobby and environmental gardeners, while also largely solitary in the process of gardening, were much more likely to see their gardens as a way in which they could contribute to the lives of others. They were more likely to share food with neighbours and friends. They were also more likely to establish connections with other gardeners from whom they could learn techniques for food growing and exchange the foods they grow.

Part of the reason why most of the cook, teaching and aesthetic type gardeners did not share food is that they generally did not grow food in large quantities. Only about one third of the respondents maintained substantial plots of food, or from about 14 m^2 of vegetable bed to 50 or even a 100 m^2 of vegetables. These figures do not include pathways or storage or any other uses. A few gardeners nevertheless devoted close to 100 m^2 of their small gardens to vegetables by eliminating all but the most necessary uses for their outdoor spaces. Both of the two gardeners who devoted this much space to food included some food in their front gardens, the only gardeners to do so, though each maintained some flowers in front as well. Depending on the quality of the gardener's care for the plants and the site, harvests likely vary. Some gardeners had large fruit trees and so more of their total garden space is used for food, but they ate much less from their gardens and so cannot be considered large scale food gardeners A few cook type gardeners grew large scale quantities of food, as well as most of the hobby and environmental gardeners.

However, most of the gardeners interviewed limited what they grew as much as possible in order to avoid waste. As Anne, a cook type gardener with a small Riverdale garden, said, "I don't grow something I'm not going to use." Harvesting large volumes of food promptly takes attention and dedication. Keeping ahead of the harvest and avoiding

any mess or waste of food is important enough to many gardeners that they deliberately grew less than they might have otherwise. This was particularly true of the owners of fruit trees, and especially those who inherited them from a previous owner of the property. Fruit trees are the most likely source of overabundance which could be shared, but they are often cut down because of the mess they create if the fruit is not promptly harvested. Animals attracted to the fruit can be a nuisance, as can insects.

Vincent, who has lived in his Weston-Mt. Dennis home for 16 years, grows three potted tomato plants in his garden. The remainder of his large yard is devoted to lawn and two small storage sheds. This spring he purchased a tomato plant for the first time in many years. His daughters have "never seen tomato plants grow or anything so this year I decided to grow one for them." However, before his daughters were born, when he moved into the property, it was what he refers to as 'the plantation'. The previous owner had planted several fruit trees, and there was a four foot bed surrounding the lawn filled with vegetables. Even a system of irrigation hoses was in place. He kept the garden for four or five years, but gradually cut it down and converted it to grass until there was nothing left.

> I was excited at the beginning . . . but there was more wasted than what I could handle. So that's why I cut down, I cut down and by that time I had nothing left . . . it was just too much for us to handle, so most of it went to waste. Trying to keep track of the lettuce. The animals got at it before we even used to get at it. (Vincent, teaching gardener, Weston-Mt. Dennis)

Derek is a cook type gardener with a lush, extensive garden full of vines, shrubs, and ornamental trees. He has a flourishing Concord grape vine growing over an arbour in his back garden. The grapes are edible, and not bad tasting, but every year he takes the trouble to remove all the bunches of grapes he can reach before they ripen in order to avoid the mess when they fall. Of all the respondents only Greg, an enthusiastic cook type gardener who is in the midst of expanding his food garden this year, felt comfortable with waste.

> There's something about that - you don't feel bad about just putting it, returning it to the earth, letting it go around again. And that will be great here too. Whatever I don't eat, or doesn't work out, just turn the soil back into the soil. It's not expensive to do it. It's inexpensive, it's just your time. (Greg, cook gardener, Riverdale)

However, this perspective was not shared by others. Most felt that to waste food due to neglect or lack of time was depressing, and to be avoided if at all possible:

> . . . in the height of summer when everything's ripening when you go away and you come back and it's all rotted it's a bit heartbreaking. Even when we went away for five days last year we lost a whole bunch of tomatoes, I remember [her husband Eric] being really upset. (Genevieve, environmental gardener, Riverdale)

Instead of allowing this to happen, the gardeners interviewed tended to rein themselves in and limit the amount of food they produce, leaving less to be shared with others. Sharing of food outside the household with neighbours, family, coworkers or, much less commonly, through formal programs, was generally fairly minimal and not necessarily part of the purpose of the garden. Most of the produce grown by the gardeners interviewed is consumed at home by the gardeners themselves, other household members, and guests. There is little waste. When there is excess produce, it is generally given away.

> Sometimes if you get too much and you can't eat it, sure, give it to neighbours or maybe take it to work and give it to some people at work. I'm not going to waste it, you know. (Doug, environmental gardener, Weston-Mt. Dennis)

Most of the gardeners interviewed do not grow more food than they need, expecting that they can and will share it. However, some of the more substantial growers, generally the hobby and environmental gardeners, did share significant amounts of food. For these gardeners, sharing food can act to strengthen important social ties. As Mario, a hobby gardener who grows a large amount of food in his small Riverdale garden, puts it:

> We share things. I love to share things. You know, that's the best way, when you share things with a friend, with the neighbour. You know the neighbour is better than a brother? I'll tell you why. Because the brother, if he's near it's okay, but if he's far away it's not like the neighbour, because the neighbour is more close to you. That's why we say the neighbour is better than brother, because the neighbour is near you. (Mario, hobby gardener, Riverdale)

The gardeners interviewed reported a fairly strong sense of belonging to the community in which they lived, though less than half belonged to any organized groups which required them to participate more than a few times a year. For the majority of the gardeners interviewed, this sense of belonging did not translate into close connections with neighbours. Few knew any other gardeners nearby. Even for those interview

respondents who did make an effort to make connections within the community, sharing food tended to be a one way exchange. However, this was not universal. For example, Eric and Genevieve, environmental gardeners in Riverdale, strengthen their relationship with several different neighbours through exchanges of food and talk about the garden. Neighbours up the street grow squash but no tomatoes, and they have promised an exchange. Other neighbours enjoy strawberries from the prolific patch at the back of Eric and Genevieve's garden in June. And their next door neighbour, who has lived in the same house for many years, has shared stories of the past history of the garden which Eric and Genevieve have only recently made their own.

Similarly, Derek, who has a large pear tree in his Weston-Mt. Dennis garden, has a number of neighbours who will ask every year when the fruit is ready, so they can make preserves. This type of exchange is perhaps less common now that the demographics of both neighbourhoods are changing quickly and residents see less common ground between themselves and their neighbours. Anne, a retired gardener in Riverdale who has lived in her current home for many years, said when asked about reciprocal exchange with neighbours:

> Not really. This is a sort of a changing neighbourhood and most of the people who are here now are younger professionals who don't garden or who have somebody come in and "set them up" - you can see the ones that have been set up. (Anne, cook gardener, Riverdale)

Rachel, who moved to her home in Weston-Mt.Dennis fairly recently, said:

> Most of my friends are - live out of the city. Far away. No, that's not true. I have one really good friend here, who I do give stuff to. And so she will receive it, but really nobody else, because we're pretty quiet and stick to ourselves, right, so that's about it. Otherwise, I think obviously, I mean you plant a bunch of tomatoes what always happens at the end of the year is you have all these tomatoes and they're all ripe at the same time and oh my goodness, what do you do with them. So you give them away, right? So I think if there were people around, I probably would give more away. (Rachel, cook gardener, Weston-Mt. Dennis)

The gardeners interviewed generally did not know that there are programs and organizations which will accept donations of fresh foods. Most of the interview respondents were limited to personal contacts if they wished to avoid wasting food. Darryl, a Weston-Mt. Dennis resident and one of the few participants under 30, cultivates

a small amount of food in his lawn-dominated garden. When asked about the formal sharing of food he said:

> I mean, if I knew about those programs, then I'd actually make the effort to make sure everything grew. Part of the reason I don't put in extra effort is because I know we aren't going to use everything . . . So yeah, if I can find somewhere to give them…because when we have extra clothes or anything, I always keep them in the trunk of my car until I drive by a Salvation Army or something and take it out. (Darryl, cook gardener, Weston-Mt. Dennis)

Other participants felt that they would consider planting more if they could donate the produce easily, for example if it was picked up or if there was a donation point in the neighbourhood. Several respondents also said that they would be interested in fruit tree gleaning initiatives, though most thought that their trees would not yield sufficient or high enough quality fruit to make such an exercise worthwhile.

Safety and control

Another important aspect of community food security is the accessibility of safe foods. A common concern among the gardeners interviewed related to their lack of knowledge about what goes into the foods they purchase at their local store. They valued the food they grow and continued to take the time to care for it at least in part because it allows them to control some of what goes into their diet. This is particularly true of cook-type gardeners. It was important to them to know what goes into the food they eat.

> If you want to eat well, I suppose, if you want to trust someone, trust yourself. You know that you've never sprayed it, and you watered it, and you use the right kinds of soil. (Greg, cook gardener, Riverdale)

Several parents raised this as a particular concern. According to Rachel, who has two young sons, having control over her food is the main reason she maintains a garden. This is important to her, and so she cares for the garden despite the fact that she has significant health issues and is unable to work outside the home. As she said:

> It's a matter of control. I can control what goes into the ground. I can control what I feed the plants. I can control when they're harvested so they're ripening. I can control, and to some extent I can even control the size. If I don't put Miracle Grow or some kind of growth product on it then I'm not getting these humongous whatevers. And I don't know what stores or producers have done. They've enhanced them, they've genetically altered them, they've put pesticides on them, they've done all kinds of stuff and, it's sat on a truck for however long, and I don't know what

> they've, I really don't know what they've done with them. So that's why I would rather do my own and see what I get. Because I can say my kids are eating something that doesn't have chemicals in them. And I think that's one of my biggest things is the chemicals. I have one son who's premature, he's very premature and I don't care what anybody says, they can't tell me that all the chemicals that we've got in this world are good for him. So I know I can control what's going on with at least the chemicals that he's ingesting, to a certain point. (Rachel, cook gardener, Weston-Mt. Dennis)

Even the few interview respondents who did use some pesticides in their garden did not use them on their food crops, and the majority of the participants used only organic methods on their gardens.

While growing their own organic produce may give the gardeners interviewed a greater sense of safety in terms of their food supply, many also had some concerns about growing food in an urban environment. Some mentioned specific issues, such as the diesel trains running through Weston-Mt. Dennis and the potential expansion of the service, or the potential contamination of their garden soil by previous owners. However, for the most part concerns were more amorphous. Several gardeners described the uncertainty they feel when they see dust gradually being deposited on their plants. They wonder what is in it, and how concerned they should be. The gardeners interviewed here chose to discount or ignore this as a concern and continue to grow food: "if we can breathe it we can eat it" (Derek, cook gardener, Weston-Mt. Dennis). Angela, who grows mainly lettuce in her small back garden patch, said:

> I don't worry about the chemicals, I think truly you have to take in some of the dirt in the place where you live. So the air here is polluted, this is where I live. (Angela, cook gardener, Riverdale)

However, such concerns may be a significant barrier to food production for other urban residents.

The environment

As was detailed above, for a number of the gardeners interviewed, environmental ethics were their central motivation to grow food in their home garden. This type of food gardener values personal action, believes in the importance of eating locally, and therefore feels that it is their duty to use the land they own to grow food. Teaching

gardeners also placed a strong emphasis on gardening as a way to become more in tune with nature and therefore more aware of environmental issues in a general sense. Most of the gardeners interviewed do make an effort to follow organic practices. Very few used pesticides, and none used them on the food they grow. Despite the Toronto green bin program, which allows for curbside pickup of organic wastes, almost half of the gardeners make and use at least some homemade compost. Indeed, several gardeners, including both cook and environmental type gardeners, devoted the space and effort to establish multiple bin, productive composting systems and did not purchase any other amendments. All of the environmental type gardeners composted, but two (both with newer gardens, having recently moved) purchased amendments as well as creating their own.

While there are definite environmental benefits to eating locally and decreasing pesticide use, there are some potentially negative consequences to growing food in the city as well which could impact on its overall environmental sustainability. First among these is water usage. While the interview respondents may be minimizing their use of chemical fertilizers and pesticides, frequency of water usage was fairly high among the gardeners interviewed. More than half of the gardeners interviewed watered three times or more per week. However, several mentioned during the interviews that they do try to conserve water and vary their watering depending on the weather, and most do not water everyday. But even those who try to conserve, water fairly frequently. For example, when asked about her watering schedule, Anne said:

> I follow the weather, obviously, and if it's needed, about every three days. But generally, if there's rain then I'll hold off. You know, three or four times a week. (Anne, cook gardener, Riverdale)

Several of the respondents used a barrel to collect rainwater for the garden, including all of the environmental type gardeners. A number of others have disconnected their downspouts and directed the overflow towards the garden. It seems that lack of clarity about the water barrels and how they can be used may be a factor in limiting the number of gardeners who use them. Derek owns a water barrel but does not use it since he was not sure how to install it:

> I haven't figured that out. My intents were good, but I really haven't figured it, gotten it set up properly. (Derek, cook gardener, Weston-Mt. Dennis)

Some gardeners may also, like Michael and Mia, not have installed a water barrel thinking the open water will encourage mosquitoes. The water barrels the city provides are covered, with a filter over the downspout entry point and a tap at the base to which a hose can be connected (Paes 2007). As a result, mosquitoes should not be a problem. However, lack of publicity about the specifics of the service may be barring some gardeners from participating. Certainly, the majority of the gardeners continued to use the municipal water system for most of their watering needs, and in general did water fairly frequently, using what is likely a considerable quantity of water.

The second urban environmental issue with the potential to conflict with home food growing is that of the urban forest canopy. As any gardener knows, shade trees and tomato harvests simply do not occupy the same small spaces. Even Eric, a committed environmentalist gardener who considers himself a supporter of the urban forest as a general rule, admitted that as a vegetable gardener:

> . . . you learn to hate big trees . . . See, I don't want shade, I want to grow vegetables. Vegetables require full sun, the more the better. (Eric, environmental gardener, Riverdale)

Typically the respondents' gardens had little or no shade. In no case was more than half of an interview respondent's garden shaded by trees. The urban tree canopy makes an important contribution to reducing air pollution and urban heat island impacts on the city. Nevertheless, few dedicated food growers are likely to plant a shade tree, and some will cut existing trees down, as appeared to have occurred in at least two of the respondent's gardens. While no measurements were taken of non-food growing yards, it is likely that the presence of shade trees is a significant limiting factor to food growing in city lots, where one large tree can shade the majority of the available growing space. Indeed, in the door to door screening of neighbourhood residents, one of the most common reasons volunteered by residents for why they did not grow food was shade. However, not every urban resident wants to grow food, and space can be found for both activities. And indeed while most interview respondents did not plant trees in their own yards, a few did, or cherished the ones already there. As Colleen, who grows a small amount of food in her large Riverdale garden, said when discussing her ability to grow food:

> It's partial [shade]. We do get sun, but you know you can't plant full sun over there. You can in this little area and that's fine for where the tomatoes are, but otherwise we do definitely have a lot of… it's okay, I love that, I love that maple tree. (Colleen, cook gardener, Riverdale)

Beyond community food security

Home food growing affects community food security in a number of different ways. However, one of the most important aspects from the perspective of the interview participants is not, strictly speaking, an element of community food security. Rather, it is the impact of gardening in general and food gardening in particular on the gardeners' own health and well being. The majority of the respondents reported that they were in excellent or very good health, which they attributed at least in part to the garden.

As was discussed earlier, eating fresh organic produce, and potentially eating more fresh produce on the whole, can be one of the benefits of home food gardening. However, in the interviews respondents felt that their gardening activities had other physical benefits as well. Breathing fresh air, being off the couch, and the stretching and bending involved in caring for a garden were all seen as beneficial. Helen, now retired, splits her time between her farmhouse outside the city with its extensive food garden and her home in Riverdale. She approaches both gardens as a cook, though she devotes considerably less of her Riverdale garden to food. When asked how gardening affects her health she said:

> . . . Well my mother, I was amazed, my mother gardened until she was about 83 and then her health began going. But I remember this one day she said, "oh I've just got to weed my beets" and out she goes, and their garden was as big as this backyard. She bent over from the waist, bent like this, and just weeded her beets . . . I never ever saw her exercise, in her life, you know, and she - so yeah, it does, it keeps you much more flexible. And you don't realize it at the time. (Helen, cook gardener, Riverdale)

The specific physical benefits of gardening, particularly for older people, can be significant (Milligan et al 2004: 1782). Gardening can help maintain ease of movement as well as a confidence in the body that can recede when underused (Bhatti 2006: 324). The mental rather than physical contribution of gardening to health was perhaps the more significant of the two from the perspective of the interview participants. Many of the interview participants found simply being in the garden relaxing. As Mario said of working in his intensely planted garden: "See, when you go in the garden, you do

something, you feel happy. And when the people is happy . . . the health is no stress" (Mario, hobby gardener, Riverdale). There was also a strong emphasis in most of the interviews on the satisfaction of nurturing plants. Many of the respondents check on their gardens every day and some spend far more time in them than is needed, doing a little weeding here and there but generally just enjoying seeing the progress of the plants.

> Satisfaction from growing something . . . it's peaceful, you can't be closer to God than walking around that garden with things growing. And for me it was almost - I worked forty years before I retired. Doing the seeds over winter and the gardening, my husband called it my Prozac. (Susan, cook gardener, Weston-Mt. Dennis)

It is relaxing to be absorbed in an activity which engages the mind in a different way from what typically occupies our daily lives. George, who carefully tends his beautifully landscaped garden, said "I feel at ease when I'm in the garden. I feel relaxed, no thoughts on my mind, no worries" (George, aesthetic gardener, Weston-Mt. Dennis). For environmental type gardeners like Patrick, a Federal civil servant, the time they spend in the garden can give meaning to their lives.

> I think that it's good for my mental health to be doing something that I feel is meaningful. Because I don't always feel that I'm contributing very much meaning through my work. Sometimes my work is useful, and sometimes there are long periods when I don't do very much. That's the nature of my job. (Patrick, environmental gardener, Weston-Mt Dennis)

In a similar but less abstract sense, simply caring for plants and watching the plants thrive can bring meaning to life and a sense of personal agency. Miguel is a hobby gardener with a small but productive garden, including two small fruit trees. He says:

> For me, it's just the pleasure. Being there, doing your own thing. You know, even the tomatoes, there's some things you have to take out of the tomatoes that grow beside the leaves. I take them out. So that gives more strength to the plant, it comes a bit stronger, if you don't take the string away from the plant. You see the difference. I just like it. I go there and I look at it. It's…I can't even explain it to you. For me . . . my heart opens up. When you're looking after a plant, it's a beautiful feeling. For me, it just opens my heart. That's about it. It's enjoyable. For me, I love it. I love every minute that I spend here. (Miguel, hobby gardener, Weston-Mt. Dennis)

A strong theme throughout the interviews was the garden as a space apart in some way from the routine of daily life. As Conradson (2005: 341) notes, the attenuation of demands of home and work with a change in setting can make travel therapeutic. While the step out to the garden is not a large distance it can be similar in its effect. Agnes is a

cook type gardener who has lived in the same house in Riverdale since her 20s and is now retired. When asked what is special about her garden she says, "Just the ability to go outside in your own backyard. Nothing, it could look different, it doesn't matter. Just the idea, you've got a backyard." The same values come through in different words from Greg, a successful young father who works from home. For him, his garden is a 'white space' in his daily life:

> It's contrast, I guess, and it's time. Time that you're taking for yourself. It's white space in your day that's so badly lacking in so many other ways. Yeah. It's out of doors, there's a certain sense of community because you're adjacent to your neighbours, and you can see your neighbours. It's taking it. In our busy lives these days there's so little time to do it and you can justify it because you actually feel like you're doing something at the same time, as much as it's a holiday, holiday from other responsibilities. But you can say it's part of your food preparation or it's part of beautifying your backyard or the curb appeal of your property and it's valuable and something you can justify doing. (Greg, cook gardener, Riverdale)

However, it is important to note that gardens are not always a refuge. Rather, it is the relational experience of the garden which impacts an individual's well being. For some, the garden is a site of tension over control of the affairs of the household. For example, when Agnes' husband retired eight years ago he took over the care of the garden she maintained throughout their marriage. While she does still feel a sense of ownership over the garden it is clearly also a cause of tension between them. For others, like Vincent, who dislikes the activity of gardening, caring for a garden can be a time consuming burden. It is the relational interaction in the way individuals experience their gardens that make them 'therapeutic landscapes' which promote health and well being (Gesler 1992, Conradson 2005). Nevertheless, most of the gardeners interviewed here find the time they spend in their gardens calming and rejuvenating.

> We like to sit out there a lot at night and believe it or not, even though we're all close and that, it is so quiet here. It's kinda like our, it's just our haven. (Ken, cook gardener, Riverdale)

Facilitators and Barriers

There are a number of different factors which can facilitate urban home food gardening. There are also various barriers. One of the most important elements for successful home food gardening is having the skills to nurture a productive garden.

Establishing a garden takes considerable effort, and it also takes knowledge. All of the interview participants had experience gardening with their families and most were able to draw on that knowledge to build healthy, productive gardens. Without that knowledge, the process of establishing a garden would no doubt be more challenging and in some cases would-be gardeners may give up in frustration. Others likely never try at all, assuming that it will be too difficult.

With improved gardening skills other issues also become less important. Specifically, the time to care for the garden can be a crucial barrier to food gardening. Time was one of the factors mentioned most often by non food growing neighbourhood residents during the screening process to explain why they did not grow food. However, some interview participants were able to spend very little time on their gardens and still harvest a substantial amount of food. With their knowledge of the garden they were able to focus their efforts more effectively. Others spent similar amounts of time with far less success.

In addition, food growing, or indeed any activity, is facilitated by being approached as a fun, enjoyable activity rather than a chore. This is particularly true for those who see gardening as their hobby and look forward to the time they spend caring for their plants. As one gardener who grows a very substantial amount of food said:

> You know when I used to work, and I used to work hard, my garden was always the same, it never changed. And people say oh, I have no time. No, you don't want to have the time, everybody has time. We don't have enough time to live, but we have lots of time if you want to do something. (Mario, hobby gardener, Riverdale)

One barrier which cannot be overcome easily is that of illness or mobility issues. In several cases during the initial screening process, neighbourhood residents said that they used to grow food and would like to continue. However, they were not able to, since their health would not permit it. In cases such as these, raised beds or small numbers of potted plants can sometimes allow gardeners with reduced mobility to continue to garden. However, such solutions require sufficient motivation and energy as well as the assistance of others.

Another aspect of gardening in the city which can frustrate novices and experienced gardeners alike is the presence of animal pests such as racoons and squirrels. While they are not a problem in all gardens, when they discover a particular plant or garden they can completely destroy the harvest very quickly. For example, ten years ago George planted a

bed of vegetables but "the squirrels just bit into every one" (George, aesthetic gardener, Weston-Mt. Dennis). He still grows herbs but has not tried to grow vegetables in the years since. The wastefulness and mess caused by animals can lead some gardeners to give up entirely on growing food or on particular crops.

While sunshine, as has been discussed earlier, is a crucial element for home food gardening, space, surprisingly, seemed quite a bit less important in enabling food growing among the interview participants. While some space is essential, more garden space does not necessarily lead to more food growing. The gardens documented during the interviews varied widely in size, and some of the largest supported the smallest amounts of food. The determining factor seems to be not so much the space itself as the priorities of the gardener and the rest of the household for the space. For some households it is important to have space for children to play. However, if there is another space which can fill that need, such as a nearby park, then more space will be available for food gardening. Priorities such as storage, for example in the case of one respondent who runs a landscaping business, or outdoor living space for the couple who like to entertain, can also take precedence over the use of space for gardening. Conversely, for a small number of interview participants food growing takes precedence over other uses. As a result, pathways between the beds are the only non-food growing use which still remains.

A final barrier to home food gardening which was mentioned briefly above is concern about the safety of the home garden soil. Air pollution is a concern that many of the interview participants raised, though few considered it a serious barrier to growing food. A more significant concern, particularly for residents of older neighbourhoods, is the presence of lead and other heavy metals in garden soils. While this was not raised by many of the interview participants, it was mentioned by several Riverdale residents during the screening process. As was discussed in Chapter Two, deposits of leaded gasoline and leaded outdoor paint have the potential to be absorbed into food crops. It is also possible to have garden soils tested for lead, and one interview participant did so. Soil can also be grown in planters or lined beds filled with purchased soil mix, though this involves a certain initial cost which may be a barrier for some. It seems likely that the possibility of lead in the soil remains a significant barrier to food growing in older

neighbourhoods. The simple threat of lead contamination is likely to be enough to persuade at least some residents to avoid food gardening completely.

Pilot survey assessment

At the end of the interview, the research participants were each asked to complete a pilot survey. The pilot survey was conducted as a way of accessing quantitative data on food production practices, nutrition, community dynamics, demographics and other factors relevant to security and home food growing. Traditionally, demographic information in qualitative research is accessed through a short list of checklist style questions, rather than a full-fledged survey. Surveys are not usually conducted with qualitative informants simply because the sample size is almost always too small for a statistical analysis of the results. However, in this case a survey was conducted rather than a shorter and simpler demographic checklist. This was done in order to pilot the survey, with the expectation that it may in the future be administered on a larger scale. This will allow for an assessment of home food gardening from a quantitative perspective. The results of the surveys conducted with the interview participants were not intended to provide any statistical analysis, due to the small sample size. Instead, the data collected has been compared with the results of the interviews. Therefore the results of the survey are presented here in the form of an assessment of the survey. This assessment will focus on how well the survey questions were able to access the information uncovered through the interviews, and highlight any gaps or unclear questions. In this way the results of this study will allow the survey to be improved before it is conducted on a larger scale. There were some areas which experience with the survey indicated were in need of improvement. This was particularly evident in the areas of food production, food security, and neighbourhood cohesion, which are explored in detail below. However, some elements of interest in the study, such as information about nutrition and self-rated health, were better gathered through the survey than in the course of the interviews (please see Appendix D for survey questions referenced throughout).

Food production

In terms of the current survey, a number of issues came to light in comparing the results with the interview transcripts. One was the fact that the survey was unable to address issues of volume of production. The volume of food grown varied substantially between the interview participants. Some were virtually self-sufficient in certain types of produce, while for others the impact was very minimal. Currently the survey asks only if the food grown reduces the respondents' spending on fruits and vegetables (Question P9). In order to address the issue of relative significance in terms of sustenance, a question could be added which asks respondents who answer in the affirmative to quantify how many dollars per week they save by eating out of their garden. Another way to quantify this would be to ask what proportion of meals are eaten out of the garden, or how many meals per week include ingredients from the garden. A combination of questions may help to make this necessarily indirect assessment more accurate. This is the most significant gap in the initial food production section. Two minor additional issues concern question P6 (pesticide use) and P12 (produce use percentages). Question P6 (pesticide use) doesn't distinguish between spraying on food and ornamentals and would benefit from greater specificity. Question P12 was long and difficult to follow for several respondents. It might best be reworded to allow gardeners to answer first which types of use were applicable to them and then give a percentage for those uses only.

Food security

A number of the interview respondents had difficulty with both question F1 (food security) and F2 (place to go for food). For question F1 some respondents had difficulty in choosing between 'you and others always had enough of the kinds of food you wanted to eat' and 'you and others had enough to eat, but not always the kinds of food you wanted'. Three of the gardeners interviewed answered that they had enough, but not always the kinds of food they wanted. However, the reasons for this were not necessarily financial. There are many different reasons individuals want things and don't necessarily get them. For example, one gardener stated that he felt he couldn't trust the food available at the grocery store, and so could not always find what he wanted. Another responded:

> Is there a 'more than enough to eat'? . . . seriously, not always what we want to eat. In wintertime, is that what you mean? Things are more expensive in the winter, so we tend not to buy, you know, raspberries . . . But we can afford it. (Michael, cook gardener, Riverdale)

Similarly, most of the gardeners interviewed said that if they did not have enough food to eat they would have a place to go. But several (6 of the 23) did not answer the question or replied that they didn't know. For example, Helen, a retired gardener in Riverdale, stated firmly "I have never ever been in that position." The stigma associated with such questions may be leading to some of the ambiguity in respondents' answers. More detailed or specific questions relating to food security issues may have improved the clarity of this aspect of the survey results.

Neighbourhood and community

The study respondents also had considerable difficulty with the neighbourhood social capital scale questions (F11 – F17). Several refused to answer or took a very long time to reply to some questions. The questions the respondents had the most difficulty with were F12 (generally know one another) and F17 (share the same values). Respondents objected to being asked to characterise their neighbours and community as a whole, about whom they have little certain knowledge, rather than themselves and their own situation. Since these questions are fairly similar in intent to F8 (sense of belonging), there is the option of omitting all eight questions. This would include F18 (adequate access to places to buy food), which is not part of the social capital scale, but is somewhat vague and does not seem to yield much information, with all of the respondents in the current study giving the same reply (agree).

However in considering omitting the social capital questions it is important to note that F8 (sense of belonging) does not map cleanly onto the social capital scale. Respondents rating their sense of belonging as 'very strong' scored as low as 5 (of 7, the strongest level of social capital) on the scale, and those saying they had a 'somewhat weak' sense of belonging scored up to 7, the highest score, though lower scores (of between 4 and 5) were more common for those with a weak sense of belonging. To some degree the two sets of questions do corroborate each other. On both the sense of belonging and social capital questions, Riverdale residents had higher scores, reporting

both a stronger sense of belonging and higher social capital than the Weston-Mt Dennis residents. Given the small scale of the study, however, this is in no way representative of the overall social cohesion of the two neighbourhoods.

Chapter Five: Discussion and Conclusion

Introduction

With the objective of developing an exploratory assessment of the contribution home food gardening makes to community food security in Toronto, semi-structured in-depth interviews were conducted with home food gardeners in two contrasting neighbourhoods. Data was gathered from a number of different sources in order to develop a detailed portrait of the gardeners interviewed and the role the food they grow plays in their lives. Data sources for the research included full transcripts of the interviews as well as maps of the participants' gardens, pilot surveys completed by the participants, and the researcher's field notes. These materials were analysed in accordance with a grounded theory approach (Corbin and Strauss 1990). The approach to analysis taken is described in detail in Chapter Three.

Key findings

The goals of this research were, first, to develop a portrait of home food gardens in Toronto, and second, to assess the qualitative understanding developed in that portrait to explore the contribution residential home gardens make to community food security in Toronto. Through a random screening of 125 households (just over 60 in each neighbourhood) a broad selection of food growing households were recruited to participate in in-depth semi-structured interviews. Over half of the households screened in both neighbourhoods grew some food. More than a third (46) grew fruits and/or vegetables, and 23 of these gardeners were recruited to participate in the in-depth interviews.

A number of the gardeners interviewed grew substantial quantities of food, but most did not do this out of financial necessity. Instead they had a number of different reasons to grow food. There were five basic types of gardener encountered in the interview process. The types were distinguished principally by their motivation for food growing, which shaped both their gardens and the role the gardens played in the gardeners' lives. The five types identified were:

1. Cook's gardens

The most common type of food garden among the respondents interviewed, cultivated in order to assure access to a variety of pesticide-free, fresh and flavourful produce.

2. Teaching gardens

These are generally small scale and diverse food gardens cultivated by parents. They are maintained in order to encourage children to interact with and respect the natural world and to make eating fresh produce exciting and enjoyable for children.

3. Environmental gardens

These are food gardens cultivated to reduce the household's environmental footprint. Organic methods are used and the gardens are fairly substantial in size in order to provide as much as possible for the household's needs.

4. Hobby gardens

These are gardens in which food is cultivated as a hobby, for the pleasure and satisfaction of caring for the plants. Generally these gardens are substantial in size and include a wide variety of crops.

5. Aesthetic gardens

These gardens include a small amount of food which is cultivated as much for the beauty of the food plants as the harvest they produce.

The motivations of the gardeners interviewed and the forms of their gardens were as varied as the gardeners themselves. The five types are not absolute but rather characteristic and descriptive. While there was some overlap, with some cooks also approaching their garden to some extent as a hobby, it was fairly clear which type each garden fit into. The majority of the gardeners were cooks, but several respondents were included in each of the other types.

While each type of garden is distinct from the others, all make a contribution to community food security. Home food gardens impact food security in a number of ways, including dimensions of accessibility, nutrition, safety, cultural acceptability and environmental sustainability, at the level of the individual, household, and neighbourhood. The most significant impacts of home food gardening on food security found were in its ability to enhance the accessibility and nutritional value of the diets of the gardeners interviewed. However, the sustainability and safety of diets were also

increased through home food growing, and were found to be important reasons why a number of the gardeners interviewed chose to maintain a garden.

Home food gardening had an impact on diet by providing convenient access to fresh and flavourful vegetables and fruits. As a result, participants were more likely to eat nutritious foods. The process of everyday engagement with the food garden changed the gardeners' approach to food, such that the respondents were more likely to seek out fresh produce in season. It also enabled gardeners to provide pesticide-free or organic produce for their families, which many would not have purchased otherwise. All of the gardeners interviewed emphasized that they do not use pesticides on the food they grow. Having control and personal knowledge of the circumstances in which their food grows was important to many of the gardeners.

All of the gardeners interviewed had a family history of gardening, and many grew foods in their gardens which had meaning for them in terms of their identity as individuals and their personal and community history. For the most part, however, the foods that they grew were not ones which are unavailable elsewhere. Access to foods which are specific to the gardener's heritage was not a primary motivation for any of the gardeners, though other studies have highlighted this as a motivation for food growing (Baker 2002, Kalčik 1984, Kimber 2004).

Also, while many of the gardeners shared gifts of small amounts of food with friends and family, this was again not a primary motivation for food growing for the majority of gardeners, unlike what has been found in studies elsewhere (Christie 2004, Ban and Coomes 2004, Winklerprins 2002, Thomasson 1994). This may be partly due to the small amount of food many gardeners grow and also the changing demographics of both neighbourhoods. Nevertheless, many gardeners felt a strong aversion to wasting food, and so would go out of their way to be sure everything was used even if it was only a small amount.

However, for gardeners who felt a strong ethical or personal motivation to garden, such as the environmental and hobby type gardeners, sharing of food with neighbours and friends was more common. Through gifts from their garden and sharing their experience of it they strengthened their connections with others in their community.

Few gardeners shared food formally, through organizations or programs. Most did not know such programs existed and those who did were uncertain how and where to participate. A number of the gardeners stated that they would consider growing more food if they were able to share it with those in need. Gardeners with fruit trees also expressed an interest in contributing a portion of the harvest from their trees through gleaning programs. Such a program may result in more fruit trees being cared for in the city, since the mess from fallen fruit and the animals and insects the fruit can attract is frustrating for gardeners and may cause them to remove the trees. However, the yields from such a project are uncertain. Some of the gardeners felt that the quantity of usable fruit which could be harvested from their trees would be low due to animal and insect pests. Pilot testing will likely be needed to clarify this issue.

Seeking to provide their food in a more environmentally sustainable manner was a significant motivation for some gardeners. These gardeners tended to follow especially sustainable practices such as composting and using a water barrel to collect rainwater for the garden. However, the remainder of the gardeners interviewed also made an effort to follow sustainable practices. For example, none of the gardeners interviewed used pesticides on their food crops. Still, only about half of the gardeners composted and many used water from the municipal system to water their gardens fairly frequently. While there is room for improvement, it is safe to say that all of the gardeners improved the sustainability and environmental impact of their diet by growing food in their home garden. This was largely due to the elimination of the energy use currently dedicated to growing, packing, and shipping the produce from where it might otherwise have been grown.

Beyond community food security, the gardeners interviewed emphasized the impact that nurturing food plants had on their overall health and well being. Gardening in general, and caring for food plants specifically, contributed to both the gardeners' physical and mental health. Simply being outside, breathing fresh air, and working physically were felt to be positive in many of the gardeners' lives. Another aspect many gardeners emphasized was the satisfaction and sense of personal agency they felt in successfully nurturing their plants to harvest. Most universally, the gardeners saw their

gardens as a place apart which they found to be an important source of relaxation and a way to let go of stress from their daily lives.

In terms of barriers and facilitators to home food growing, security of tenure, absence of shade, and gardening skills were all clearly important factors in enabling home food growing. Other issues, particularly concerns about the safety of backyard food gardening, may also be important. However, this is difficult to determine without contributions from non-food growers.

Discussion

The primary function of the screening process was to recruit residential food growers, rather than to collect generalizable data about food growing. However, that over fifty percent of the gardeners polled in each neighbourhood grew food is intriguing. While backyard food growing is common in developing nations worldwide, cities in North America tend to be seen in a different light (Mougeot 2005). The prototypical modern North American city is a man-made landscape, from its tall skyscrapers and bright lights to the tidy lawns framing the residential streets (Wilson 1992). These numbers tell a different story of the spaces behind the houses.

As part of the screening process, the location where food was grown was identified. Front yard food gardening was very uncommon within the target neighbourhoods, but nevertheless many backyard gardens included food plants. Of the 125 residents who participated in the screening (64 in Riverdale and 61 in Weston-Mt. Dennis), 54 percent grew food. The percentages in each neighbourhood were very similar, with 53 percent in Riverdale and 54 percent in Weston-Mt. Dennis. The number of food gardeners found in this limited sample is higher than the only previous estimate of residential food growing in Toronto. This was an Ipsos-Reid poll commissioned by the Vancouver non-profit City Farmer in 2002, which found that forty percent of households in the Greater Toronto Area (GTA) grew some food (City Farmer 2002a). However, the two are difficult to compare, since the Ipsos-Reed poll (n = 400) included community gardeners as well as home gardeners in more suburban areas of the GTA, where households have far more garden space available. It also included apartment dwellers in the sample. While the results found during the screening conducted as part of the current study were higher, the

screening sample included only those households with access to garden space. An estimate which included high rise apartment dwellers in the sample would likely be lower than the results reported here.

With the inclusion of apartment dwellers, the two figures may be fairly similar. While the figures gathered through the screening are not representative, they likely indicate that there are far more food growers in the city than might be guessed from the prevalence of exclusively ornamental urban front yards. While these figures do not tell us how much food or what kind of food these gardeners are growing, residential food production may play a role in the food security of a large number of households across the city. These results may also indicate a higher level of unmet need in terms of community garden plots than might previously have been estimated. In order to clarify how representative these estimates are, future larger scale research will be needed.

Stereotypically, urban food gardens tend to be linked with particular ethnic traditions and older gardeners. However, this description does not characterise the majority of the gardeners interviewed in this study. Less than half of the gardeners interviewed here were immigrants to Canada, and all have made a home here for many years. The gardeners interviewed range in age from 28 to 71. Most were under 50, in contrast with other North American studies which have found most gardeners to be older individuals (Blair et al 1991, Westmacott 1992). The sample size is small, so the characteristics of this sample cannot be considered reflective of food gardeners as a whole. However, this research does perhaps fill a gap by primarily recounting the experience of younger North American food gardeners.

The primary motivation for food growing for most of the gardeners interviewed here was not subsistence. While urban food growing can be an important way to support community food security in terms of access and nutrition, it does not necessarily lead directly from financial need. Most research on urban agriculture has been conducted in developing countries worldwide, where growing food for subsistence is common (Mougeot 2005). However in wealthier countries many gardeners may be growing food for other reasons. This is highlighted in Australian research exploring food growing in suburban areas over the last century (Gaynor 2006). As was discussed in Chapter Two, according to Gaynor, home food growing is popular among middle class Australians who

grow food in large part because they value the independence that it affords them. Financially it may be beneficial, and that is valued too, but it is not the main motivator (Gaynor 2006). Similarly, a number of the gardeners interviewed here did grow substantial quantities of food, such that they could be self-sufficient in at least some foods for the duration of the harvest season. However, financial necessity was not a key motivator. Rather, the gardeners interviewed grew food in order to access fresher, more diverse, and pesticide free produce. In addition some gardeners grew food as a teaching opportunity for their children, for the pleasure of it, out of environmental concern, or for the beauty of the plants. Not having to pay for the food was a bonus for most, not the primary reason why they grew food.

Nevertheless, several of the gardeners were living on below average incomes, and at least one gardener felt that having the garden made the difference between eating vegetables occasionally and eating them every day. When asked, most of the gardeners interviewed, even those with lower incomes, said that they would purchase what they grow if prevented from growing food. However, several of the lower to middle income respondents appeared to be highly sensitive to the cost of purchased foods. It seems likely that while they may be able to afford the food in an absolute sense, having a garden allows them a greater diversity of fresh and nutritious produce than they may find themselves purchasing otherwise. Toronto is an expensive city to live in, particularly in terms of shelter. Fixed costs can result in households looking for savings in other areas which are more flexible, such as the food budget. This can be true even for those with seemingly adequate incomes (Che and Chen 2001). Large quantities of vegetables and fruits are a key element of Health Canada's food guide recommendations (Health Canada 2007). However, as was discussed in Chapter Two, they can be difficult to access, since they are also some of the most expensive items in the supermarket per unit of caloric value (Drewnowski and Specter 2004). By growing some of their food themselves, gardeners are able to access fresh and high quality produce and avoid having to make unhealthy compromises in order to meet tight budgetary limitations.

More important than economic access to fresh fruits and vegetables for most participants was the access their garden gives them in terms of proximity, convenience and flavour. Having watched the plants develop through the season, the fruits and

vegetables produced are an attractive reward, and are far more likely to be eaten than the same foods purchased and placed in the refrigerator. Participants spoke about eating produce straight from the garden, or planning their meals around the foods they were growing as they became ready to harvest. As a result, gardeners and their families ate more fresh foods, particularly tender vegetables such as greens and tomatoes, than they might have otherwise. Given the health benefits of vegetable and fruit consumption and the low levels prevalent in the average Canadian diet that were discussed in Chapter Two, this is an important benefit of food gardening for all households, regardless of income level.

While many of the gardeners interviewed, particularly the cook type gardeners, grew tender greens and vegetables because they found that it was difficult to access them sufficiently fresh otherwise, this was not true for all participants. As a number of the participants pointed out, in both of the project neighbourhoods fresh foods are highly accessible. Regular farmer's markets, major grocery stores and, in Riverdale, an abundance of small greengrocers mean that both neighbourhoods are amply supplied with fresh produce. As a result, the emphasis on access, while already significant, may have been less prevalent than it would have been if the study had been conducted in different neighbourhoods. The quantities grown may also have been more limited than they would have been otherwise due to the characteristics of the two project neighbourhoods. The ability of home food growing to enhance access to a variety of fresh and reasonably priced produce may be a more significant contributor to community food security in neighbourhoods where fresh produce availability is more limited. As was discussed earlier, some urban areas were it has become difficult for those without a private vehicle to access fresh healthy foods have been termed 'food deserts' in the literature (Eisenhauer 2001). Studies have found that poor diet can be linked to an individual's area of residence independent of their relative purchasing power (Curtis 2004: 144). Further research exploring food growing in such neighbourhoods would be beneficial in order to gain a better understanding of the implications of home food growing for improving access to the fresh produce essential to a healthy diet.

In addition to improved access to fresh foods, through food gardening there was an overall change in the respondents' approach to food. When purchasing fresh produce,

gardeners were more likely to seek out fresh produce in season and in some cases organic produce. Whether they consumed purchased or home grown foods, the gardeners interviewed generally had a better diet in terms of fruit and vegetable consumption than the Statistics Canada average (Statistics Canada 2005c). The study by Blair, Giesecke and Sherman reviewed earlier similarly found higher consumption of vegetables among gardeners (Blair et al 1991). The gardeners interviewed here also ate more pesticide-free and organic produce than they would have otherwise, which likely has health benefits, and not only from the absence of pesticide residues on the food. As was discussed above, there is some evidence that organically grown produce may be nutritionally more valuable, since the soil in which it is grown is more complex (Asami et al 2003, Carbonaro and Mattera 2001).

Access to foods of known provenance was important to many of the gardeners. Among almost all of the gardeners interviewed there was a high level of mistrust of purchased foods, even organically certified foods, in some cases. While the majority of the gardeners used only organic methods, they were also largely unwilling to purchase organically grown produce. A number said that organic foods were too expensive to purchase regularly, and this included several gardeners with above average incomes. A few respondents also voiced distrust of the organic label. In a world where the average food item travels thousands of kilometres from field to table it has become difficult if not impossible to say with certainty what goes into the foods we eat (Halweil 2002:6). Within the modern food system, food products are treated as commodities and travel through complex distribution networks before they reach the supermarket shelf. For the average consumer it is difficult to know what lies at the other end of the commodity chain. Food scares have been associated with not just foods we may typically think of as unhealthy, such as a McDonald's meal or a Twinkie. Fresh spinach and carrot juice, both almost archetypal health foods, have caused deaths in recent years due to improper handling by growers or packers (CFIA 2006a, CFIA 2006b). As a result, having a personal knowledge of where and how the food they eat grows to harvest was highly valued by the gardeners interviewed.

For the participants in this study access to fresh, flavourful, safe and healthy produce is a principal benefit of maintaining a house-lot food garden. The quality of produce is

important to gardeners anywhere. However, according to previous research, an additional element of importance to many gardeners is the access their garden gives them to foods specific to their cultural heritage (Kimber 2004, Kalčik 1984). Gardens and the foods grown there have been found to be important in the maintenance of cultural identities and practices (Kimber 2004). Food gardening can allow immigrants to retain access to heritage foods which can sometimes be difficult to access otherwise. Through these foods individuals and communities can celebrate and maintain their cultural identity (Kalčik 1984).

The importance of access to these culturally appropriate foods is recognized as an essential component of community food security. However, access to these foods specifically does not seem to be the focus of the gardens and gardeners interviewed within the context of the current study. All of the gardeners interviewed do have a history of food gardening in their family background, and many grow foods which remind them of those they tasted as a child. The participants' gardens and the foods they grow are part of their identity as individuals. In their gardens and the plants they grow are embodied their personal history and that of their community. However, for the most part these ties are not represented by foods unavailable elsewhere. The few less available foods that are grown by the gardeners interviewed do not make up a large portion of any of their gardens. Even for the gardeners interviewed who grow these foods, access to them does not appear to be a primary reason why they chose to grow food. This is perhaps surprising, since even here in Toronto FoodShare's community garden study Seeds of Our City found that the ability to grow culturally appropriate foods was a key contribution of community gardens to community food security in Toronto (Baker 2002).

It is possible that those who are more motivated by the need for specific foods tend to have less access to land than the typical home food gardener. For the most part the group of gardeners interviewed was less ethnically diverse and composed of fewer immigrants, and especially recent immigrants, than the demographics of the city as a whole would lead one to expect. However, the small size of the sample makes it impossible to draw any conclusions from this. The reduced importance of growing culturally specific foods within this study may also be due at least in part to the fact that it can take a considerable length of time to establish oneself in a new country. While immigrants and particularly

recent immigrants may have special reasons for wanting to grow food, they may also face greater barriers than others in doing so, being less likely to own their own home and to live in low-rise residential neighbourhoods with access to a garden. Home food gardens may play an important role in community food security, but they in no way replace community gardens which are able to provide land to those without other means of growing food.

Another important element in a number of international studies of home food gardening is the enabling role of home gardens in reciprocity networks (Christie 2004, Ban and Coomes 2004, Winklerprins 2002, Thomasson 1994). Gifts of food create obligation through what Offer (1997) terms 'relations of regard' and strengthen social networks which can then be drawn upon in times of need (Berkman et al 2000). The literature suggests that the social capital established and maintained through home food gardening is an important way in which home gardens can contribute to community food security. Among the gardeners interviewed here, community connections built and maintained through food gardens were less common than might be expected based on the literature. For most of the participants in Riverdale and Weston-Mt. Dennis, food gardening is an individual or household level activity which does not play a large role in their social networks. While many of the gardeners interviewed did give away some of the food they grow, the small amounts of excess foods shared were not considered part of the purpose of the garden by most of the gardeners. This may in part be due to the changing demographics of both neighbourhoods. Real estate in Toronto is in high demand, and many people have moved in and out of these neighbourhoods. Whether long term or newer residents, many homeowners do not expect to have much in common with their neighbours. New neighbours move in and then move on again. After some time it seems that many residents no longer know or seek to get to know their neighbours.

However, there is an exception to this relatively solitary approach to gardening, which may be related to integration into the social fabric of the neighbourhood but also seems linked to the gardener's level of personal investment in their food garden. For some of the gardeners interviewed, the food they grow in their garden has nostalgic and personal value that goes beyond its basic value as good food. The food plants they tend are a connection to something personally significant, whether it is their memories of their

childhood or their environmental convictions. The hobby and environmental gardeners, as well as a few cooks with large gardens, tend to display this quality of personal investment in the food they grow more clearly than the other types of gardeners interviewed. As a result, perhaps, they also tend to grow larger quantities of food. These gardeners often see their gardens not only as a personal effort but also as a way in which they can contribute to and connect with the people around them. They will often share substantial amounts of food with neighbours and friends and may develop connections with other gardeners in the area as well. Further research is needed to determine how prevalent this type of approach to food gardening is among Toronto gardeners and how the connections made and food shared impacts these gardeners and the rest of their social networks.

A final element of community food security which was examined within this study deals with the source of the food consumed in this city. As was discussed in Chapter Two, the global food system which currently supplies the most of Toronto's produce needs is highly unsustainable. While it is rational within the current global economic system, it is dependent on large quantities of fossil fuel energy in order to produce and distribute food at an industrial scale (Halweil 2002). The global distribution of food products not only necessitates environmentally damaging and unsustainable energy inputs but also creates problems of pollution and depletion of nutrients worldwide (Nelson 1996). In a sustainable system, nutrients cycle locally so that the soil which nourishes food plants is then replenished by compost made from food wastes. By distancing the sources of our food from the place they are eaten this nutrient cycle is broken, and both the sites of production and consumption suffer.

Home food growing offers the opportunity to increase the sustainability of the urban food supply by re-localizing a portion of it. The amounts of food grown are generally speaking not very large. Nevertheless, if over fifty percent of households with gardens are growing food, the practice of home food production does have the potential to affect the environmental sustainability of the urban food system. The fresh, tender produce most often grown by home gardeners is fragile. It must be refrigerated and sometimes flown to its final destination. Such produce is therefore environmentally the most costly to transport to the end consumer. The amount of fossil fuel energy spent on the production

and transportation of even small quantities of fresh produce from California is significant particularly when it is considered in terms of the caloric energy embodied in such foods. One calculation estimates that a one pound (454 gram) plastic box of organically grown salad mix costs 57 times more calories of fossil fuel energy to grow, pack, and ship than the caloric energy embodied in the salad itself (Pollan 2006: 167).

By contrast, the energy inputs required for home grown salad are vanishingly small, though they do vary with the practices of the gardener. With no shipping or packaging impacts, four fifths of the energy cost of the food is eliminated. In addition, at the small scale of the backyard garden, no fossil fuel burning machinery is needed. And finally, the gardeners interviewed by and large follow sustainable practices in growing their food. None apply chemical pesticides to the food they grow, and only a few use artificial fertilizers. A large number produced their own compost, which closes the nutrient loop as opposed to purchasing it as a shipped and packed input from a supermarket with a consequent fossil fuel impact.

The gardeners do use fairly large quantities of water, most from the municipal system, which requires energy to process and distribute. However, most of the gardeners interviewed made an effort to conserve water. It is also likely that they would use a similar amount if they were growing flowers or maintaining a green lawn. All in all, the food produced in backyard gardens has the potential to increase the sustainability of the urban food supply, particularly when rain barrels, home made compost and organic practices are used.

Perhaps more significant however in terms of the overall environmental impact of home food gardening is the changed relationship to food which can develop when the distance between the end consumer and the food they eat is eliminated. Urban dwellers may have little to remind them in their daily life of the natural cycles which govern our food supply. Urban lives today are lived in a largely manufactured landscape of concrete and electricity. Food is purchased shrink-wrapped and often pre-prepared. Buying meals in cans and boxes creates a psychological distance between people and the land, energy and water that go into and absorb the food that they purchase. The everyday experience of checking on the progress of the garden offers a way to close that distance. Caring for plants, watching the weather, and creating compost from kitchen scraps are daily

activities which are small and perhaps of little consequence in and of themselves. However, these daily activities can lead to a shift in perception that is essential if our society is to develop a sustainable relationship with our environment. By growing their own food, gardeners are able to close the distance created by the complex commodity chains of the modern industrial food system. At a personal level, as embodied iterative action within a daily routine, food gardening offers a chance to understand our daily lives within the natural cycles of which they are a part.

Home food gardens can promote to different degrees access to safe, healthy, culturally appropriate and sustainable foods at the household level and within community networks. However, a significant aspect of home food gardening which goes beyond community food security measures is its impact on health and well being. The physical and mental benefits are multiple, from simply 'getting off the couch' to the personal agency felt in successfully nurturing dependent plants. Most universally, there was a strong theme in almost all the interviews in which the garden was positioned as a place apart which the gardeners interviewed found to be an important source of relaxation and rejuvenation.

For many of the gardeners interviewed, the daily experience of and interaction with plants is perceived to have a positive health impact. As was discussed in Chapter Four, the majority of the gardeners interviewed considered their health excellent or very good. This result accords with other studies of self reported health among gardeners (Blair et al 1991). However, this may in part be due to a greater ability to garden rather than any impact of gardening itself. The mere presence of green space has been associated with increases in self-reported health in the literature, as well as therapeutic benefits in a number of specific areas (Curtis 2004, Frumkin 2003). This may be due not so much to the character of the spaces as being natural and therefore therapeutic, but rather in a culturally and individually specific response to such spaces. For those who spend their working lives and also much of their leisure time indoors, the change of scene involved in 'stepping out to the garden' offers an attenuation of the demands of daily life. The time spent in the garden is essentially different in character from that of routine daily life, and this was something that a number of the gardeners interviewed felt was beneficial to their health. In addition, as Bhatti and Church (2000) note when speaking about gender

relations in the garden, gardening is very different from most types of housework but it is still 'work'. For some individuals, unpaid work in the home can to a large extent define their leisure. Within such a context, the ability to spend time gardening can be an opportunity to justify a breathing space within the everyday space of the home.

Perhaps in part because so much of modern urban life is lived inside, gardens truly have become a space apart and a meaningful refuge from daily life. Certainly, the health benefits felt in being able to retreat to that 'white space' in their day was very important to the gardeners interviewed here. While gardens can offer a meaningful respite in many circumstances, it is important to note that the garden is not a priori a refuge with a positive impact of health. Rather, a garden becomes a therapeutic landscape through the relational interaction between the gardener and the garden. No gardener will have the same experience and so no garden is intrinsically therapeutic. As Milligan, Gatrell, and Bingley put it, "Our experience of landscape through the senses is inseparable from the social and psychological context of that experience" (2004: 1785). Gardens can be beneficial to health, but this is dependent on many factors, including personal circumstances, individual character, and cultural preferences. To non-gardeners, who may see garden spaces in entirely different ways from the gardeners interviewed here, a garden may be more a source of stress rather than relaxation. Indeed, even among the gardeners interviewed for this research there were gardeners whose relationship with their gardens was less than relaxing.

However, for many people gardening can be a positive experience. As was discussed in Chapter Two, gardens can be especially important to migrants adapting to life in a new place (Head et al 2004). Gardens are liminal spaces, border zones within everyday life. They are neither public nor private, inside or outside. As such, gardens are spaces where individuals can build a relationship with their environment through everyday embodied action. Through gardening, individuals place themselves in relation to their social and physical environment. Through this everyday process of engagement it becomes possible to come to terms with a new place, to 'put down roots' so to speak. While the gardeners interviewed here are not necessarily a representative sample, it is notable that they did not include any recent immigrants. Whether this is a reflection of lack of opportunity or interest is a question which requires further research to answer.

For all would-be gardeners there are certain factors which can help or hinder the establishment and maintenance of a residential food garden. All of the gardeners interviewed shared three key characteristics which likely played a significant role in enabling them to grow food in their home gardens. First, almost all of the interview respondents owned their own home and so had secure tenure over the garden. The exceptions to this were two gardeners who maintained gardens in homes owned by family members. Again, they had security of tenure and the freedom to do what they liked with the garden, including removing lawn and garden perennials, which a landlord might have been less likely to permit.

Second, none of the gardens received more than 50 percent shade cover, and most received much less. This should come as no surprise, since without significant amounts of sunshine, few food crops will flourish. However, it is important to note simply because it is a reminder that many households may have garden space, but do not have the option of growing food. Instead they are nurturing the large shade trees which keep our city cool. The urban forest canopy is a crucial factor in balancing the heat island effect created by a city's heat absorbing streets and buildings (Akbari et al 2001). However, in small urban lots large shade trees and food gardens are an either/or proposition.

Finally, the third common characteristic among the food gardeners interviewed was a family history of food gardening. It is likely that for those without this experience food growing may seem too difficult to attempt. Even if inexperienced gardeners do attempt to grow food, their lack of experience may result in frustration and the garden may be less likely to be maintained over time.

Fear of lead and other environmental contaminants may also be a significant barrier, though this was difficult to assess without the contribution of non-food gardeners. Home soil testing kits for lead are available, but not necessarily reliable, since none are government regulated or approved. Also, home test kits can lead to false alarms, since they measure only the presence rather than the amount of lead in the soil (Muir and Campbell 1995).

In consideration of these barriers to home food growing, it is clear that while home gardens can make an important contribution to community food security, they are only part of the answer. Renters, those living in apartment buildings, and those living in homes

where the garden receives significant shade are not likely to be able to create a residential food garden. Public support for community and allotment gardens is therefore crucial to allow individuals and households without the necessary land access in their gardens to grow their own food if they wish to do so. Unfortunately, community gardens in Toronto often have waiting lists, indicating there is more demand than is currently being met in the city (UGROW 2006).

Food gardening could also be facilitated through programs which support the development of gardening skills. Participation in community gardens is one way gardeners can develop their skills. Gardening skills can be learned informally or through programs run by non-profit organizations, such as the Toronto Green Community's Ecological gardening workshop series (TGC 2007). Also, while all of the interview participants had a family history of food gardening, children can also develop an interest in healthy foods and learn how to care for plants through gardening programs developed with them in mind. For example, Evergreen, a national non-profit organization, supports children's gardening through their Learning Grounds program (Evergreen 2007).

Limitations of this Study

The principal goal of this project was to explore the contribution of house-lot food gardens to community food security in the city of Toronto. There was little previous research available to drawn on. The study was therefore designed in order to capture as much as possible. It would have been premature to formulate a hypothesis to be tested through the research. Therefore, a qualitative grounded theory approach was chosen to allow the research to explore unexpected elements which emerged through the process of data collection and analysis. As a result, a more comprehensive study was possible than if the research design had been fixed before field work commenced. While the research primarily consisted of in-depth interviews, some quantitative elements were incorporated in the study. These elements (the screening, garden analysis and interview participant survey) were included in order to validate and triangulate the interview results and build stronger theory from the data. Piloting the survey with the interview participants also offered the opportunity to test the survey's clarity and effectiveness prior to future larger scale implementation. As such, these elements were valuable parts of the research.

Nevertheless it is important to emphasize that the sample size involved is too small at this stage to be considered representative of all food growers in Toronto, or even those in the pilot neighbourhoods.

As a pilot project involving in-depth interviews, the research was necessarily small in scale. At the small scale of a pilot it was only possible to conduct the research in two target neighbourhoods. The neighbourhoods were chosen to access a wide diversity of respondents at a similar residential density. They were not intended to be representative of the city as a whole. Research conducted in other neighbourhoods may lead to different results. This became clear in the course of the research when examining issues of food access, since both of the study neighbourhoods were exceptionally well supplied with fresh produce.

The sample of individual interview respondents, while randomly selected in order to access a diversity of food growers, also may not be representative of food gardeners in general. Specifically, language barriers may have lead to a less representative sample of interviews. The study materials were not translated into multiple languages due to cost limitations at the small scale of this study and in recognition that less than five percent of the residents in each neighbourhood do not speak one of Canada's official languages. A number of residents in both neighbourhoods did not participate in the screening due to apparent language barriers. While the numbers are not large, this likely influenced the character of the study sample, particularly in Riverdale. As many Riverdale participants pointed out, the non-English speaking Chinese community in Riverdale is small, but they are disproportionately vegetable growers. Unfortunately, all the gardeners identified by neighbours as growing substantial quantities of Asian vegetables spoke little or no English, and since the study materials were not translated for Chinese gardeners, it was not possible for them to participate.

Certainly, there was less of a focus on growing culturally specific foods among the gardeners interviewed than might have been expected from the literature. This can perhaps be attributed to the composition of the interview sample, due to language barriers or other factors. Only 7 of the 23 gardeners interviewed were born outside Canada, which is a much lower proportion than the average for the city as a whole and also lower than that of either of the two neighbourhoods (Figure 2). In 2001, 49 percent of Toronto

residents were immigrants (Figure 2). None of the gardeners interviewed are recent immigrants (which the city defines as having arrived in Canada less than five years ago). Most have lived in Canada for more than ten years. Similarly, in terms of the overall ethnic diversity of the sample, the majority of the participants were of Northern European descent. In addition there were a few participants with a Southern European background, particularly Italian. A small number of other respondents reported Asian ancestry, and one was of Caribbean descent. In Weston-Mt. Dennis there were also two Latin American gardeners, including one non-English speaker. With the help of a Spanish speaking research assistant it was possible to include Carlos in the interviews, who came to Canada from Ecuador several years ago and now maintains a small hobby garden in the backyard of his Weston-Mt. Dennis home. The diversity within the interview respondents as a group was fairly limited compared to that within the general population. However, this is not a representative sample regardless, given the small sample size. Further research will be needed to capture the full diversity of food growing practices within the city.

The small scale also limited the breadth of the research in that it was not possible to interview non-food growers to allow for comparison of results. Without further research involving a comparative sample it is difficult to assess some aspects of the results, particularly the facilitators and barriers to food growing.

A final limitation which was unavoidable at the scale of a pilot was the lack of a direct measure of the productivity of food gardens maintained by the interview participants. Indirectly, productivity was assessed through mapping of the area of garden devoted to food crops. The participants were also asked for an assessment of the contribution of their garden to their diet. Further research could expand on this with a direct measure of productivity, perhaps by asking gardeners to weigh the foods they harvest over a season. However, this is time consuming and places a heavy burden on research participants which must be balanced against the benefits of the research.

Future research directions

As a pilot, exploratory project there are many directions in which this research can be taken in the future. First, a larger scale implementation of the survey piloted here would

be valuable in order to conduct a quantitative assessment of food growing in the city. Answers from a diversity of respondents and a sufficient sample size would allow the prevalence of home food growing across the city to be determined. The survey would also allow for an assessment as to the degree to which the results of the current study are reflective of a larger whole. Conducting the survey among all residents of the city, not just those in low rise housing, would also be beneficial to assess the prevalence and importance of food growing on apartment balconies.

While the survey implementation is the first necessary direction to take, it would also be beneficial to conduct further interviews. These could be conducted in other neighbourhoods in order to reach different communities and a greater diversity of respondents. Non-food growers could also be included in order to assess how they use and view their garden space and to add a comparative element to the research. Specific groups of gardeners could also be targeted, for example those who do not speak English or French. In Riverdale, interviews could be conducted in Chinese. In other areas, Italian, Spanish, Greek or Vietnamese may be important. Members of gardening clubs and other committed gardeners could also be targeted for interviews, as could gardeners who participate in programs like the Plant A Row, Grow A Row initiative.

Specific improvements to questions included in the current survey are included in the results chapter. However, there are additional questions which could be added to extend the current research and the usefulness of the survey. Specifically, questions could be added relating to:

1. Access to outdoor space
2. Desire to grow food among non-food growers
3. Barriers to food growing
4. Productivity of food gardens (e.g. proportion of meals eaten from the garden, or number of meals which include ingredients from the garden)
5. Preserving food (which would again contribute to an understanding of the importance of food gardens in terms of sustenance)

More generally, there are a number of overall themes which have emerged through the current research and could be valuable to pursue, either through the survey, further interviews, or both. First would be an exploration of housing tenure, gardening and

health. This could include an investigation of the degree and quality of access tenants in urban areas have to outdoor space. For many of the interview participants, gardens represented a haven to which they attributed positive health benefits. Is this something that is inaccessible to renters? Whether and to what degree tenure status affects the ability to grow food in a residential garden could be specifically explored, along with the barriers to food gardening by tenants. Perhaps limited food gardening in pots is possible but not planting trees or removing lawn to grow more substantial quantities of food. Barriers to be investigated could include concerns about landlords, other tenants, or perhaps a reluctance to invest in land to which they have no permanent claim.

A second similar theme to be explored relates to new Canadians and their access to land for gardening and specifically food growing. No recent immigrants were encountered in the course of this study. However, other research, as has been discussed above, suggests that gardening can be a way for migrants to adjust to life in a new country. Developing a relationship with a particular space can allow individuals to come to terms with a new place. Food gardening is also a way to carry with them some of the traditions and familiar flavours from their past. Therefore it would be worthwhile to investigate whether there is much demand for land for gardening among recent immigrants and whether tenure is a significant barrier to access. The degree to which new Canadians are able to access land through community gardens could be explored along with ways in which this access may this be facilitated.

Another theme which emerges through this research as an avenue to be explored is the question of environmental contaminants and perceptions of pollution and their impact on food growing in the city. From the results of the current study it is difficult to know to what extent concern regarding environmental contaminants is a barrier to food growing in the city. The interview participants in the current study grow food and therefore are unsurprisingly not seriously concerned about such issues. However, informal conversations over the course of the screening, particularly in Riverdale, made it clear that at least some residents were not growing food because of concerns about environmental contaminants and pollution. There are some legitimate concerns about lead in soils surrounding older homes, as discussed in chapter two. Further research could explore to what degree this is or should be a barrier to food growing in the city. It could

also explore how such information is disseminated and popular understandings of the urban environment.

Finally, another important theme that would benefit from being explored in more depth is the environmental impact of home food gardens. As was discussed in chapter two, urban food production is seen by many as a way to relocalize nutrient cycles, reducing the environmental impacts of an unsustainable globalized food system in terms of waste, pollution, and degradation of land. While home food production can certainly have a large impact on sustainability in terms of energy consumption in the food system, the benefits in terms of nutrient cycling are less clear. Composting can be an important way to maintain local cycling of nutrients and wastes. Gardeners play a part in this but composting was by no means universal among the participants. In part this was likely due to usage of the city organic waste collection program. However, most participants did not use the city compost created from the wastes collected, preferring to purchase nutrients in the form of bagged composted manure, topsoil, or chemical fertilizers, despite the fact that the city compost is available free of charge. The quality of the city compost may be hampering a return of the nutrients collected to the local soils, but this is unclear from the current study. Further exploration of urban gardeners' composting practices and other use that is made of the city compost is needed to gain a better understanding of the routes taken by nutrients within the city.

Lessons for governmental and non-profit organizations

As has been shown through this research, home food gardening can make an important contribution to community food security. There are a number of ways organizations seeking to support community food security from within government or the non-profit sector can act to support urban food gardeners and thereby help to sustain a successful multi-faceted community food security strategy.

It is important to remember, first, that while this research has focussed largely on home food gardens, these are not accessible to everyone. They have the advantage of convenience, such that far more people are likely to use them than will seek out a community garden. Nevertheless, for various reasons, including unsuitable conditions, lack of secure tenure, and lack of access to garden space of any kind, community gardens

play an important role in ensuring that every individual and household can access garden space. Both community gardens and home gardens are needed, and worth supporting. Each is an element in the urban fabric that fulfills needs for relaxation and enjoyment as well as improving diet. The significance to many people of this access to outdoor space, private or within a community garden, is an important lesson for planners, in particular, to remember as urban spaces are increasingly filled with high rise condominium developments which make little allowance for these needs. More support for community and allotment gardens is needed. Currently, community gardens often have waiting lists, and in areas where the land is valuable and could be developed for housing, their security of tenure can be threatened (UGROW 2006). Community gardens need to be taken seriously as important uses of urban land, such that the establishment of new gardens is facilitated and established gardens are supported as important community amenities. There is also a need to enhance the accessibility of the gardens to ensure that those who wish to grow food are able to find and join the gardens in their neighbourhood. This is an area where the city could do more. Currently the city's website offers very little in terms of detailed information on the various community and allotment gardens, and no list of the gardens across the city is available for anyone to access. Access is by word of mouth or through Foodlink, a volunteer hotline managed by FoodShare, which maintains an informal list of contacts for community gardens across the city (Biberstein 2007). Despite these hurdles, there are waiting lists, which clearly indicate an unmet demand.

One area that this research has examined closely is the formal sharing of garden produce through community agencies and programs such as Plant a Row Grow a Row. Through such programs, food waste is reduced, and those most in need are able to access fresh and healthy foods. However, most of the gardeners interviewed did not realize it was possible to share fresh produce this way. The majority of the gardeners did not grow food in sufficient quantities to share food formally, in any case, but a number did evince an interest in growing more food if it could be easily donated where needed. Most of the gardeners interviewed dislike waste and will not grow food unless they know it can be used. Therefore more and better communication is needed in order to ensure that gardeners are aware of opportunities to share fresh foods, and where and how to go about it.

Fruit trees may offer the best opportunity for gleaning surplus produce. Gardeners are often overwhelmed by the mess created by the sudden abundance of fruit produced by the trees and the animals attracted to the fruit. The large quantities available at one time and the difficulty gardeners sometimes have harvesting larger trees also make tree fruit a good candidate for formal food sharing programs. However, the timing of the harvest would need to be very prompt. Another issue raised by the gardeners interviewed was the varying quality of the fruit. Many of the participants with fruit trees felt that the fruit produced by their trees was of too low a quality, too quickly consumed by animals, birds, or insects, or insufficiently abundant to yield a worthwhile harvest. Some participants suggested netting, pruning, and/or spraying the trees in the spring to increase the harvestable yields. Given the size of the study, it cannot be assumed that these fruit tree growers are typical, therefore it is unclear how large a harvest may be obtainable from such backyard fruit trees. Pilot testing of any such programs is recommended to clarify if such measures are necessary or desirable.

Another issue that has come to light is the lack of understanding and clarity about safety issues attached to growing foods in back gardens. Better communication of this information, particularly in terms of resources for testing and remedial action that can be taken, may allow more gardeners to grow food more safely.

Not only in terms of contaminants but also in other areas there is a need for more support for gardeners and food gardening in the city. For example, a lack of gardening skills is a significant barrier to food gardening, as discussed above. Therefore it would be beneficial to enable gardeners to develop their skills. This could occur through programs or events that informally connect gardeners, such as the Seedy Saturday event organized by FoodShare in Toronto (FoodShare 2007). Children's gardening programs are also an important way gardening skills can be transmitted which would benefit from greater support, particularly within the public school system. These programs, whether for adults or children, would be especially beneficial if they included instruction on elements of ecological gardening. Simple measures, such as the use of mulch, compost, and rain gauges can have a significant impact. The study participants interviewed were well-meaning, but many did not necessarily have access to simple but important information which would have helped them create far lower impact gardens. For example, such a

program could teach water conservation skills. The City of Toronto does in fact offer a program which helps households conserve water, called the WaterSaver Visit (Paes 2007). A professional visits the home of participating households, free of charge, and advises them on plant selection, lawn maintenance and other issues relating to water conservation in the garden (Paes 2007). However, the program is fairly small and little publicized and it is doubtful that any of the participants had heard of it. Most of the participants watered several times a week, and few had installed water barrels. This lack of adoption of water conservation measures is likely due in part to lack of knowledge. Some interview participants had water barrels but didn't use them. Others were concerned that they might encourage mosquitoes and hadn't installed one as a result, not realizing that the city provided barrels are covered to prevent this being as issue (Paes 2007). Knowledge gaps such as these make it clear that educational programs such as the City's own WaterSaver Visit program are essential if the sustainability benefits of urban home gardens are to be maintained and enhanced.

Conclusion

The objective of this study was to develop a qualitative portrait of home food gardeners in Toronto and assess the contribution of home food gardening practices to community food security in the city. The work that has been done here is exploratory, and can only provide a preliminary understanding of the role residential food production plays in North American urban food systems.

Within the study sample, it is clear that home food gardeners are participating in home food production for a variety of reasons. While few are financially insecure, growing food nevertheless impacts their level of food security and that of their community. Growing food contributes to food security at all income levels by encouraging and enabling gardeners to eat more fruits and vegetables than they might otherwise. It also creates an opportunity for some to share food and strengthen social connections. Gardening can promote a sense of health and well-being, and did so for most of the gardeners interviewed. Home food growing also increases food security by increasing the sustainability of household food sourcing. This is especially true when

gardeners make an effort to use environmentally friendly practices in their garden, which most of those interviewed did.

Home food gardening is not accessible to everyone. Only 65 percent of Toronto households have a lawn or garden (Statistics Canada 2007: 55). However, this includes far more potential land for food production than is likely to be accessible to community gardeners in the near future. Residential food gardens are an important and often overlooked component of urban food systems. Home food gardeners would benefit from support, particularly in terms of developing ecological gardening skills. However, community gardens are also essential to ensure that all households are able to have a garden if they so choose, in order to bolster their food security and their overall health. More resources need to be allocated to providing community garden space and learning opportunities to all gardeners. In this way, the sustainability and accessibility of food gardening in the city might be increased.

Residential food gardening has the potential to shift both perceptions and practices in our relationship with food and the urban environment. Food gardening is immediate and personal, forcing us to deal not only with what and how much we eat but also where it comes from and what it means to us. In its ability to address not only issues of nutrition and access but also sustainability, health and well-being, home food growing is a powerful way to confront issues of urban food security. It is hoped that this study will benefit both academic research and community development by providing a better understanding of the relationship between urban home food growing and food security as well as what barriers may be present. With this knowledge programs and policies to support house-lot food producers can be developed and improved. More research is needed to build on the exploratory understanding developed through this study of residential food production in the city and its contribution to community food security. With the pilot survey assessed here it is hoped that further research can determine the prevalence of residential food growing in the city and explore issues raised by this study in more depth.

Appendix A: Screening questions

1. Do you, or does anyone in your household grow food, that is vegetables, fruit, berries, nuts, or herbs in your yard, on your balcony or in a community garden?
    1. Yes
    2. No *(conclude screening)*

2. What kinds of foods do you grow? (Choose all that apply)
    1. Vegetables
    2. Fruit
    3. Nuts
    4. Herbs *(conclude screening if neither 1 nor 2 is chosen)*.

3. Where do you grow this food? (Choose all that apply):
    1. In your front yard?
    2. Back or side yard?
    3. In containers outside in your yard?
    4. In containers outside on a balcony, porch or rooftop?
    5. In containers inside?
    6. In a community garden? *(If only response, conclude screening)*.

[Respondents who grew vegetables or fruit in their home gardens were then given more detailed information about the study and asked to participate.]

Sources: Question 1: (City Farmer 2002a).
No source was used for questions 2 and 3.

Appendix B: Information letter and consent form
[Printed on departmental letterhead]

Edible Backyards Pilot Project
A study of residential land use for food production in Toronto

INFORMATION FOR POTENTIAL PARTICIPANTS
May 2007

Do you grow food (vegetables or fruit) in your garden?

To the adult primarily in charge of the garden for your home:

Researchers from the University of Toronto are working on a pilot study to learn more about home gardens and growing food in Toronto. If you grow food in your garden, we would like to talk to you about your experience with gardening in the city. We want to learn more about your garden and why growing food at home is important to you.

Please think about allowing a person from our project to visit your garden and talk with you (the adult primarily in charge of the garden) about growing food in the city. She will ask questions like:

- How did you start gardening?
- How much time do you spend working on your garden?
- What types of foods do you grow?
- Why do you garden?
- What difference does gardening make to your health?
- Does gardening change the way you eat?
- Who eats the food you grow?
- Do you have any concerns about gardening in the city?

The interview will last at most two hours, and can be scheduled at whatever time is best for you. The interview will be tape recorded, so we have a good record of what you tell us. As part of the interview we will also ask you to fill out a questionnaire so we can learn a little bit more about you and your gardening practices, health and nutrition, and some details about what it is like to live and garden in your neighbourhood. We would also like to sketch and photograph your garden.

All information collected during the study will stay **confidential**. This means that your name will NOT be used in any published study, though the name of your neighbourhood may be. Only the two researchers will be able to see anything that you say that can be traced to you. All original information, including any notes or tape recordings, will be destroyed when we finish studying the

information. Information included in reports or publications coming from this work will be carefully looked at to make sure people who take part in the study can not be identified.

If you decide that you want to take part in the study, please ask us questions or tell us about things you are worried about. You can leave the study at any time if you want. In other words, if you change your mind, we can cancel the interview, even if you already said yes. You can also ask to be taken out of the study even after the interview is over. During the interview, you don't have to answer a question if you don't want to.

If you do take part, you will be asked to go over any written reports that have information that you gave us, to make sure that we have understood what you said correctly, and to make sure that no one who reads the information will be able to trace it back to you. You can say no if you do not want to do this or do not have the time to do this. You can also ask for a copy of the full report if you would like.

You might not benefit directly by taking part in this study, but you will help us find out new things, which might help us understand more about home food gardening in the city. This information could also be used in developing gardening programs and in advocacy. In addition, as a small thank you for taking the time to help us learn more about gardening in Toronto, we will give you a $20 supermarket gift certificate.

Thank you for your time. If you have questions, or if you would like to make plans for an interview, please call:

Robin Kortright, Master's Candidate,
Department of Geography, University of Toronto
tel: 416-835-2832, email: robin.kortright@utoronto.ca, or

Sarah Wakefield, Assistant Professor,
Department of Geography, University of Toronto
tel: 416-978-3653, email: sarah.wakefield@utoronto.ca.

Sincerely,

Robin Kortright
Master's Candidate,
Department of Geography
University of Toronto

If you have any questions about your rights as a participant in this study, please contact the University of Toronto Ethics Review Office at ethics.review@utoronto.ca or 416-946-3273.

[Printed on departmental letterhead]

Edible Backyards Pilot Project
A study of residential land use for food production in Toronto
CONSENT FORM

I, _____, agree to take part in this study of Toronto home food gardens. I understand that I will be asked to show my garden to a researcher from the university and answer questions about my health, nutrition, and gardening practices. I understand that my garden will be sketched and photographed. I understand that I may be asked questions like:

- How did you start gardening?
- How much time do you spend working on your garden?
- What types of foods do you grow?
- Why do you garden?
- What difference does gardening make to your health?
- Does gardening change the way you eat?
- Who eats the food you grow?
- Do you have any concerns about gardening in the city?

I understand that the interview will take two hours or less. I understand that the interview will be tape-recorded. I understand that I do not have to be interviewed. I understand that I do not have to answer any questions that I don't want to answer, and that I can leave the study any time I want.

I understand that my name will not be used in any report or presentation from this study, although the name of my neighbourhood may be. I understand that only the two researchers and a professional transcriber will see the information collected. I understand that the findings of the study will be given to me so that I can review them if I want to, and that if I want to I can have a copy of the final report. I understand that I will not benefit directly from the study, except by the gift of a $20 supermarket gift certificate.

I understand what this study involves and agree to participate. I have been given a copy of this consent form.

_____
Signature

_____
Date

If you have any questions or concerns about this study, please contact Robin Kortright (phone: 416-835-2832; email: robin.kortright@utoronto.ca). If you have questions about your rights as a research subject, please contact the Ethics Review Office at 416-946-3273 or email: ethics.review@utoronto.ca.

Appendix C: Gardener interview guiding questions

Topics	Questions	Probes
Garden/Gardener Introduction and History	Do you remember when you first started gardening? What gave you the idea to grow food?	How long ago? Where? Initial contact? Who did you learn from? What about now?
	How has the garden changed over time?	
	What are you proudest of in your garden?	Favourite thing to grow? Why?
	Who does most of the garden work?	Who helps? Tasks?
	How much time do you spend working in the garden?	
	What kinds of fruits, vegetables and herbs do you grow? (or will plant this year)	Use? Example of how you prepare foods from your garden?
Why?	Why do you garden?	Most important product/benefit?
	Why do you grow food?	Main reason? Favourite part? Why not buy food at a store? How is your food different?
	Does gardening change the way you eat?	In what way? (Volume, substitutions, nutrition)
	What impact does gardening have on your health?	Mental, physical health
Sharing of produce	Who eats the food you grow?	
	Do you store/preserve any of the harvest?	How? With whom?
	Is any food wasted because you can't store/preserve/share it in time?	What foods? How much? Why?
	Do you share any of the food you grow with family and friends?	Who? When was the last time? Kinds of foods? Fresh? Preserved? Do you share any other kinds of food? Garden tools? Does anyone give to you? Who?
	Have you ever shared food through a program or organization?	Which one(s)? Have you heard of Plant a Row Grow a Row? Why/why not? Is it difficult to do? What would make it easier?
Concerns	Do you have any concerns about gardening in the city?	Barriers? Drawbacks? Health? What is the hardest part of gardening for you?

Is there anything else you want to add?

(Questions partially adapted from Baker 2006, Forkes 2006, and Wakefield 2006).

Appendix D: Pilot Household Food Security and Production Questionnaire

TABLE OF CONTENTS

Question topic	#	Source
Food production		
Method		
Amendments	P1	UT*
Type of amendments	P2	UT*
Watering	P3	HE
Times per week	P4	HE
Rain barrel use	P5	HE*
Pesticide use	P6	HE*
Foods grown		
Supermarket availability	P7	UT
Supermarket expense	P8	NS
Food budget impact	P9	UT
Diet impact	P10	NS
Buying habits impact	P11	NS
Produce use percentages	P12	UT
Food security:		
Food security		
Food security	F1	CCHSa/IRONHI
Place to go for food	F2	RRFSS/IRONHI
Nutrition		
Fruit consumption	F3	CCHSa
Salad consumption	F4	CCHSa
Potato consumption	F5	CCHSa
Carrot consumption	F6	CCHSa
Vegetable consumption	F7	CCHSa
Neighbourhood and community		
Sense of belonging	F8	CCHSb/IRONHI
Membership in voluntary organizations	F9	CCHSb/IRONHI
Frequency of participation	F10	CCHSb
Social capital		
Neighbours helpful	F9	P
Neighbours know each other	F10	P
Could borrow money from a neighbour	F11	P
Neighbours don't get along	F12	P
Neighbours can be trusted	F13	P
If sick, neighbours would grocery shop	F14	P
Neighbours do not share values	F15	P
Adequate access to food shopping	F16	P

Household socio-demographics:

Roster		
# Adults	H1	P
(Age, gender, relationship to respondent)		
# Children	H2	P
(Age, gender)		
Dwelling		
Dwelling type	H3	IRONHI*
Tenure	H4	CC
Time in current residence	H5	IRONHI
Time in neighbourhood	H6	IRONHI
Frequency of moves	H7	IRONHI
Socio-cultural Information		
Birth country	H8	CC
Language spoken at home	H9	CC
Ethno-cultural origins	H10	CC
Economic Status		
Education	H11	IRONHI
Employment	H12	RRFSS
Income	H13	RRFSS*
General Health		
General health	H14	RRFSS

Sources:

CCHSa	Canadian Community Health Survey 2.2: Nutrition	(Statistics Canada 2005a)
CCHSb	Canadian Community Health Survey 3.1	(Statistics Canada 2005b)
P	South Parkdale Food Security, Housing and Neighbourhoods Study	(Hulchanski et al 2006)
CC	Canadian Census	(Statistics Canada 2006a)
UT	University of Toronto Community Garden Survey	(Forkes 2006)
HE	Households and Environment survey	(Statistics Canada 2006b)
RRFSS	Rapid Risk Factor Surveillance System	(RRFSS 2005)
IRONHI	Intensive Research on Neighbourhoods and Health Initiative Survey Draft	(IRONHI 2007)
NS	Question unique to survey	
*	Question amended for this survey	

Edible Backyards Pilot Project
A study of residential land use for food production in Toronto
PILOT SURVEY

First, I'd like to ask you about how you take care of your garden.

P1. Do you use manure, compost, fertilizers or anything else to increase the health of your garden plot and produce?
1. Yes
2. No (skip next question)

P2. Which types do you use?
1. Homemade compost
2. City of Toronto provided compost
3. Compost from a garden centre, supermarket or other retail outlet
4. Manure from a garden centre, supermarket or other retail outlet
5. Manure from a farm
6. Chemical fertilizers
7. Crop rotation (year to year)
8. Cover crop in winter
9. Other amendments? (please specify)_____

P3. Last summer, did you or someone else water your garden?
1. Yes
2. No (skip to P6)

P4. On average, how many times a week was it watered?
1. Less than once a week
2. Once a week
3. Twice a week
4. Three times or more a week
5. Other

P5. Do you water your garden using water from a rain barrel or cistern?
1. Yes
2. No

P6. In 2006, were any weed killers, pesticides, or fungicides applied to your garden?
Include fertilizer and pesticide mixes like 'Weed and Feed'.
Include pesticides applied by commercial operators.
1. Yes
2. No

Now I'd like to ask you about the kinds of food you grow.

P7. Do you grow varieties of fruits, herbs or vegetables that are not usually available at the supermarket during the gardening season?
1. Yes
2. No

P8. Do you grow varieties of fruits, herbs or vegetables that are available but too expensive to buy regularly at the supermarket during the gardening season?
1. Yes
2. No

P9. Does the produce from your garden plot reduce your monthly spending on fruits, herbs and/or vegetables during the gardening season?
1. Yes
2. No

P10. Do you think your garden has changed your or your family's diet?
1. Yes
2. No

P11. Would you buy the same or similar foods from a store that you get from your garden?
1. Yes
2. No

P12. Using a total of 100%, please estimate how you use the produce from your garden. For example, 80% is consumed at home by household members, and 20% is given to relatives or friends, for a total of 100%. *What percentage is . . .*

1. Consumed at home by household members _____
2. Given away to relatives and/or friends outside the household _____
3. Traded for other products _____
4. Sold to others _____
5. Donated to charity _____
6. Thrown away/composted _____
7. Other? (please specify) _____

These next questions are about the food eaten in your household in the last 12 months, since May of last year.

F1. Which of the following statements best describes the food eaten in your household in the past 12 months, that is since May of last year?
1. You and others always had enough of the kinds of food you wanted to eat.
2. You and others had enough to eat, but not always the kinds of food you wanted.
3. Sometimes you and others did not have enough to eat.
4. Often you and others didn't have enough to eat.

F2. Do you have a place to go if you don't have enough to eat?
This could be to a family member or friends place, a food bank, or any other place.
1. Yes
2. No
3. Don't know
4. Refused

The next questions are about the foods you usually eat or drink. Think about all the foods you eat, both meals and snacks, at home and away from home.

F3. Not counting juice, how often do you usually eat fruit?

_____ Times

1. Per day
2. Per week
3. Per month
4. Per year

F4. And how many times per day, week or month do you usually eat green salad?
A green salad includes lettuce with or without other ingredients.

_____ Times

1. Per day
2. Per week
3. Per month
4. Per year

F5. How often do you usually eat potatoes, not including French fries, fried potatoes or potato chips?

_____ Times

1. Per day
2. Per week
3. Per month
4. Per year

F6. How often do you usually eat carrots?

_____ Times

1. Per day
2. Per week
3. Per month
4. Per year

F7. Not counting carrots, potatoes, or salad, how many servings of other vegetables do you usually eat?

_____ Times

1. Per day
2. Per week
3. Per month
4. Per year

Now I'd like to ask you some questions about your life in your local community.

F8. How would you describe your sense of belonging to your local community? Would you say it is:

1 … very strong?
2 … somewhat strong?
3 … somewhat weak?
4 … very weak?

F9. Are you a member of any voluntary organizations or associations such as school groups, church social groups, community centres, ethnic associations or social/civic clubs?

1. Yes
2. No *(skip next question)*

F10. How often did you participate in meetings or activities of these groups in the past 12 months? If you belong to many, just think of the ones in which you are most active.

1. At least once a week
2. At least once a month
3. At least 3 or 4 times a year
4. At least once a year
5. Not at all

Now I would like to ask you some questions about your neighbourhood and by neighbourhood, I mean the area that you live in. For each of the following statements, please tell me whether you agree or disagree.

F11. People around here are willing to help their neighbours
1. Agree
2. Disagree

F12. This is a close-knit or "tight" neighbourhood where people generally know one another.
1. Agree
2. Disagree

F13. If I had to borrow $30 in an emergency, I could borrow it from a neighbour.
1. Agree
2. Disagree

F14. People in this neighbourhood generally don't get along with each other.
1. Agree
2. Disagree

F15. People in this neighbourhood can be trusted.
1. Agree
2. Disagree

F16. If I were sick, I could count on my neighbours to shop for groceries for me.
1. Agree
2. Disagree

F17. People in this neighbourhood do not share the same values.
1. Agree
2. Disagree

F18. There is adequate access to places to buy food in this neighbourhood.
1. Agree
2. Disagree

Now I'd like to find out a little about the people that live here with you. Just to remind you, all of the information that you provide is completely confidential.

H1. Are there any other adults that live here with you?
Record age, sex and relationship to respondent for each adult in the household. Also record the age and sex of the respondent.

H2. How many children do you have?
Probe for sex and age of each child. Record names only if volunteered, do not ask for names.

	First name	Sex	Age	Relationship to respondent
1	Respondent			Not applicable
2				
3				
4				
5				
6				
7				
8				
9				
10				

If respondent reports other people in the household with whom he/she does not share expenses (for example, a roommate who is not a child or a partner), instruct the respondent that 'your household' refers to him/herself, him/her partner (if applicable), and his/her children.
If respondent is doesn't know/refuses to give an adult's exact age, probe for range 18-64 or 65+.

Now, I'd like to ask you about your home.
H3. *(Interviewer: note dwelling type and confirm with respondent)* So you live in a . . .
1. single house (not attached to any other dwelling)
2. semi-detached, duplex house, row house, or townhouse
3. self-contained apartment within a house
4. apartment or condominium in a low rise building or apartment block (< 5 storeys)
5. other (specify)_____

H4. Is this dwelling:
Specify one answer only.
1. owned by you or a member of this household (even if it is still being paid for)?
2. rented (even if no cash rent is paid)?

H5. For how long have you lived in this current dwelling?
1. ___ ___ years ___ ___ months
2. Don't Know
3. No Response

H6. For how long have you lived in this neighbourhood?
1. ___ ___ years ___ ___ months
2. Don't Know
3. No Response

H7. How many times have you moved in the past 5 years?
1. _____ times
2. Don't Know
3. No Response

H8. Where were you born?
Specify one response only, according to present boundaries.
1. Born in Canada
2. Born outside Canada
*Specify country*_____

H9. What language do you speak **most often** at home?
1. English
2. French
3. Other — *Specify*_____

H10. What are the ethnic or cultural origins of your **ancestors**?
An ancestor is usually more distant than a grandparent. For example, Canadian, English, French, Chinese, Italian, Jamaican, Vietnamese, East Indian, Irish, Cree, Ukrainian, Dutch, Filipino, Polish, Portuguese, Jewish, Greek, Lebanese, Chilean, Salvadorean, etc. Specify as many origins as applicable.

H11. What is the highest grade of school you have ever completed? Is it:
1. less than grade 9
2. some high school
3. completed high school
4. some trades or technical training
5. completed trades or technical training
6. some university
7. completed university
8. some post-graduate education
9. Don't Know
10. No Response

H12. Are you currently: employed for wages, self-employed, been out of work for less than one year, been out of work for more than 1 year, taking care of a family, a student, retired, or unable to work?

1. employed for wages *(working, on maternity, vacation, strike, etc.)*
2. self-employed
3. out of work for less than 1 year
4. out of work for more than 1 year
5. taking care of a family *(including working part time)*
6. student *(including working part time)*
7. retired *(including working part time)*
8. unable to work *(including on disability)*
9. other: _____

H13. Could you please tell me how much income you and other members of your household received in the past year, so ending December 31st 2006, before taxes. Please include income FROM ALL SOURCES such as savings, pensions, rent, as well as wages. Was the total household income from all sources:

1. Less than $20,000,
2. $20,000 to $50,000*, (49,999)*
3. $50,000 to $80,000*, (79,999)*
4. $80,000 to $100,000*, (99,999)*
5. $100,000 to $150,000*, (149,999)*
6. 150,000 or more?
7. Don't know/refused

H14. Would you say your general health is: excellent, very good, good, fair, or poor?

1. excellent
2. very good
3. good
4. fair
5. poor
6. don't know

Thank you for your time and patience.

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