WHEN'S DINNER READY?  
-An Evaluation of Community Gardening and its Contribution to A  
Sustainable Food System

MASTER'S THESIS

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ABSTRACT

The thesis explores the practice of community gardening within the context of sustainable agriculture. Community Gardening is proposed as one solution for sustainable development in North American cities. The current global food system is unsustainable in its linear design of importing produce to cities while using excess energy and resources, with wastes flowing out of the city. The lifestyle habits and perceptions of the city residents also contribute to the unsustainability. Six gardens in Toronto, Canada were studied on the basis of their contributions towards a sustainable food system, as well as their role as an education tool to the urban society. Physical, community, and societal obstacles are described that have hindered the widespread use of community gardens in the city. Results have shown community gardening was able to promote the three cornerstones of sustainability- ecological, economic, and social. The support of city planning and non-government organizations were shown to help to bring awareness and education to the city society. Societal obstacles were viewed as the most difficult of obstacles to overcome, requiring a change of city attitudes that can take years to form.

Key Words: Community gardening, sustainable food system, urban attitudes, obstacles, Toronto

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In the garden, we discover the meaning of a life of quality – a life of harmony and balance among the economic, ecological, and social. The garden is a metaphor for life (Ikred, 2001).

1. Introduction

When’s dinner ready? The usual question asked daily by urban residents coming home from work or school, eagerly anticipating their next meal. There is little thought involved about where the dinner comes from, as long as it is served and ready. This attitude towards food is common practice in most North American cities today as the production and processing of food tends to occur in rural settings, away from the city society. As a result, urban areas have become distanced from the land, as well as from the effects of their consumption habits. There is a sense in cities of 'out of sight, out of mind' as production and waste matters are handled outside of the city limits.

This is a relevant issue to deal with as 45% of the world population is urbanized, as is 75% of North America (International Sustainable Agriculture Issues Report, 1994). If current trends persist, the rate of urbanization will progress, forcing greater pressure on the surrounding environment as the linear food system in the city will continue importing global foods and releasing increased wastes.

The current consumption habits and attitudes of the majority in the city society do little to alleviate the pressure of the city's food system. Many food habits of urban residents are influenced by time constraints of the prevailing lifestyle as well as the perception of food production as a rural practice that is viewed as separate from the city.

There is a need to reexamine the role of urban societies in the current food system. What are needed are sustainable city practices; sustainability within the city may aid in reducing the stress placed on the environment from the current linear throughput model of the food system. Community gardens can act as tools of change in this respect and education for the urban society on the food system and the role of cities in sustainable development.

In the developing cities, community gardens act as a source of income, while in developed cities they can act as tools for awareness of sustainability concerns. The North American urban society has become separated from the natural environment, in part by technology, such that a false sense is created that they live outside the limits imposed by nature. This leads to unsustainability, as the average individual does not consider their consumption habits. Cities should be seen as tools for development of sustainable practices, not just the cause of environmental problems.

1.1 Objectives

Sustainable urban agriculture will be examined as part of the solution to the current city food system. Specifically, the focus of the study is to evaluate the contribution community gardens may have to improve a city’s sustainability. The paper will attempt to define a sustainable food system and relate this to what has been accomplished in Toronto, Canada. Research questions include:

- What contributes to a sustainable food system?
- How do community gardens contribute to various aspects of sustainability?
- What are the obstacles in the way of food sustainability in cities and how can these be overcome?
1.2 Scope

The research into understanding food systems and relating the concept of sustainability is limited to the community gardening aspect of urban agriculture in North American cities, specifically Toronto, Canada. Toronto is a growing metropolis representative of typical North American cities. The paper deals with the lifestyle of the middle class urban consumer and there are other potential reasons for urban agriculture in developing areas. Urban agriculture already plays an increasingly vital role in the physical and economic survival of many people in southern countries.

1.3 Methods and Materials

Interviews were done on site at community gardens established in Toronto, Canada. 6 different gardens with different perspectives were visited during July 20-22, 2001. These included:

- May Robinson apartments- senior garden
- Moss Park- Community garden
- Frances Beavis Manor Garden- Senior garden
- Ashbridge Eco-community garden
- Jamaetown Gardens
- Riverdale Farm

Open discussions were conducted with 30 individuals comprising of gardeners, garden coordinators, and supervisor for garden projects in Toronto, all of whom will be anonymous. These talks allowed for a deeper sense of what the gardens were about and how the gardeners felt about these projects. Follow up questions and discussions were handled via e-mails sent to the coordinators.

Articles and books were used to obtain background information of urban agriculture and what has already been discussed in the area of a sustainable food system. The Toronto Food Charter (appendix 1) was consulted to place community gardens in perspective with actions taken by the city. As well, three main urban agriculture organizations were contacted and researched in their role in supporting the increase of urban agriculture in the city of Toronto.

1.4 Theory

Exploring a sustainable food system is a relevant issue for today's ever-growing metropolis world. In the year 2025 it is expected that 5.5 billion people will be living in cities worldwide (International Sustainable Agriculture Issues Report, 1994). As cities are thriving, pressure is placed on the earth as more resources and energy are required. Currently, the city can be seen as separate from the natural world, funneling in resources and expelling back waste which is producing a linear system of inputs and outputs. There is a need to close this linear system, and produce cities that are more self-sufficient.

Figure 1 represents logical steps of reason that has led the author to consider community gardening as a basis for representation to the urban society what a sustainable food system is comprised of. Sustainable agriculture has gained increasing credibility after the Brundtland report from 1987. This introduced the concept of sustainable development, defined as 'development that

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1 In some of these cities, a fifth to a third of families are engaged in agriculture, and some have no other source of sustenance or income (Rees, 1997). In Asian cities, food production is promoted and already recognized as a critical urban function such as in Hong Kong, one of the world's most densely populated cities, where urban agriculture produces close to half of the vegetables eaten by its citizens (United Nations Development Program, 1996).
meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environment and Development, 1987, p. 8). The Science Council of Canada has said that "sustainable agri-food systems are those that are economically viable, and meet society's needs for safe and nutritious food, while conserving and enhancing... natural resources and the quality of the environment for future generations" (1992, p. 15). One idea that has been used to reach this sustainability has been urban agriculture. Logically, researchers have pushed this form of agriculture, stating 'agriculture will not be sustainable if it doesn't include urban agriculture, because urban is the way the world is going' (International Sustainable Agriculture Issues Report, 1994). One benefit of urban agriculture is its ability to close the nutrient loop left open in cities. Organic wastes and energy tend to flow out of cities; urban agriculture is able to utilize this in the form of composting, and reduced energy needs (Nelson, 1996).

An interesting concept that lies behind urban agriculture is the urban foodshed. First conceived in 1929, the foodshed idea has its origin in 'unifying place and people, nature and society' (Kloppenburg et al, 1996, p. 34). The foodshed can be rationalized as a framework for thought and action, an indicator of the possibility to change the food system from what it is today. This is important when looking at the current global food system and combining this concept with urban agriculture, which has its basis in local food suppliers. As is stated, "How can [people] understand implications of their own participation in the global food system when processes are located elsewhere and obscured from them?" (ibid, p.34).

From the theories and research on sustainable development, urban agriculture and the foodshed concept comes the idea of community gardening encompassing the factors involved when considering what contributes to a sustainable food system.

Research conducted on the idea of a sustainable food system has often focused on single aspects such as ecology, nutrition and centralizing global food suppliers. The conceptual framework of the thesis is inspired by the work of Kloppenburg et al, 2000, in their article on defining sustainability. The premise lies not in the definition based on one simple concept, but rather to incorporate a variety of factors that interrelate to help meet the goal of sustainability. The merit of this method is that it takes a transdisciplinary view of the current situation and brings in ideas from scholars, rural farmers, educators, businesses, chefs, and students. "...People from many
While backgrounds and social locations are participating in initiatives for food system sustainability. It is through honoring and understanding the multiple dimensions of motivation that [sustainability] can actually be brought to fruition" (Kloppenburg et al, 2000, p. 185).

2. DEFINING A SUSTAINABLE FOOD SYSTEM

"[w]e must build landscapes that heal, connect and empower, that make intelligible our relations with each other and with the natural world" (Wilson, 1992, p. 17).

As a way to assess the value of community gardens in urban agriculture, a definition of what a sustainable food system requires can be of use.

The three cornerstones of sustainability are ecological integrity, economic viability, and social responsibility (Ikred, 2001). Any system of development that degrades the productivity of its resource base eventually will lose its ability to produce, and thus, is not sustainable. Any system of development that is not financially sound, eventually will lose the ability to make decisions concerning how resources are used, and thus, is not sustainable. Also, any system of development that does not meet the needs of society, not only as consumers but also as people, will not be sustained by society, and thus, is not sustainable. A sustainable food system works much the same way. It must encompass many factors and work on many levels.

There has been previous research in defining a sustainable system all with many different answers. It seems to lie in the 'eye of the beholder', due in part to the monodisciplinary view of those in question. Agriculturists, businesses, governments, and non-government organizations all have their view of what a sustainable food system should be and centers their results on just the one aspect, such as environmental health concerns (Waltner-Toews, 1996) or economics (Toronto Food policy council, Jan. 1999). Each can be right on their own, however, a transdisciplinary view should be taken to involve all viewpoints. With this in mind, it is difficult to narrow down food sustainability in one sentence. Instead, it is important to focus on the different aspects involved and how these interrelate into what becomes a secure food system for cities.

2.1 The Considered Sustainability Aspects

Work done by researchers such as Kloppenburg et al, 2000, have come up with over 14 definitions of sustainability (see appendix 3). These 14 were re-grouped as they can be related to the other factors to form 9 that are subsequently considered here in how they contribute to sustainability in agriculture, specifically community gardens. These are 9 different aspects that could be combined to form a holistic sustainable food system. As mentioned previously, it is imperative to look beyond just environmental issues, but to consider economic and social aspects, as well as many others that may be linked to these main 3 issues, but are important to consider as well. This is not to say this is the one definition of a sustainable food system. However, in order to evaluate the benefits of community gardens, it is helpful to be able to draw comparisons against a set of factors. These nine aspects, while potentially contributing to many various agriculture practices, are viewed here in the context of sustainability within urban agriculture (Figure 2).
2.1.1 Community Involvement

All people should have the opportunity to grow their own produce. A sustainable food system should allow interaction between the production process and the consumers in order for the latter to experience and learn from the growing of vegetables. Food production can also bring a stronger sense of community spirit to a neighbourhood. 'Building a community around growing things can promise [children] what no amount of income and no amount of security systems, guards, guns, and locks in suburbs and new towns can buy- the hard-woven fabric of a neighbourhood' (Nelson, 1996). Sustainability involves society, and a sense of community.

2.1.2 Cultural

This aspect of a sustainable food system is twofold. A sustainable food system should involve all cultures and enable them to work together. This is linked together with the above aspect of community involvement. When various cultures can work together, new ideas and knowledge can be spread to those previously focused on their own society.

The other point is that a food system should allow people to express their culture (Kloppenburg et al, 2000). Many cultures are expressive in their food preparation, old recipes and ingredients that are passed on through generations. For immigrants, food can be a connection to their culture and childhood. Many tend to long for the taste and smell of home (Avakian, 1997).
2.1.3 Ecological

The food system should not be exploitative to the earth. An ecological food system should also promote plant diversity and restoration of native species. By creating a functional biodiversity, processes occur that provide ecological services such as the activation of soil organisms, the cycling of nutrients, and the enhancement of beneficial insects (Alteiri, 1998). The throughputs of energy and matter should be reduced, by doing the same with less (Miller, 1999). This includes the re-use of water and the composting of food wastes that would decrease garbage flows while providing humus, a rich soil for gardening (Brown, 1991). Issues of natural resource protection, rehabilitation and conservation should be important as well (Madden, 1997).

2.1.4 Economic

Economic sustainability here implies that local farmers should be supported to bring in profit to the local area. Participants in the Kloppenburg study have mentioned that the pricing of produce needs to reflect the cost of production (Kloppenburg, 2000). Urban farmers could target their produce to the growing niche market which demands organic, local, and environmentally friendly foodstuffs (Barrs, 1999).

2.1.5 Educational

People need to be informed of the unsustainability of the current food system in order to act effectively (Kloppenburg, 2000). It should also be important for children to see the magic of growing own food. School programs can be seen as 'a promising vehicle for long-term extension of the community's understanding of food issues' (ibid). A sustainable food system should be educational for all involved. This includes the growers and consumers.

2.1.6 Equitable

Equity here implies the ability for all people to have the opportunity to support themselves and have access to quality food. As stated in the United Nations Covenant on Social, Economic and Cultural Rights, there should be "the fundamental right of everyone to be free from hunger" (Toronto Food Charter, 2001). A sustainable food system needs to face this hunger issue in cities and be able to support low-income families with their food supply.

An equitable food system in the ethical sense would also treat the earth respectfully and be respectful of species' integrity (Kloppenburg, 2000). A sustainable food system should have social justice as well, in terms of class and gender.

2.1.7 Healthful

The health aspect is becoming more important as a part of a sustainable food system as the health trend has brought attention to diet habits. A sustainable food system needs to cover the topic of nutrition, providing access to healthful food.

A healthful food system would rely mainly on organic production, applying organic fertilizers that keep chemicals out of the produce.
2.1.8 Local

The goal is not complete self-sufficiency but a more sustainable food system and that means choosing which crops are best grown in the city, which are best acquired from the local bio-region and which through choice or necessity are imported from other areas. There has been an increase in the distances of food transport, specifically due to the increase in urbanization as well as globalization (Toronto Food Policy Council, 1999). Sustainability demands that as much food as possible is grown close to where it is consumed. The research from Kloppenburg (2000) has shown an emphasis should be put not only on locally grown food, but also on local control over production and regulation.

"It's about taking back the ability to produce food for ourselves. At the grocery store, you not only don't connect to the food system, but your money goes out of the region" (Rauber, 1997).

2.1.9 Spiritual

A sustainable food system should acknowledge the spiritual values of food and its relationship to the consumers. This aspect is usually absent when one considers a food system, yet it is of importance as food is at the center of many cultural and religious festivities. For sustainability to work, one must consider harmony among people- this is within families, communities, and societies (Ikred, 2001). 'We can begin reclaiming the sacred in food by reclaiming without compromise, the spiritual nature of sustainability' (ibid). Spirituality of sustainable farming is about here and now, not there and when. The rewards come from having positive relationships with family, friends, and others; and from being a responsible steward of resources for the future.

3. THE CURRENT TREND OF THE FOOD SYSTEM

3.1 Global Food System

The current food system is an important issue to discuss. The food system is increasingly more complex, indirect and globally influenced rather than community based and direct (King, 2001). Cities began loosening the link to local food supplies with the advent of technological advances, such as irrigation, thus becoming linked with larger physical structures and social institutions to become the agri-food industry it is today (Steward, 1995). A number of changes occurred during the transition to modern industrial societies, and now there is the dominant trend towards a global industrial food system (Dahlberg 2001).

Along with technological and large industrial scale practices comes a threat to the global environment. "Agriculture has a greater harmful impact on air, soil, water, and biodiversity resources than any other human activity" (Miller, 1999:290). Table 1 shows some of the harm current agriculture practices have on the environment.
Table 1. Environmental effects of global food production. Source: Miller, 1999, p. 291.

<table>
<thead>
<tr>
<th>Water</th>
<th>Air Pollution</th>
<th>Soil</th>
<th>Biodiversity Loss</th>
<th>Human Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Increased runoff and flooding from cleared land</td>
<td>• Greenhouse gas emissions from fossil fuel use</td>
<td>• Erosion</td>
<td>• Loss and degradation of habitat from clearing grasslands and forests and draining wetlands</td>
<td>• Nitrates in drinking water</td>
</tr>
<tr>
<td>• Surface and groundwater pollution from pesticides</td>
<td>• Pollution from pesticide use</td>
<td>• Loss of fertility</td>
<td>• Salinization</td>
<td>• Pesticide residues in food and air</td>
</tr>
<tr>
<td>• Aquifer depletion</td>
<td></td>
<td>• Waterlogging</td>
<td>• Desertification</td>
<td></td>
</tr>
<tr>
<td>• Sediment pollution from runoff</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

In today's urban society, a gap is increasing between urban dwellers and the produce they consume. The more convenient way to obtain vegetables via the grocery store is leading to more energy, packaging, and transport needed for delivery. Due to the competitive market economy, food production tends to occur in areas where wages are low or costs are decreased. An example of this is mass tomato production in Mexico (Kloppenburg et al, 1996).

Consumerization is the trend, this can be defined as a cultural change from people that eat foods they themselves produce, to those who are consumers of goods and services (Warde, 1997). Foods have become commodities, economic objects, rather than food for consumption (ibid). There is a consensus that the global consumer economy degrades and devalues food - 'from a basic human resource, a fundamental (sacramental) subject of exchange and relationship - into a commodity bought and sold globally' (Center for Environment and Society, 2001).

One point of interest is the emergent stalling of global food production. Despite rising demand, per capita grain production has actually been in decline since at least the mid-1980s as has the area of grainland available per capita. Indeed, some 86 million ha of severely degraded land (twice the area of Canada's cropland) has been lost to production. Potentially arable land on the Earth is already under cultivation and many authorities believe that farmers in the more productive areas have already got the most out of many technologies that were behind the green revolution (e.g., irrigation, fertilizers, pesticides) (Brown, et al. 1991).

3.2 Canadian Trends

Environmental Health

The current trend of Canadian farmers is to rely on heavy uses of pesticides, fertilizers and monocultural production in order to compete in the global economy. In Canada, agricultural pesticides are the only class of pesticides excluded from the federal government's annual inventory of toxic releases, and this is a worrying fact for any food consumer (Roberts, 2001).

In terms of wastes, the potential to reuse organic wastes is not up to its full potential in Canada. The country is second in the world after the U.S.A for the amount of waste generated, at 657 kg of trash per person annually. Out of this amount, 34% is in the form of food and garden waste (Chua, 2001).
Importing food has a negative effect on the environment. The total energy to transport produce is ten times more energy than the calories that are actually received in nutritional benefits (Hendrickson, 1997). It has been shown that ten litres of orange juice requires one litre of diesel fuel for processing the transport. (Dearden et al, 1998).

Government policies have tended to encourage the export of agriculture, believing food should be produced wherever it can be done most cheaply and in vast quantities, then imported to countries (Good Food News, 2001). Currently, roughly $172 million is spent yearly in the Toronto area to import fresh vegetables, and 1/3 of this produce is imported during Toronto's own growing season (Food and Hunger Action Committee, 2001). Between 50-60% of the fruits and vegetables sold are imported from Mexico, Florida and California (Toronto Food Policy Council, 1999).

Human Health

The current urban lifestyle of fast pace favours the appeal of a quick stop to a fast food restaurant, over-feeding on less healthy fats and sugars. The current diet of many North Americans may be displacing the nutritious value of dark green and yellow vegetables. For example, one fifth of the vegetables Americans eat are french fries and potato chips (Gardner, 2000, pg. 63). On average, Canadians eat 2.3 servings\(^2\) of vegetable and fruit per day instead of the recommended 5-10. This can largely be attributed to either low income or over-eating on fast food (Field, 1999). Considering that diet is a risk factor in 70% of diseases, it is important to have access to and indeed make a habit of eating healthy, nutritious food.

One in five Toronto residents currently has too little money to meet their basic food needs, and receiving goods from food banks have been on the rise in Canada (Food and Hunger Action Committee, 2001). It is alarming to hear more than 40% of food bank recipients are children, and that some of these city food banks can not meet their demand (Canadian association of Food Banks, 1999). The Canadian Association of Food Banks has stated 'this growth in hunger is deeply disturbing and raises fundamental questions about the type of society we are choosing to create'. (Field, 1999).

4. TOWARDS A FOODSHED MENTALITY

"There becomes a new paradigm: What if "waste is food" and sewage and garbage were prime inputs to food production? What if the urban landscape was edible? What if vacant, wasteland in cities were productive and enhancing the environment for living? What if urban areas were increasing biodiversity rather than diminishing it?" (Smit, 1996, page unknown).

4.1 Background on Urban Agriculture

The concept of urban agriculture can be seen as a new thought to help achieve sustainability in Agriculture. However, one can say agriculture has been part of the city since ancient civilizations.

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\(^2\) One serving of vegetables = 225 ml
One serving of fruit = one medium sized fruit (Good Food News, 2001).
In the book *The Economy of Cities*, it is argued that agriculture is actually an urban invention, developed in centers of trade (Nelson, 1996). Urban agriculture can be defined in many ways. In Canada, it can be understood as an industry that produces, processes, and markets food within a town, city, or metropolis on land and water, dispersed throughout the urban and peri-urban area (Toronto Food Policy Council, 1999). The Organisation for Economic Co-operation and Development, (1998) have a simpler definition of urban agriculture:

"The Production of food, nonfood plant and tree crops, and animal husbandry, both within and fringing the urban area."

Urban agriculture encompasses many different processes, such as greenhouse projects, city-fringe farming, rooftop gardens, allotment gardens and community gardens. Allotment gardens differ from community gardens in that the plot is leased out to the gardener for yearly fees whereas community gardeners may keep their plot indefinitely.

Urban agriculture can reduce energy costs and pollution by limiting storage and transport; reduces packaging needs; can use urban waste for compost; and can take pressure off of current rural agricultural practices (International Sustainable agriculture issues report, 1994). Currently in the world, urban agriculture produces 15% of the food supply (Miller, 1999). Urban Agriculture is also of importance when it comes to emergency situations. Due to the growing trend of just in time delivery, many cities have only a three-day supply of food (Toronto Food Policy Council, 1999). In storm weather conditions that can inhibit the transportation of food into the city, urban agriculture can provide extra backup. Locally produced foods require less packaging and refrigeration and other preservation measures thus reducing the packaging waste stream, energy use, and the chemical load in foodstuffs.

In addition to improving the nutritional and health standards of the poor, urban agriculture can supplement their incomes and improve urban environmental conditions through additional green space, the clearing of rubbish dumps and the recycling of organic wastes (Food and Hunger Action Committee, 2001).

4.1.2 Community Gardening

Community gardening is one component of urban agriculture; it can be called the entrepreneurial section or the people's movement, where individuals or groups start the gardens mainly for personal use. These types of gardens are ideal for those living in apartments, or with no land available. These gardens also provide a form of sustenance and informal economy to low-income communities, helping to reduce dependence on food banks (Berman, 1997).

Community Gardens are safe outdoor spaces on public or private lands, where neighbours meet to grow and care for vegetables, flowers and native plant species. The gardeners take initiative and responsibility for organizing, maintaining and managing the garden area.

4.2 History of Community Gardening in Canada

Urban community gardening in Canada has experienced waves of interest over the past hundred years. There are many overlapping periods of community gardening that are a part of Canadian history (Quayle, 1989: 17-20). The first community gardens in Canada were the Railway Gardens (1890 - 1930). Designed and maintained by the Canadian Pacific Railway, these

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3 Just in time- logistics model that relies heavily on transporting goods directly when needed, saving warehouse costs.
community gardens were located in town stations across the country and expressed local community spirit when the West was becoming colonized. School Gardens began during this time as well. As part of the Nature-Study Movement, each student had a plot to grow flowers and vegetables from seed. The Relief Gardens of WWI and eventually the Victory Gardens of WWII expanded upon this wave of activity. Thousands of gardens were coordinated to provide food for the war efforts (ibid).

Another stage in Canadian community gardens fell between the wars. Municipalities encouraged Vacant Lot Gardens as a method to improve the appearances of communities and as an access of employment and food for the poor. During the 1950-1960's the number of cars, suburban living and processed foods increased and community gardening declined (ibid).

The counter-culture movement between 1965-1979 saw some revival of urban gardening in response to concerns about the environment, energy conservation, self-reliance and community breakdown. Current community gardens evolved out of the 1970's movement, involving the rebuilding of local neighbourhoods and restoring ecology to the inner city (Hynes, 1996).

4.3 Non-Government Organizations in Toronto

There are many non-government organizations (NGOs) in the city of Toronto that are currently helping to promote awareness of urban agriculture and community gardening to communities. Each organization has a different motivating factor, from hunger issues, urban planning, community involvement, to profitability. FoodShare and Greenest City are two main organizations that are involved with starting community garden projects throughout the city.

4.3.1 FoodShare

FoodShare was founded in 1985 by those concerned about the growth of hunger and food banks in the city. FoodShare is currently involved with co-operative buying systems, collective kitchens and community gardens that would have the potential to address short-term issues of household hunger, while also providing longer-term benefits by building the capacity of individuals and communities. Their Philosophy is putting food first and not treating it as commodity. Over the years, they have broadened the focus to look at the entire food system—how food is produced, distributed and consumed. Approximately 30% of their funding comes from individual donors. The other 70% are provided by individual donors, and support from all levels of government: municipal, provincial and federal. This funding often comes in the form of project grants, targeted to specific initiatives (FoodShare, 2001).

In 1988, FoodShare became involved in promoting community gardens as a source of affordable food to low-income families. FoodShare offers the Good Food Box program, a part of their Field to Table project, as a way for all to have the opportunity of a healthful diet. Field to Table offers a link between urban consumers and farmers by providing fifty pounds of fresh produce bi-weekly from local farmers. Volunteers pack returnable bins with local in season produce for a fee of $12, a saving of $7 in comparison with store bought produce (Berman, 1997).

4.3.2 Greenest City

This Organization is concerned with the livability of cities, working on greening projects to ensure involvement and health of urban dwellers (Greenest City, 2001). In 1998, Greenest City worked with eight immigrant communities to support garden creations.
4.4 Current Urban Agriculture Projects

Many other NGO’s are involved promoting other possibilities of urban agriculture with active projects. These projects can demonstrate to the urban residents the potential and possibilities of practicing urban agriculture projects in the city.

Rooftop Garden Resource Group

This group aims to create rooftop gardening through media awareness and education. Many individuals work together, from landscape architects, engineers and urban planners. Their philosophy is to make Toronto's environment greener and healthier, and to promote diverse use of space. This group has educated schools and communities of the potential of rooftop gardening with tours of the city and provides expertise in planning processes (Rooftop Garden Resource group, 1997).

Annex Organics

Established in 1996, Annex Organics is an environmentally responsible enterprise dedicated to producing high quality organic food in urban environments (Garden Coordinator interview, 2001). The organization also provides consulting and educational services to community-based groups. They have been involved with developing growing systems for rooftop food production, as well as mushroom production. Their main project is a successful organic sprout operation. The sprouts are grown on hydroponic sprouting units and sold to local caterers and retailers. This operation has generated approximately $30,000 in total gross revenue per year (ibid).

There have been many success stories regarding urban agriculture projects the world over. In Berlin 80,000 garden plots are leased on land left barren after bombing from World War II (Nelson, 1996). Around the cities in North America, several positive outcomes have resulted with implementation of community gardens. In San Francisco, there is the Fresh Start Farms program. This program employs homeless families raising vegetables for some of the city's finer restaurants. Also, the San Francisco County Jail's Garden Project has prisoners grow food for local soup kitchens, graduating when they complete their sentences to an intensive market garden that serves restaurants and farmers' markets (Rauber, 1997).

5. CASE STUDY: COMMUNITY GARDENS IN TORONTO, CANADA

5.1 Community Gardens

The Greater Toronto Area (GTA) is Metropolitan Toronto and the four surrounding regional districts. In the last 50 years the population of the area has increased from 1 to 4 million people. Population projections are for 6 million in the year 2020 (Golden, 1996). Currently, there are 122 community gardens with 5,000 participants in Toronto (Food and Hunger Action Committee, 2001).

In order to see the effectiveness of community gardening as part of the sustainable agriculture movement, 6 gardens in the city of Toronto, Canada were visited and evaluated on the 9 aspects of a sustainable food system previously defined. The 6 gardens are in various locations in the city and attended to by various communities. Based on research and interviews with the gardeners, these gardens were examined and related in section 5.2 to the definition of a sustainable food system as viewed in this paper.
5.1.1 Garden of Eden- May Robinson apartments Senior Garden

The Garden of Eden was established in 1998 after 4 years of struggle with start up costs and site location. It is located on the grounds of a senior home and used by the elderly residents. At the start, 15 residents took part in the garden. Currently there are 37 gardeners, along with a waiting list of others waiting for available garden plots. The plots are small in size, roughly 1.2 metres by 1 metre, yet adequate for the individual. The produce grown is for personal use and not intended for sale.

The garden co-ordinator is an 84-year-old woman from the Philippines. A woman very adamant of her opinions, she fought to get the garden started. There had been a murder involving a prostitute and feelings in the community were frightful. A meeting was held for what could be done to freshen up the community. As she stated, ‘We needed something to get the men busy with [another manner]’. To help in the start up procedure of the garden, the FoodShare Organization was contacted and provided beneficial help for dealing with costs and the garden layout.

The back yard of the senior apartments is now a thriving garden, complete with a compost facility and picnic benches. Some of the plots have been raised on wooden bins for the convenience of those with back troubles.

5.1.2 Moss Park community garden

Situated in a low-income area, the Moss park garden was established in the summer of 2000 at the edge of the park nearby to the community center for the area. Currently there are 27 individual plots ranging in size from 1.4 square metres to 9 square metres. The garden belongs to the city as it is located on park property, but was started and is maintained by volunteer at the Moss Park community center. They received assistance from the city in the site selection, and contacted FoodShare for start up procedures. The garden is sponsored and supported by local businesses, among them the coffee chain Starbucks, which supplies tools for the gardeners. There is much sharing of information among the gardeners; the ones with more experience are willing and happy to share their ideas with the beginners. Many share their vegetables or donate them to soup kitchens that supply food for the homeless.

There is theft at the garden, but people are aware of this starting out. The garden began for community spirit, and to be involved. For one gardener there was great enjoyment as 'there is a sense of I own'.

The garden brings out the curiosity of others passing by, there are many that became interested and have inquired about getting their own plot.

With gardening, some people have reduced their need for store vegetable. There is experimentation involved with what and how to plant. The gardeners share this information and learn for the next year. All ages are involved at Moss Park; there is a section of the garden that is dedicated for the children of the gardeners as well as those from the nearby community center. The gardening knowledge here expands to others as the Moss Park garden began with dedicated, experienced community members, and spread to those in the community who became interested after walking by the garden.

5.1.3 Frances Beavis Manor Garden- Senior garden

Primarily Asian women with an average age of 84 years tend to this senior garden. Plots in this garden are small, 1.4 square metres, but very intensive. This is one of the most productive gardens
in the city. The garden started with help of the Greenest City organization 4 years ago, in 1997. All types of vegetables are grown here such as corn, cucumber, tomatoes, beans, and lettuce. As most of the other community gardens, the produce grown is mainly for personal use. Many had farmed in the past and started up again for the enjoyment of being outside and 'spending time with a healthful pastime' (Gardener interview, 2001-07-22).

5.1.4 Ashbridge Eco-Garden- Community garden

This garden started in 1998 by community incentives; friends wanted an area to garden and took it about themselves to locate the site, and design the garden plan. It took the gardeners one year to get land available, as the owners of optional sites were hesitant. They were finally granted the use of city land located next door to a local police precinct (Gardener interview, 2001-07-21). There is water available on site, this is one of the few gardens with a direct water source. The shed and tools used at this garden have all been donated. The plot size ranges from 2.3 square metres to 6.8 square metres. Currently there are 31 gardeners from around the area, ranging from experienced to inexperienced. 15 of the gardeners began the project due to lack of space at their homes. The other 15 gardeners began out of curiosity after walking by the garden. These individuals had not considered gardening before, but became interested when seeing the result of the original group members. The compost they use is from the city, and everyone has agreed to use organic fertilizers.
5.1.5 Jamestown Gardens- Community gardens in Jamestown apartment complex

This garden is in its 2nd season. It is located on a patch of grass between 2 high rise apartments. This neighbourhood is almost covered in concrete, as it is the site for 14 twenty story apartment buildings and parking lots. The garden has been greatly welcomed as it livens up the scenery and provides those with no balcony a chance to have some outdoor space (Gardener interview, 2001-07-21). The garden began as a result of the residents who wanted to liven up the area with a green space. The Greenest City organization was able to help with start up procedures.

Currently there are 34 plots, maximized to produce as much as possible. Many different cultures are involved in this garden, all having different plants and herbs that they grow. Children use some of the garden area, and the parents think that it is great for them to see where food comes from. Also, as one gardener has stated, it is important for the children that come into the garden to see the hard work that goes behind growing vegetables. 'It's not just about walking to the store and picking up some carrots, there's much work to get the final product' (gardener interview, 2001-07-21).

5.1.6 Riverdale Farm

Riverdale farm is located on the east side of Toronto and is exactly that, a farm in the city. Here there is a park, museum, and a barn complete with horses, pigs, chickens, and gardens. The farm also provides a farmer's market to sell local Ontario produce. The garden here began as an educational tool for children. Local schools come here for nature trips, mainly those between 8 and 11 years old. As one of the directors of the farm has said, 'The children love the garden, to play in it and watch their vegetables they planted grow'. Part of the vegetable garden is used for a teaching tool for summer camps where children can grow their own vegetables.

A unique area of this farm has a section that is dedicated to teenagers who live on the streets or who are new to Canada. Volunteers teach them to garden and the teenagers can then take ability tests and subsequently get jobs in various fields of gardening. The group even gets chances to show their skills by participating in various garden conferences, this year flying to California. The produce they grow is donated to community food kitchens or the Riverdale farmer's market.

5.2 Community Gardens in the Context of a Sustainable Food System

1) Community involvement- As the name implies, the community gardens involve all in the neighbourhood, and are all open to new gardeners. People that lived in the same apartment complex have met for the first time through working in the same garden. The gardens also increase the number of users in the area, such as the case of Moss Park. The more users there are of a park, the more it becomes a people place and can thus increase safety standards of the area. They can help create a community image that is perceived as positive by both residents and outsiders. "We didn't know many people in our garden until we started telling one another about how tasty our vegetables were," a gardener from Moss Park voiced. At the Ashbridge Eco-Garden, one gardener mentioned the sense of community pride that was felt with working in the garden, saying 'It's not just growing vegetables, but growing friendships as well.'

2) Cultural- All of the gardens had a sense of cultural sustainability. With all the gardens that were visited, any community resident has the opportunity to become involved. Toronto is known as a cultural city, and proof of this can be seen in these community gardens. Chinese, Philippines,
Koreans, Africans, Italians, and Canadians all work together tending their plots. The gardens also provided the gardeners to be able to grow herbs and vegetables that were connected to their culture. A Caribbean gardener at Moss Park grows calau, a leafy green vegetable and 'red peas', or kidney beans, for his peas and rice dish. As he stated, 'it's hard to find these fresh, I grow them myself instead.' At the Frances Beavis garden, the Asian women grow Chinese vegetables such as green onions, bok choy, and tong ao for their recipes.

3) Ecological- Though not started for the purpose of being 'environmentally sound', all the gardens contribute to environmental awareness. Compost bins are used at all of the gardens, and rainwater barrels are being considered to collect rainwater to be less dependent on tapped water. These city farmers play a major role in waste recycling, creating a closed system in which organic wastes -- from food, manufacturing and sewage -- are reused instead of festering in dumps and polluting waterways. Gardens as a whole are beneficial in their absorption of rainwater. Gardens absorb 15% more than green lawns, thus reducing the amount of water entering storm drains and the potential to carry raw sewage into Lake Ontario (Toronto Food Policy Council, 2001).

Urban bio-diversity has been increased, not only by the tendency of local gardens to grow a wider range of foods, but through providing habitats for urban wildlife (Rees, 1997, p. 5). Ashbridge Eco-garden and Moss Park have planted flowers among the vegetables to provide nectar for both butterflies and bees, whose populations have decreased in the city (Gardener Coordinator interview, 2001-07-20).

4) Economic- The economic aspect is best described in two sectors, the formal and informal economy, with informal relating to the individual level, unregistered activity that is not included in the nation's gross domestic product (U.S Department of State, 2001). All but one of the gardens are primarily used for personal, recreational use and are not used for formal economic purposes. The exception is the Riverdale Farm Garden, which sells its produce at their own farmer's market. A study conducted in Toronto on the value of gardens has shown the average produce per square meter is $12.79, with the average garden size being 6.55 square meters (Seeds of Our City, 2001). The American community Garden association has estimated a savings per household of $250-$500 yearly on food bills, which can be related to Canadian yields (Berman, 1997). Over the summer of 1995, a local farming program engaged the Frances Beavis gardeners to help in some "food miles" research, which included an inquiry into the economic, social and environmental benefits of local food production. They calculated the garden's season's crop value at CAN $7,400 worth of fresh, nutritious vegetables (Government of Canada, 1996). The economic development potential for these community gardens is modest, but important. They play a critical role in preparing low-income residents for better quality jobs over the long term. They do so by providing educational opportunities, and developing leadership and life skills. (Feenstra, et al. 1999:34). This is evident at Riverdale farm through the street youth program that is run.

In essence, these community gardens do not contribute to Toronto's formal economy. However, they are economical to the individual as they reduce the need for store bought produce.

5) Educational- Though most gardens started off with those experienced, many of the new and curious became well educated with their help. A Caribbean gardener at Moss Park was very happy to discuss his planting techniques with the others and is open to their feedback as well. With the children's summer camp at Riverdale Farm, children are able to learn first hand about the food cycle

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4 However, biodiversity is a contested subject still in debate. Immigrant gardeners view themselves as contributing to the diversity of what is grown in Toronto; ecologists may view them as introducing harmful alien species to the ecosystem.
with growing their own vegetables. The manager at Riverdale Farm stated how much the children love running around the gardens and getting their hands dirty. 'It is a great way to teach these children about ecology- hands on experience.' The knowledge for gardening and food in general is also provided through many organizations established in the city, such as FoodShare, Toronto Community Garden Network, and The Food Policy Council (appendix 2). These organizations provide gardening workshops, and monthly newsletters (for example Good Food News) are available for all to keep informed and get recipes for local, in season vegetables. There are also an abundance of Internet sites devoted to community gardens. These provide readers with clarifications of gardening as well as solutions to potential difficulties.

6) Equitable- These gardens provide food for community centers, and allow any income level to participate. The gardeners also have the option of participating in the 'grow a row' program. This program encourages gardeners to plant an extra row of vegetables that is then donated to community kitchens and food banks. The youth program at Riverdale Farm is also helpful in this respect by offering street youths a chance to learn job skills.

7) Healthful- Many gardeners are aware and enjoy the sense of eating healthy, organically grown produce. Also gardening provides many with beneficial exercise. The gardens are also mentally healthful in reducing stress and depression among the elderly gardeners. As in the Garden of Eden, many have claimed they feel better and are given a hobby to keep them occupied. Community gardens allow organic, nutritious food to be accessible to all income levels. One woman gardener from China says it's nicer to eat organic food, it's healthier and she knows where it comes from, this is her own work (Garden interview, 2001-07-22).

8) Local- The gardens allow for city residents to buy their produce through local farmer's markets. The Riverdale farm sets up a farmer's market in the summer for visitors to be able to buy local produce. As well The Ashbridge Eco garden has planned summer events along with the police precinct; this provides an ideal platform to aware the local community of the garden and allow the produce to be sold. Leafy vegetables are particularly perishable and post-harvest losses can be reduced when production is located close to consumers (Food and Agricultural Organization of the United Nations, 2001).

9) Spiritual- The spirituality of the gardens comes differently to each gardener. Through gardening, many have become much 'calmer' in life and enjoy the tranquility of being outside with nature. At the Garden of Eden, many find gardening to 'relieve depression and give some purpose to life' (Gardener interview, 2001-07-20). A garden can be a spiritual place, where the purpose and meaning of one's life is revealed. As people find their place within nature, they can begin to understand their place within the larger order of things as well. 'Gardening is a therapeutic activity for gardeners. They have changed their relationship to the Earth in a way which benefits their personal well being and invites a whole new understanding of their community' (Garden coordinator e-mail, 2001-09-18). Food production and better nutrition is one motivation for these gardeners. But it is often not the primary motivation- the gardens are very symbolic, especially to the new immigrants of Toronto. They are a tie to the homeland, allowing the gardeners to grow plants that are familiar, to practice their skills, and teach their children.
6. OBSTACLES

The thesis has so far examined the positive reactions and benefits gardens have to offer to the community and city. The question arises, if there are such benefits then why is this type of urban agriculture not as prevalent in today's cities? It is crucial to take a look at the reasons why there can be hindrances to community gardens and the skepticism that surrounds them. Previous research of community gardens, and interviews with gardeners and gardener co-ordinators themselves, have shown various obstacles that can come in the way of starting up or continuing city gardens. These obstacles can be divided in 3 basic categories; physical, community and societal.

6.1 Physical Obstacles

The physical obstacles tend to occur when garden projects are in the starting phase. There is interest in community gardening, but they may not happen due to impeding factors.

1) City approval- One of the main obstacles in the way is to get approval from the local Government and landowner to be able to start up a community garden. In the case of the Garden of Eden, it took 4 years to get acceptance to acquire a site for the garden. The urban agriculture movement is a relatively new agenda for the city, whose priorities often lie with other civic duties.

2) Start up costs- Starting up a garden can cost quite a bit of money. The costs include checking a site for toxins, renting the land, soil, water installation, seeds, and tools.

3) Site contamination- Site contamination can be a problem if a garden is to be started on used land. Some gardeners had expressed concern as to the safety of eating their vegetables. Toxins could leak into the soil from nearby buildings, or from buildings that have been torn down. Some concerns have been contamination of lead from nearby residential buildings. The FoodShare organization has shown interest in starting a demonstration garden for the public on a lot left vacant from an autoshop. Their concern here is the potential for metal and paint contaminants and waste oil. A check needs to be done in order to test the soil for toxins, this can cost between $1,000 to $2,000 Canadian (Garden Coordinator interview, 2001-07-20). The site may also need to be cleaned up from construction material or other debris; this can be a massive process, many dedicated volunteers could be needed.

4) Water availability- Lack of water can be an obstacle in many new gardens. Some sites do not have water so other means of getting water to the garden are necessary.

5) Land rights- This obstacle arises if there are no laws for permanent gardens. Many gardens could be located on sites that will be rebuilt. Securing the land for the garden project is one of the main problems. One garden not studied, the Maloca garden located on land owned by the University of Toronto, has to deal with this problem as it was paved over in April of 2001, to be turned into a parking lot (Seeds of our City, 2001). The landowner sees the garden as a temporary project, and may sell the area to developers and force the closing of the community garden. There is also the fact that urban land is highly prized and priced, with industry and commercial businesses outweighing and outbidding agriculture projects for space. Often getting the permission to build community gardens involves lobbying municipal governments to grant access to the land; once acquired, urban farmers must frequently fight to keep possession (Berman, 1997).
vacant land is mainly privately owned, this can limit the available land for gardens. Gardeners must then search for spaces at schools, churches, apartment complexes, community centers, and libraries (Garden coordinator e mail, 2001-09-26).

6.2 Community Obstacles

Community obstacles tend to determine how long gardening projects last. If there is no community spirit or support, the gardens could be deemed 'useless' and abandoned.

1) Vandalism/ Theft- Vandalism is a concern for many gardens as they are easily accessible to the public. For most of the gardens, there is no serious destruction; the common problem is theft of the vegetables. However, many understand this problem when starting the garden. As one gardener had stated, 'It does happen that some of my vegetables are stolen, but that's what food is for, to be eaten. I don't mind, if someone is hungry, then it's okay'. Theft is often occurring at Moss Park where many homeless tend to be, this is also the garden which is located away from residential buildings.

2) Waning interest- 'One of the biggest obstacles to overcome is the fading interest of the gardeners' (Garden Coordinator interview, 2001-07-20). As garden co-ordinator for the city, Laura Berman sees many excited new gardeners at the start of the growing season wane interest as the season goes on. All gardens have experienced individuals who tire of gardening and abandon their plot.

3) Lack of community support- The neighborhood may be apprehensive of a garden in the community, complaining of the garden as an 'eyesore' (Berman, 1997). This can happen if the garden is not well kept- tools not locked away or litter on the ground.

4) Personal differences- Within a gardening community, 'problems can arise between the gardeners, and this is important to overcome in order to have a successful project' (Moss Park gardener interview, 2001-07-22). At the Garden of Eden, problems arose between cultures as there was argument over plot size and location, and what was grown. It is important for the gardeners to be aware of other cultures and open-minded when it comes to discussions. A stressful gardening environment is not the goal, as a gardener from Moss Park stated, 'it should be a place for people to come together and learn from eachother'.

6.3 Societal Obstacles

Societal obstacles can determine if gardening projects will ever exist in the first place. The following tend to be the most difficult obstacles community gardening faces.

1) Time- In today's society, there is little time to 'stop and smell the roses'. With both spouses in today's families working, it is difficult to find the time to prepare a proper dinner, let alone 'wait for a garden to grow' (Riverdale farmer interview, 2001-07-22). A study has shown more time is spent eating food outside the home; over 1/3 of a consumer's food budget is spent on fast food (Manchester and Clauson, 1996). The speed and taste of fast food encourages people to eat prepared foods (Field, 1999). Studies from America have shown food consumed outside the home has increased from 16% of all meals in 1978 to 27% by 1995 (Trum Hunter, 2000). As households have become smaller and women have entered the workforce, there is little time or need to cook
meals daily on top of the work outside the home. This causes a reliance on prepared food (ibid). The stress and overwork can also limit the patience and ability for home cooking, and the food industry has responded to this with prepared foods and frozen dinners that are lower in nutritional content (ibid).

The promotion of frozen and processed foods contributes to the amount of unhealthful food eaten. Companies spend millions of dollars promoting processed and fast foods; In the United States the food industry alone spends an estimated $30 billion annually, more than any other industry (Gardner, 2000). This is an astonishing difference compared to the government that spends $350 million on nutritious food advertising (Government of Canada, 1996).

2) Perception of backwards progress- People may see community gardening as a step back in time and not a part of today's technical society. Some also may consider urban agriculture in general as a waste of city space (Rauber, 1997). As the property value of city land in Toronto is quite high, agriculture in the city is viewed as an inappropriate use of city ground. As well, there is a significant perceptual gap across generations. In the six community gardens studied, the youth population (12-20 years old) was visibly absent. Many young people in cities tend to look at gardening as the domain of older adults, an activity too boring and intolerable to be of much use to them.

6.4 Overcoming the Hurdles

Many of the community gardens examined in this thesis have had these obstacles in their way at some point in time, or are still experiencing them. Solutions to these hurdles can be a 'quick fix' when dealing with the physical obstacles, or take many generations to solve when considering societal attitudes.

6.4.1 Physical Changes

The physical obstacles against community gardens tend to hit during start up procedures. With City support and patience, many of these hindrances can be overcome.

City approval may take some time if the community garden is to be located on city property. However, in Toronto's Food Charter there is the goal of increasing the number of community gardens and encouraging their use (City of Toronto, 2001). The city has already taken the first step in acknowledging their commitment to urban agriculture practices, and obtaining a site may be easier here than in other cities. In the 6 gardens studied, all had permission to use the location even if it took some time. One possible solution to promote community gardens on private property is to offer a tax-free status on the site. This is done in Montreal, Canada, as an incentive for the property owners to allow gardening (Pfeiff, 2001).

The start-up costs vary with each garden, depending if soil toxicity tests are necessary. There are many solutions that can help ease the costs:

- Some funding is available from the City of Toronto's Community Garden Action Plan or other organizations such as FoodShare. In Canada, there are over 600 charity foundations that donate funds for a variety of projects (Berman, 1997).
Tools, compost bins, and seeds can also be donated to the project from local retailers or businesses. In the case of Moss Park garden, the tools were donated by local businesses. Many businesses can be willing to donate equipment in exchange for positive publicity, such as a thank-you by way of a newspaper article.

Fundraisers in the community are also an important source of monetary aid. Bake sales, garage sales, and forming a cookbook from neighbourhood recipes have been used at some of the community gardens to raise funds for seeds and equipment.

The clean up of a contaminated site from debris will require a strong community effort and commitment. If there is a motivated group, clean up will not pose a large problem. If the land has been contaminated with toxins the construction of raised beds is a possibility. This is a simple matter of building wood boxes, generally to a height of 18 inches or higher, then filling the bed with imported topsoil and amendments of humus or compost (Toronto Food Policy Council, 1999). However, all of the six gardens studied, and many of the others in Toronto are located on residential sites, so there is generally not too much concern over heavy chemicals that may be present on industrial lots.

Water availability is a pressing issue for many new gardens. If there is no water on sight, there will be extra costs involved in hooking up to another water source. A barrel to collect rainwater is an option to ease up on tapped water use. There also is the possibility to hook up a water hose at a nearby building that has access to water in exchange for a share in the garden, or a sharing of the water bill payment. This is done at Moss Park Garden, where a hose is hooked up to the nearby community center. Rainwater barrels are being considered for use at the community gardens to ease the water bill payment, however none have been installed as of yet.

The land tenure issue can be avoided altogether if garden projects do not seek out land that seems likely to be developed in the near future. Placing community gardens under city ownership and management is a solution, such as developing gardens in city parks (Garden Coordinator email, 2001-10-15).

6.4.2 Community Change

Vandalism and theft is a common problem that all community gardens studied have faced. In all of the gardens, the gardeners are aware of the problem and not too concerned. It is seen more as an irritant than as a deterrent of gardening. All have expected this occurrence, and not much can be done as they are labeled community gardens. The Garden of Eden, Riverdale farm, Ashbridge Eco-garden, and Jamestown apartment gardens all have fenced in their gardens, yet this still allows those intent on disturbing the garden to climb over. Tools and other equipment used in the garden should be kept locked in a shed to eliminate theft. The Ashbridge Eco-garden has a donated shed for this purpose, and the other gardens have nearby locations to store their equipment. Vandalism is mostly at the hands of the youth, but committed gardeners should repair damage and the vandals will usually tire. Theft is mostly attributed to those who are homeless and in need of food; people understand this, as 'the food is here to be eaten' (Gardener interview, 2001-07-22).

Waning interest of the gardeners occurs as the summer progresses, days get hot and laziness sets in (Gardener interview, 2001-07-21). The Garden of Eden had lost two gardeners as a result of this the first year the garden was in use, however these gardeners are now on the waiting list for a plot, to try again. The strongest solution is to keep up the motivation and involvement of the
gardeners. This can be done with social events such as Barbecues in the community, garden workshops, and other social gatherings (Garden Coordinator interview, 2001-07-20). Some gardeners prefer the early morning, or evening to tend their gardens, so at times there can be a sense of solitude due to different schedules. The social events will allow gardeners to spend more time with each other.

The key to get community support is through involving the neighbourhood in all the events that involve the garden. The social gatherings mentioned previously can involve the whole community, not just the gardeners involved. By bringing in the community to the project, there is the ability to see the positive effects the garden has. It is important to make the community feel vital to the project by informing them of the project, explaining the benefits and inviting all to join in the garden (Berman, 1997).

Overcoming personal differences among the gardeners requires a strong communication system among the participants, patience and open-mindedness. The gardeners must be open to other's ideas and opinions. In all of the six gardens, there have been differences of opinions concerning plot sizes and garden layouts. At the Garden of Eden, there was conflict over plots between the Korean and Philippines gardeners. The Koreans succeeded in getting their choices, with the Philippines threatening to walk out of the project. With the garden coordinator as a mediator, the Philippines agreed to their assigned plots and the conflict eventually faded. An open, communicative garden coordinator is a key factor in settling personal differences.

6.4.3 Societal Changes

The solutions to the societal obstacles that face community gardens involve many more levels and time than the physical or community obstacles. Perception and time obstacles are not easily overcome. These are shaped by everyday societal habits and attitudes, and it is up to each individual for change to happen.

It is important to address the idea that sustainable agriculture should not be seen as a step back in time. Instead, it seeks to combine some of the wisdom of past practices, like crop rotation and green manure crops, with careful use of current technology (Norman et al, 1998). It is easy to say there must be a change in consumption habits, but quite another to make it happen. Information, education and training are some tools that are able to improve knowledge and behaviour of society (Lundgren, 1999). Non-government organizations are important as they can act as forerunners for the cause of bringing awareness and change to the individual.
8. DISCUSSION

"The act of eating is split between the metaphors of refueling at the pump, and pleasing the senses as one might at a concert or museum. Nearly gone is the spirit of raising food and eating it as an act of communion with some larger whole" (Thompson, 1995, p. 19).

From the results of this study, a clearer understanding of community gardening and its contribution towards sustainable development in the urban society can be achieved. It is important to discuss the potential of these gardens to:
- reduce the unsustainability facing North American cities
- Educate the urban society in terms of their food system and sustainable development

Evaluating the Toronto community gardens against nine aspects of sustainability from the Kloppenburg study (2000) allowed it to be shown how community gardens contribute to sustainability. All the gardens touched upon these nine aspects in one form or another. There were many links between the aspects as well, such as local and healthful, equitable and community involvement.

This demonstrates how gardens work on all levels, not just environmentally, that can help with the progress towards sustainable cities. Community gardens can work on the entire environmental, social, and economic levels. Environmentally, they allow for a closing of linear food system by decreasing the need for excess inputs such as energy and transport, as well recycling back wastes in forms of compost and using rain as a source for water. The gardens increase biodiversity by adding vegetable and flower species into an area identified prominently by concrete. Community gardens also work on social levels as it takes a neighbourhood to run these gardens, a neighbourhood of all people regardless of age, race, class and culture. In terms of the informal economy, gardens can produce an increased well-being for the individual and bring in local profit from farmer's markets. As all the gardens are for personal use, there is not much contribution towards the formal economy. If cities are looking for formal economic output in the local economy, then other, larger-scale urban agriculture projects are the best solution. This can include farms that are established on the periphery of the city, and examples from Annex Organics that have shown the possibility of urban agriculture as a monetary source. It is important to note that there should not be judgement on the worth of community gardening on the basis of formal economy alone.

It has been interesting to see how the gardens contribute to all three cornerstones of sustainable development. As a matter of fact, the act of community gardening seems to provide a ground up approach to sustainable development. Although all the gardens were motivated due to a variety of factors aside from environmental reasons, the community involvement, outdoor activity, and healthier food all contribute in the goal of sustainable agriculture.

Out of all the gardeners interviewed for this study, just one mentioned environmental sustainability as their motivating factor for becoming involved in gardening. This is not to say there are not more who share her view. What is important is that the gardeners who were motivated for different reasons are partaking and learning in the process about sustainable food systems. From contacts with other gardeners and organizations, and involving herself in workshops, a stronger sense of the food system can develop. This can be viewed as the inverse of figure 1, ie; by starting the community gardens, a path was led up to sustainable development (figure 3). A review
can be done here to show how all gardeners can participate in projects towards sustainability in the food system.

![Diagram of inverted path to sustainable development]

People are brought together through the gardens, and become aware of their access to food. The gardeners become aware that urban agriculture can be possible in cities, and their close connection to their food connects them in the urban foodshed. For some of the gardeners that were interviewed, gardening has made them more aware of what they are eating, and enjoy eating what they consider is healthier more nutritious vegetables. The use of compost at the gardens, organic fertilizers, and the possibility of using rain for watering have shown the gardeners what is involved in sustainable agriculture. Last but not least, together with the above-mentioned contributions to sustainability, the gardeners come to learn what is involved for a successful sustainable development in the city.

The children's role is most important in these gardens. From the interviews, it was shown how much the children enjoy the gardens, and how it is a great way to learn about their environment. The children that are involved in gardening have become educated about food, seeing from their own eyes that carrots grow in the ground, not processed in some warehouse and trucked to the grocery store. However, a concern that has resulted from this study is the stark absence of youth gardeners, with the exception of some who are actively environmentally aware of sustainability issues. What has happened to the children who were involved in the gardens and are now in their teenage years?

One possible reason is the societal obstacles and the influences of the media. A child's most important influence is the family environment, and a strong sense of community and a relationship with their environment can have lasting impacts (Trum Hunter, 2000). If children are raised with the idea of a trip to McDonalds as a 'special treat' instead of a homemade apple pie, their food habits can become reflective of this. It is important to educate children in the nutritional benefits of fruits and vegetables, as their diets are extremely influenced from the media and what they are exposed to.

The main obstacles that affect community gardening tend to be those connected with societal views and attitudes. In today's North American society, little thought goes into the food process. What is needed is awareness and change from three main levels, as shown in figure 4.
People must be influenced by and influenced at many levels to change current opinions (Saljo, 1999).

The city and its governing policies are what allow community gardens to take place, and their recommendations and funding help the push towards urban agriculture projects becoming a staple section to the city. If there are no strong regulations, unsustainable practices could continue uncontrolled. Generally, urban managers have not been doing a good job of either regulating or supporting urban agriculture (Henderson, 1998). Without the support of local governments, sustainable agriculture cannot achieve its potential. What is needed are policies that support initiatives for urban agriculture rather than barriers to block them. Agenda 21 reinforces the need for "adopter innovative city planning strategies to address environmental and social issues", including "strengthening community-based land-resource protection practices in existing urban...settlements" (United Nations Conference on Environment and Development, 1992, p.77). As mentioned, Toronto has committed to the Food Charter that supports the use of urban agriculture. This is one step in the right direction. In 1999 Toronto City Council endorsed the Community Garden Action Plan, which seeks to establish a community garden in every ward by 2003. Though food security and hunger issues are the top priorities, an indirect result is the improvement of the environment and community relationship within the city.

The city of Toronto does provide some funding with grants to support community projects, showing there is interest in urban agriculture. However, these grants are quite small to cover the abundance of projects in the city (Food and Hunger Action Committe, 2001).

The more that urban agriculture is seen in positive terms by government officials, lending agencies, and the general public, the greater the likelihood of a smoother road. However, if the institutional climate is indifferent towards urban agriculture, its advocates will clearly encounter more difficulties in achieving their vision.

Non government organizations are very important in providing awareness and education to the urban society concerning matters with the current food system. Strong organizations are able to help communities begin garden projects and demonstrate their potential. This can be seen with the examples set by the organizations at work in Toronto.

At the very base for successful community gardening lies the individual's willingness to participate and change current attitudes and habits formed in the city society. How can one replace old habits with new, more environmentally friendly ones? People are generally not prepared to make large sacrifices for change, less dramatic changes can be easier (Biel, 1999). In this respect, community gardens can help to motivate the changes. With gardening, the habit of buying imported produce at the supermarket can be replaced by growing one's own. The realization of the benefits from local, organic vegetables and fruit can result in a change towards more environmental habits. Appendix 4 illustrates these steps towards achieving overall environmental habits. The concept is for general changes, but can be used in this context of a society's goal towards a sustainable food...
system. It is about making small, conscious changes towards developing more environmental habits.

The way society eats, prepares, and grows food is a reflection of values, and trends of that society. As stated in a discussion paper from the Toronto Food Policy Council (2001);

'A city's food habits determine whether backyards are filled with red tomatoes, squash, vines, or covered in plain lawn; whether people compost or throw food in the garbage; whether the highway is packed with trucks from across the country or whether local farmers bring in food with their pick-up trucks'. Awareness is the key. The community gardens will not likely overthrow the need for imported produce alone. However, community gardens are only one part of the urban agriculture movement.

When is Dinner Ready? Until the individual's awareness of their impact on, and their ability to, change the current food system, dinner will continue to be prepared by the processed food industry and defrosted in the microwave; minutes after a day's work at the office, just in time for that favourite TV show. The results from this study have shown there is growing awareness of the food system today through the number of city organizations promoting urban agriculture and the increasing numbers of community gardens that provide education to each gardener. Community gardening is a people's movement, and assists in the work towards a sustainable food system by bringing awareness to the individual level.

9. CONCLUSION

The global, decentralized food system of North American cities today is seen as unsustainable in its linear system, degradation of the environment and loss of consumer-food ties. The loss of connection to the Earth by city society is a problem, and the movement towards sustainable agriculture can be one solution. Urban agriculture is one division of this movement, attempting to reconnect city societies to the food system. In this thesis, community gardening was evaluated on its role to contributing awareness and sustainability to the city environment. The community gardens studied in Toronto, Canada were shown to bring awareness to the public, and though not implemented specifically for sustainability, each garden involved environmental, economic, and social aspects of sustainability. Obstacles are seen as common phenomenon throughout the garden projects, however with city and non-governmental organizations as support, the physical and community obstacles can be overcome. It is the social hinderances that are the largest threats to community gardening and can take the longest time to overcome.

Future research in the field of community gardening as an effective urban agriculture project can focus on the media's influence on the youths of today. The lack of young individuals aged 13-20 involved with community gardens may be attributed to the influence of the media in promotion of processed food, as well as the urban lifestyle habits. The youth of today will be tomorrow's leaders, and it can be of importance to study their perceptions of the current food system.
REFERENCES


Ulrika Bjurkell

When's Dinner Ready?
LUMES Thesis, November 2001


U.S Department of State. *The Advent of the Megacity.*


APPENDIX

1. Toronto’s Food Charter

In 1976 Canada signed the United Nations Covenant on Social, Economic and Cultural Rights, which includes the fundamental right of everyone to be free from hunger. The city of Toronto supports this commitment to food security and the city of Toronto has signed a food charter in June 2001 with a national commitment to food security and the following beliefs:

- Every Toronto resident should have access to an adequate supply of nutritious, affordable and culturally appropriate food.
- Food security contributes to the health and well-being of residents, while reducing their need for medical care.
- Food is central to Toronto’s economy, and the commitment to food security can strengthen the food sector’s growth and development.
- Food brings people together in celebrations of community and diversity and is an important part of the city’s culture.

Fig 3. Toronto’s Food Charter. Source: Toronto’s Food Charter, 2001

2. Toronto Community Organizations

Toronto Food Policy Council (FPC)- www.tfpc.ca

Toronto City Council formed the food policy council. The council was specifically instructed to investigate the potential of urban food production. They do not suggest gardens will end hunger, rather seeing them as a community development tool leading to urban awareness of the food system (Cosgrove, web article 1998).

The Toronto Community Garden Network (TCGN)- www.cgnetwork@foodshare.net

This network is an organization that is involved with supporting and linking community gardeners and their gardens. Their main link is the publishing of weekly newsletters that are also available online. TCGN also provides workshops monthly, an annual garden tour and harvest party, as well as sharing discounts from garden suppliers to members.
3. The Kloppenburg study focused on a conference held for the sustainability of the food system. Among those in attendance were scholars, students, farmers, teachers, businessmen. After discussions, a list of 14 indicators of sustainability was produced.

<table>
<thead>
<tr>
<th>MFAl Formulations of attributes of a Sustainable Food System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecologically sustainable</td>
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<tr>
<td>Knowledgeable/ communicative</td>
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<tr>
<td>Proximate</td>
</tr>
<tr>
<td>Economically sustaining</td>
</tr>
<tr>
<td>Participatory</td>
</tr>
<tr>
<td>Just/ ethical</td>
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<tr>
<td>Sustainably regulated</td>
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<tr>
<td>Sacred</td>
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<tr>
<td>Healthful</td>
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<tr>
<td>Diverse</td>
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<tr>
<td>Culturally nourishing</td>
</tr>
<tr>
<td>Seasonal/ temporal</td>
</tr>
<tr>
<td>Value-oriented economics</td>
</tr>
<tr>
<td>Relational</td>
</tr>
</tbody>
</table>

*Source: Kloppenburg et al, 2000.*

4. Model for achieving a move towards more environmentally friendly habits

<table>
<thead>
<tr>
<th>Impeding Factors</th>
<th>Steps towards environmentally friendly habits</th>
<th>Promoting Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly established, old habits</td>
<td>1. Activation</td>
<td>Priming of pro-environmental value</td>
</tr>
<tr>
<td></td>
<td>2. Attending present behaviour</td>
<td>Specific information about positive and negative consequences</td>
</tr>
<tr>
<td>Negative beliefs about alternatives</td>
<td>3. consider alternative solutions</td>
<td>Evident, existing alternatives</td>
</tr>
<tr>
<td>Lack of specific knowledge</td>
<td>4. plan new behaviour</td>
<td>Clear procedural instructions</td>
</tr>
<tr>
<td>Physical obstructions</td>
<td>5. test new behaviour</td>
<td></td>
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<tr>
<td>Unexpected negative consequences</td>
<td>6. evaluate new behaviour</td>
<td>Positive feedback</td>
</tr>
<tr>
<td></td>
<td>7. establishment of new behaviour</td>
<td></td>
</tr>
</tbody>
</table>

*Table 3. (Biel, 1999).*