Trent University Community Garden Project

Includes:
Final Research Report
Bibliography

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ABSTRACT

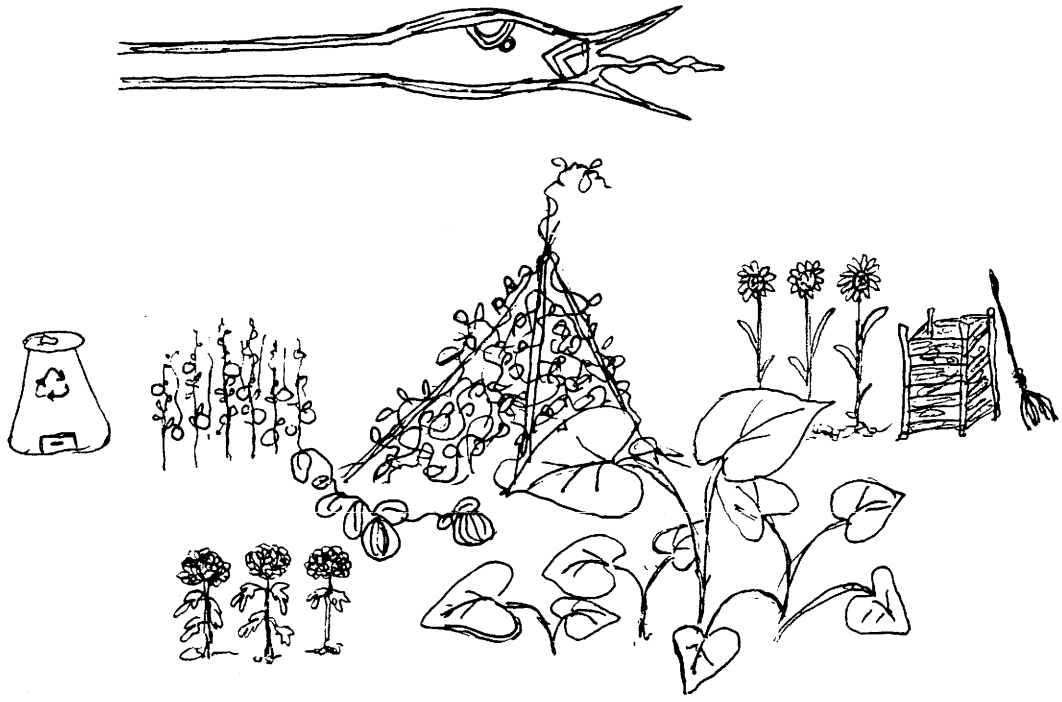
The primary purpose of this project was to represent research that can help to develop a community garden on Symons Campus at Trent University. The secondary purpose was to hopefully initiate many new traditions at the university and open the garden to the entire community. The research was done by looking at the history of community garden efforts at Trent University, community gardens in the Peterborough region and select community gardens outside of Peterborough. Finally the report looks at ecological management techniques.

It was concluded that as much as people may want to have a community garden, its ultimate success depends on how it is managed ecologically. Also, the selection of particular combinations of plants varies with the environmental conditions; therefore the report suggests strategies for evaluating literature and consulting with other growers.

KEYWORDS:

Community garden, Trent University, YMCA, The City of Peterborough, program, community participation, FoodShare, ecological management technique

TRENT UNIVERSITY COMMUNITY GARDEN PROJECT



1st Report

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Date: Monday, February 26, 2001

Trent University Community Gardens Project
Research Report # 1

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1. Introduction

University, for most students, is a time of relating to the world, a time of establishing connections and experiencing community. It can also be a time of hardship, endless work, and often a time where the most basic necessities are scarce. The university experience allows young people to reach out to others, to commit their energies to helping the people around them and forming ideals about the kinds of social or environmental change they would like to work towards. For all these reasons and more, we have been researching the feasibility of establishing a community garden at Trent University, as a pedagogical tool and practical community project.

This report represents research that can help to develop a community garden on Symon's campus. A community garden at Trent would have multiple roles within the academic community and the Peterborough region. As a learning centre, the Trent garden would teach about ecologically-sustainable food production, promoting organic gardening, composting, water conservation and biodiversity. The Trent garden can also be affiliated with academic departments to provide space for agricultural or horticultural research, organic gardening experience, or the growth of traditional Aboriginal plants to help pass on cultural knowledge to students. Further, workshops can be offered to the public through the Trent garden. Hands-on lessons in composting or organic gardening may be an interesting way to create connections between the Peterborough region and the university. As a community centre, the garden would provide opportunities for students to produce their own food and fresh produce for Peterborough social service organizations, and host social events including community cook-outs, celebrations and feasts. The garden can also serve as a peaceful common space, where students, staff and faculty can visit during their spare time.

Most importantly, the Trent Community Garden has the potential to increase food security amongst students and the surrounding community. In this report, there are interesting suggestions about how the produce gathered from the Trent Garden can be used year-round to support people in need within the Trent community. There are also ideas about how the harvest can feed people through local social service organizations in Peterborough.

We feel that a community garden is an interesting and holistic way to promote community, low-impact lifestyles and Cupertino at Trent university. While students, staff and faculty are

facing administrative difficulties and facing the loss of the downtown colleges, we hope that the Trent garden will be a way for the community to create and maintain a dedication to interactive learning, environmental sustainability, and empowerment. We also hope that this project will initiate many new traditions at Trent University, and open the garden gates to the entire community - fostering positive community interaction and experiential education.

2. History of Community Gardens Efforts at Trent University

2.1 Location, Format and Status

The community garden currently being planned will not be the first at Trent University. For several years in the early to mid-seventies, a community garden flourished next to Symons Campus (Taylor 2001; pers. comm.). Although the person responsible for organizing the garden could not be located, two informants were particularly helpful in gathering some information about how this former garden worked, and why it folded. This information is invaluable for planners of a future Trent University community garden, since it points out opportunities particular to Trent that can be taken advantage of, as well as a major pitfall to be aware of.

According to Carrie Taylor (2001), there was a community garden behind the present Otonabee College residence for several years in the mid 1970's. Mrs. Taylor and her husband Mr. Colin Taylor (now Dean of Arts and Sciences at Trent) had a plot there from 1973 to 1975, while they were Dons at Lady Eaton College. Mrs. Taylor says that individual plots were rented during the summer for a small fee, mostly by Trent faculty, some students, and very few community members. Most of the space in the garden was used for vegetables rather than ornamental flowers. Mr. and Mrs. Taylor left the garden after their third year (in 1975), because they had left the college and bought a home where they had garden space of their own. Mrs. Taylor suspects that the garden folded because interest dwindled and plots were not being purchased.

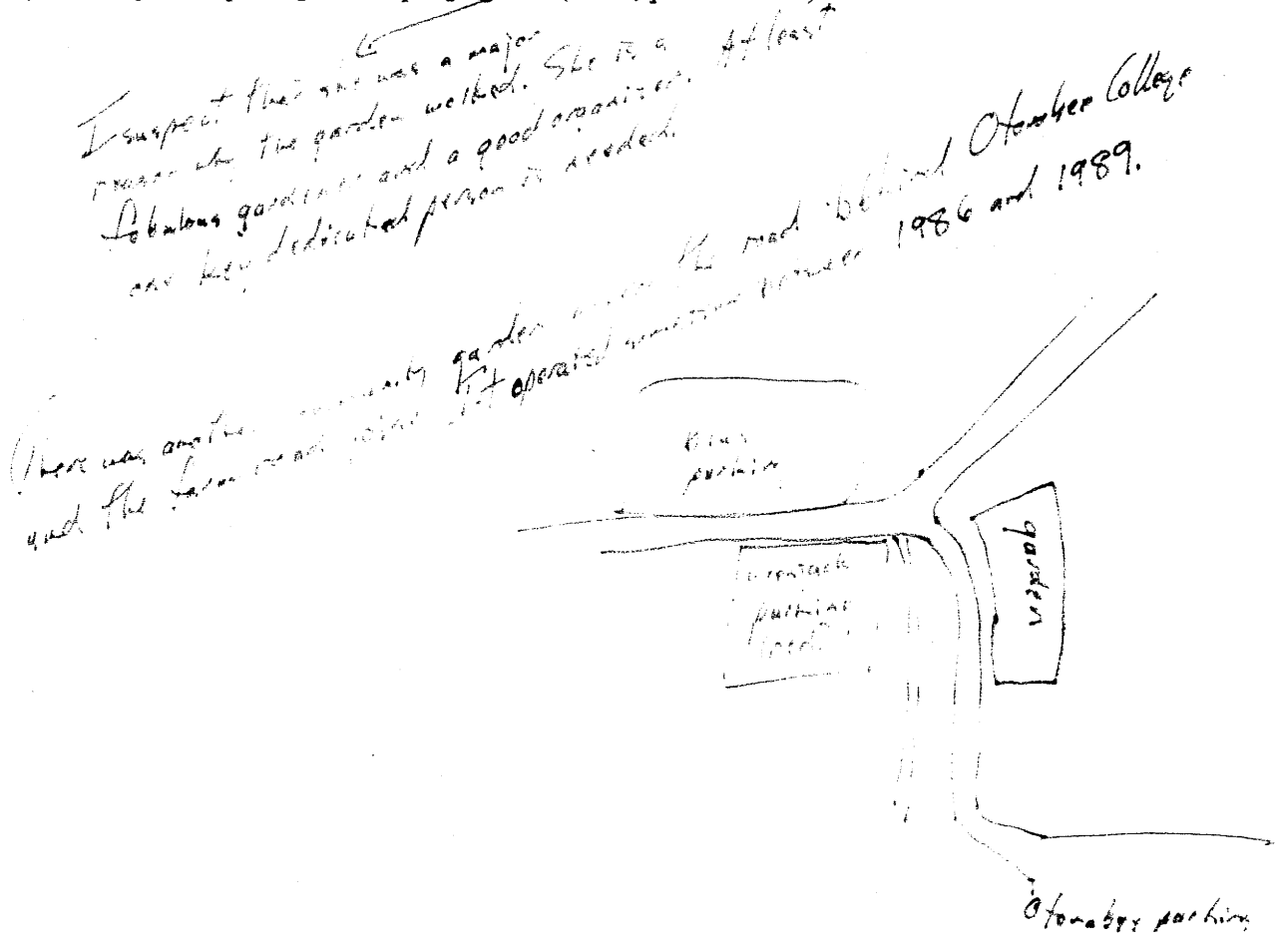
Mr. Harvey Miller, a long-time employee of the Physical Resources Department, adds that the former Trent community garden was tilled and fertilized with manure yearly by the Bolton brothers, who rented the farm to Otonabee College from the University (Miller 2001;

pers. comm.). Mr. Miller commented that the soil condition of the site was "very good" (2001). Like Mrs. Taylor, he supposes that the garden eventually collapsed because participants lost interest and stopped buying plots.

2.2 *What can be learned from the past?*

This information is of particular interest to planners of a future Trent community garden because it emphasizes what is perhaps the most important rule for community gardening. No community garden can exist without the interest and support of a sufficient number of people in the community. For that reason, extensive surveying will be done within the Trent community as part of the current planning, to gauge the level of interest beyond the researchers'.

If community interest surveys do indicate sufficient commitment to the idea, the existence of the previous garden suggests some features of Symons Campus that appear conducive to setting up a community garden. For instance, the soil is of good quality, and neighbouring farmers may be willing to till and fertilize. Further research will explore the potential opportunities and challenges of community gardening on Symons Campus in more detail. At present, however, it is hard not to agree with Carrie Taylor when she says, "It would be lovely to see garden plots [on campus] again" (2001; pers. comm.).



3. Community Gardens in the Peterborough Region

3.1 The role of the YWCA- Direct support

ommunity gardening in Peterborough has become quite widespread and is continuing to grow. As a city with lots of greenspace, Peterborough has plenty of room for residents interested in community gardening. Besides having space for potential gardeners, the City of Peterborough also has resources available for gardens, such as compost from yard waste collection. However, the most important entity contributing to the proliferation of community gardening in the Peterborough area is the YWCA.

Connie Thompson, Community Garden Coordinator at the YWCA, says that the organization supports seventeen gardens in the area in various ways (2001; pers. comm.). Community gardens affiliated with the YWCA directly or indirectly supported. The YWCA asserts that it "exists to support the right of all women and their families to live free from violence, poverty and oppression" (YWCA 2000a); in Peterborough, assisting with food security through community gardens is a part of this mandate.

Many community gardens in Peterborough would not exist without the direct support of the YWCA. Some of direct-support community gardens are located in shelter communities or non-profit, affordable housing situations where resources are already stretched thin. The YWCA supports community gardens on Centennial Crescent (second stage housing for women), Crawford Drive (affordable housing) and at Cameron House (temporary housing for women). The YWCA also supports a community garden at Kairos – a non-profit housing community funded by a local church group for women fleeing abuse. Other community gardens receiving direct support are the Armour Road garden on the Rotary Greenway Trail, St. Stephen's garden at Hilliard and St. Paul St., and the Lake Street senior's complex garden.

Gardens that are directly supported by the YWCA are divided into plots and rented out to gardeners for a sliding scale fee (no more than $10 for the season) (YWCA 2000a). One community member at each garden is designated as a contact person for the gardeners at their site. However, the YWCA does most of the organization for events, communication and the physical needs of the gardens. Tilling, compost, straw mulch, and composters from the city are all provided by the YWCA to directly supported community gardens. The YWCA also collects

and distributes seed and tool donations amongst gardeners. The rest of the garden labour – weeding, watering and tending – is the responsibility of the garden members (Thompson 2001; pers. comm.).

A key feature of the YWCA's involvement with community gardens is their commitment to positive interactions and effective conflict resolution among gardeners. Besides meeting the physical needs of the directly supported community gardens, the YWCA makes an effort to assist with positive community dynamics along with healthy food. Once a week, the YWCA tries to send a representative to visit each directly supported community garden to make sure that members are getting along well, and to confirm that the gardeners have all the supplies that they need. Community garden meetings are run by YWCA staff as well. At the end of the season, an inter-garden harvest party hosted by the YWCA gives community gardeners from around Peterborough a chance to share the food they have grown. Furthermore, Thompson stated that the YWCA will be offering conflict resolution workshops in the coming season for local community gardeners (2001; pers. comm.). The YWCA's commitment to healthy communities indicates that their community gardening program is not just about food security – it is about creating positive and reliable relationships amongst community members as well.

The leadership that the YWCA has taken with Peterborough community gardens could be beneficial to the Trent garden in many ways. First, the YWCA is aware of sources for seeds, seedlings and tools, and could probably help Trent gardeners find funding for these resources in the community if needed. Also, the YWCA has a great deal of experience with social structures in community gardens and would likely be able to offer advice on appropriate rules and codes of conduct for the garden. The Trent garden will also be able to learn about the charitable aspect of community gardening, and will likely participate in some YWCA food sharing programs discussed below. While the structure of the YWCA gardens are very different than what we anticipate the Trent garden to be, the YWCA has much to offer in the form of advice, programs, sources and support. It is our hope that the research conducted here and the subsequent creation of a Trent garden will also benefit the YWCA and its programs for years to come.

3.2 *Peterborough Gardens Not Directly Affiliated with the YWCA*

Several gardens in the Peterborough area have been created with the support of the YWCA and branched off, or started up on their own. Connie Thompson asserts that there are currently 10 gardens within Peterborough that operate without direct YWCA support (2001; pers. comm.) For example, the Ba'hai community in Peterborough operates a shared garden right next to the Armour Road garden on the Rotary Greenway Trail. While a separate Armour Road garden receives direct support from the YWCA, the Ba'hai community garden is self-sufficient – conducting its meetings and caring for the physical structure on its own. The Mount St. Joseph garden at Northminister Church is another example of a garden that is supported by an independent community. A garden at Woolsley and Barnardo St. is particularly unique in that it has been created by local citizens without any support from the YWCA. This garden group cultivates flowers and focuses on landscaping with flowers and fountains for the enjoyment of local residents.

All of the gardens mentioned above had a land base to begin with, and were supported by distinct communities – religious groups and neighbours were instrumental in their creation. In addition, the above gardens presumably had permission to use the land that they garden on. A particularly interesting example of a very different independent garden is the Bonnacord Garden, located on Bonnacord St. across from Jackson Park.

David Silburn, a Trent student and co-founder of the garden says that organizers were interested mainly in improving food security for a diverse group of people, particularly for the residents of a nearby low-income housing complex (2000; pers. comm.). Re-establishing native flora in the area and providing habitat and shelter for wildlife was another important goal for founding members (Silburn 2000; pers. comm.). The most unique aspect of the Bonnacord garden is that it is a "guerrilla garden", that is, it is situated on municipal property without the permission of the city. Bonnacord gardeners have had to negotiate fiercely with city council to maintain their urban oasis, because of the high property value of the land they have chosen. Becky Rosen, current co-ordinator of the Bonnacord garden, expressed enthusiasm that students at Trent were organizing for a community garden, as she feels that the city often disregards the need for a garden that is tended mainly by youth (Rosen 2001; pers. comm.).

Another unique aspect of the Bonnacord Community Garden is that it is a communal garden without individual plots. While Silburn acknowledges that natural leaders do emerge amongst Bonnacord gardeners, he maintains that gardening chores are a community responsibility. Bonnacord's transgression of notions of private property helps to reinforce this "informal" organization. The result of this communal responsibility shows at harvest time, where each person takes what they need, leaving enough for others to enjoy (Silburn 2000; pers. comm.).

The Bonnacord garden is also concerned with accessibility and inclusiveness. Silburn emphasized that his vision of the garden included a revitalization of the community. He commented that the diverse group of people tending the garden "re-enacts kinship". People of all ages come to Bonnacord – elderly people with a wealth of gardening knowledge have an audience to whom they may pass on their wisdom, while children are able to play imaginatively in a safe, naturalized setting. Physically, Bonnacord appears to be a welcoming and shared space as it is not enclosed by fence. The lack of security at Bonnacord emphasizes the expectation that neighbours and passers-by will respect the work that gardeners have invested in the garden. Silburn commented that because the garden is not fenced off and made inaccessible to outsiders, homeless youth living in Jackson Park have worked in the garden during several growing seasons to grow their own fresh vegetables (Silburn 2000; pers. comm.). Inclusivity is the most salient feature of the Bonnacord garden, as it shows that community gardens can be an open, equal space in a highly stratified society.

The formats and purposes of gardens that are not affiliated with the YWCA vary greatly, indicating that there is certainly more than one way to operate a community garden. Whether the Trent garden decides to have individual plots, or work communally, or whether it grows mostly vegetables or flowers, there are many people in the Peterborough community to give advice and ideas to organize an effective social structure. On the other hand, it will be up to Trent gardeners to figure out how a community garden can fit into a large institution such as a university. Fortunately, since community gardening is a strongly supported activity in Peterborough, we will not be alone as we design the Trent garden and put our ideas into practice in the beginning years.

3.3 Related Educational and Community Development Programs

3.31 YWCA Programs

Community gardening has long been associated with issues of food security, community well-being and environmental health. A study conducted by the Philadelphia Urban Gardening Project is quoted by Cultivating Our Community, an urban gardening program with Ohio State University Extension, on the benefits of community gardening in low-income urban areas.

> Community gardens provide an alternative for people in low income communities to simultaneously improve food security and their participation in a local food system. For low income families, urban gardens are a potential source of fresh, nutritious produce at a relatively low cost... Urban gardens also provide a focal point for people to come together in community and build neighbourhood relationships at a time when disappearing resources put a strain on inner city families. (Cultivating Our Community 2000)

The YWCA also incorporates important links to food security and public education in its community gardening programs. In a YWCA newsletter, the percentage of low-income families in Peterborough was reported as 13.1%. Because of this high percentage of people living on low-incomes or in poverty, the YWCA has a well-co-ordinated Food Action group that connects low-income families to a variety of affordable sources of fresh, nutritious produce. Associated with the Food Action program are Food Box initiatives, collective kitchens, and "Gleaning" (organized trips to farms with excess produce to harvest) (YWCA 2000b).

Community gardeners and home gardeners can get involved in YWCA's Food Action program by participating in their "Grow-a-Row" initiative. Growing an extra few rows of carrots, turnips, potatoes, radishes or tomatoes can help stock kitchens at Brock Mission or help people involved with the Peterborough Native Friendship Centre (YWCA 2000b). The Trent Community Garden will almost certainly be involved with the Grow-a-Row program through the YWCA to connect gardeners with the Peterborough community, and to foster a strong sense of responsibility for action against poverty in our city.

Besides ensuring access to affordable and nutritious food in Peterborough for low-income families, the YWCA also offers workshops to local gardeners. Thompson mentioned that a canning workshop was offered last fall to help gardeners learn how to preserve the summer's harvest (2001; pers. comm.). In the coming season, Thompson hopes that the YWCA will be

able to offer conflict resolution sessions as well, to help with social challenges in the gardens. Thompson identified poor attendance as the main problem with workshops, but maintained that the YWCA will continue to offer gardeners the opportunity to learn new skills through organized sessions (Thompson 2001; pers. comm.).

Programs and services offered by the YWCA are focused mostly on food security and anti-poverty action. Because the YWCA is a social service organization, its mandate is appropriately centred on families and their safety in the Peterborough community. However, there are many other issues concerning community gardening that are not directly addressed by the YWCA. Fortunately, there is another key organization in Peterborough that promotes the environmental benefits of community gardening.

3.32 *Ecology Park Programs*

The Peterborough Ecology Park is an astounding demonstration site affiliated with Peterborough Green-Up that promotes organic gardening techniques and ecological restoration projects. The Ecology Park began as a community garden and has evolved into a public education garden geared towards local homeowners. Visitors to the Ecology Park will find a native tree nursery, children's garden, compost teaching area, food, wildlife, butterfly and pond gardens, herb and heritage areas, xeriscape (water-conservation gardening) demonstrations, ecological restoration projects, and forest and meadow tracts (Peterborough Green-Up n.d.). The Ecology Park attempts to educate the Peterborough population through display gardens, free public workshops, family activities, compost and garden clinics, special events, and school tours (Peterborough Green-Up 2000).

Ecology Park public education programs are particularly useful to local teachers who have opportunities to bring their classes to the site, as part of units focused on natural history or environmental themes. A pamphlet advertising educational opportunities at the Ecology Park describes the mandate of the school programs:

> Ecology Park school programs are designed to bring natural processes back into our daily lives, and to teach important skills for sustainable lifestyles. Themes such as food, habitat, biodiversity and respect for life are woven throughout the activities of the park. (Peterborough Green-Up n.d.)

The Ecology Park highlights natural themes in their programs such as animals and their habitats, trees, water, soil, composting, food, energy, and healthy lifestyles (Peterborough Green-Up n.d.). Cathy Dueck, Ecology Park Co-ordinator, has ample and impressive experience with successful activities for children in the garden. During our conversation, she spoke about the aspects of the garden that children love best: pulling up potatoes, planting in the garden and creating their own paper pots planted with lettuce and radishes to bring home with them at the end of their visit (Dueck 2001; pers. comm.). By incorporating an array of ecological themes into their community garden site, the Ecology Park emphasizes human dependence on the natural world and encourages environmental awareness and responsibility in visitors.

The Ecology Park also works towards instilling these values in a larger audience through free workshops, a garden market, and special events. For example, workshops focus on organic gardening, composting and native plant propagation. The garden market operates three days a week and sells leaf compost, produce, plants, straw, mushroom compost, wood chips, composters and other supplies throughout the growing season (Peterborough Ecology Park 2000). The Ecology Park is a community garden that intends to include the interests of the entire Peterborough population, rather than just a neighbourhood or small community. The experience and expertise of Ecology Park staff is a valuable resource to us as we plan for and design the Trent Garden.

3.4 ~~2.3~~ *Factors Contributing to Success*

One of the main forces behind the success of a community garden is the dedication of community organizations. Both the Peterborough YWCA and Peterborough Green-Up have made major contributions to the success and popularity of community gardening in the area. Connie Thompson estimates that there are approximately 100 community gardeners in Peterborough (2001; pers. comm.). Almost half of Peterborough community gardens would not persist without the help of the YWCA. However, despite the power and influence of the YWCA as an established social service organization, Thompson points out that no garden will survive long without the active interest of community members. Cathy Dueck, founder of the Ecology Park agrees. She stressed that community gardens often lack volunteers in the beginning stages and cautioned against depending on arbitrary commitments made by individuals in the planning

stage (Dueck 2001; pers. comm.). Both Dueck and Thompson maintain that volunteers are the community garden's most valuable and necessary resource. After all, a community garden isn't much without a community.

In the first year of the Ecology Park's existence, Cathy Dueck learned a great deal about group dynamics, practical gardening skills, and challenges faced by gardeners. As a graduate student at Trent, Dueck started the Ecology Park as a Master's thesis project in 1990. The Ecology Park was originally situated near a senior's complex, where there were interested gardeners (Dueck 1990). Before starting the garden, Dueck spent a great deal of time analyzing her chosen site. She examined the landscape, history and accessibility of the site, and sent away soil samples to test a variety of nutrients and pH. Dueck emphasizes the importance of testing for lead in community garden soils to ensure public safety (Dueck 1990).

After ensuring that the chosen site was appropriate, Dueck set out to publicize the new garden through a newsletter and local newspapers and television (Dueck 1990). Starting with $630 donated by the Peterborough Sustainable Development Committee and Kawartha World Issues Centre, Dueck had funding for soil testing, tools, green manures, newsletters and some money to pay for a part-time co-ordinator hired through the Ontario Work Study Program (Dueck 1990). While the garden was well-publicized, and funded, Dueck did run into some interesting challenges in her first year at the garden.

After thoroughly surveying the site in advance, the garden was planted. However, the presence of groundhogs had not been anticipated. While the gardeners worked hard at cultivating, weeding and tidying the garden, the groundhogs proceeded to destroy a large portion of it. This situation sparked conflict in the garden. Gardeners' beliefs clashed during discussions of what should be done about the groundhogs: some felt that it was appropriate to destroy them, while others were poised in ethical opposition. In the end, a gardener who owned live traps relocated the groundhogs. In reflection, Dueck commented that although this decision sounds the most benign, it may have had repercussions for the animals, and perhaps for other gardeners in the area (2001; pers. comm.). The moral of Dueck's story has to do with unexpected challenge and community response. The garden is a shared space where community members bring their own beliefs, cultures, and identities with them, and is place where diverse group of individuals can learn to work together. Future Trent community gardeners may wish to emphasize this fact in developing a mandate. Another, less profound implication for the Trent

garden is the awareness that groundhogs can do severe damage to a garden. Dueck's conclusion to the story was that groundhogs are virtually impossible to eradicate (Dueck 2001; pers. comm.)

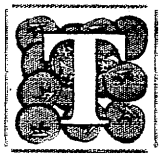
In Dueck's view, another key to the success of the Ecology Park is what she refers to as a non-threatening appearance (Dueck 2001; pers. comm.). Homeowners in the Peterborough area are one of the main target audiences of the Ecology Park, which must be tailored to meet the majority's tastes and standards. Because there is a popular assumption that organic gardens are rampant with weeds and unkempt-looking, Dueck feels that it is important to combat this stereotype. Therefore, Ecology Park staff pay special attention to the maintenance of walkways, weeding and plantings of flowers. Well-defined edges in garden beds and flowers counter popular stereotypes of organic gardening and make a good impression on sceptical visitors (Dueck 2001; pers. comm.). Planting flowers in a community garden can serve a dual purpose of adding visual appeal, while attracting pollinators to the garden and aiding in propagation.

Flowers are also the theme for the most popular workshops at the Ecology Park (Dueck 2001; pers. comm). Workshops that have been offered by the Ecology Park on food issues or growing food have been poorly attended. Dueck feels that this may be because flowers and landscaping are more popular amongst landowners (Dueck 2001; pers. comm.). Clearly, this poses a challenge to the community garden movement, which is primarily concerned with food production, and raising awareness around food issues. However, at the Trent Community Garden, this may be less of a problem, as students who sign up to work with the garden will likely be interested in growing food. However, the importance of flowers and other aesthetics is indisputable in the garden. Many people who have filled out surveys for the Trent garden have indicated that they would like to see flowers in the garden as much as they would vegetables and medicinal and cooking herbs.

Thus, careful attention to community participation, close observation of potential sites, a diverse collection of plants and educational opportunities, and perseverance should be key factors in the success of the Trent garden. Luckily, many have gone before us to learn these lessons through experience, and we have their expertise to draw upon as we make our way into the realm of community gardening.

4. Select Community Gardens Outside of Peterborough

> How people get their food is ... important. Food distribution systems that involve communities and help to create neighborhood leaders have a great potential to enhance individual and community empowerment, by leading people to feel that they have some control over this very basic part of their lives. Again, because of its material, cultural and social importance, food is special in its power to mobilize people to action. All our programs are based on this community building principle. (FoodShare 2000)



he above quote expresses some of the thoughts and feelings that lead to the initiation of this research project. Like FoodShare, we believe that the source of our food is an important issue. We also concur that community control over food, or production of food can empower people and lead to greater social and physical health in a community. As researchers and planners, we are committed to promoting community empowerment as much as possible by welcoming all people who are willing to participate in the planning, designing, planting and harvesting of the garden. In short, the Trent garden is being envisioned as a *community centre* for social and educational activities; a place of intensive food production and sharing; and a hub for students, staff and faculty to remember the very real connection that we all share with the natural world.

Many community gardens and food action organizations outside of Peterborough have developed interesting educational programs and intricate adaptations to their unique settings that we will explore in this section. We feel that learning about the work that other organizations have already done will enable us to bring exciting suggestions to the community when the planning stages for this garden begin. While each community garden and its related programs are often adapted to very different circumstances, sifting through the ideas and projects and programs can serve as an inspiration as we plan our garden. Further, the experience of other, more established community gardens and garden networks can provide sound advice, and help us to avoid common pitfalls associated with the planning process.

4.1 City Farmer – Vancouver

City Farmer, an organization that dubs itself "Canada's Office of Urban Agriculture", is based in Vancouver and provides information on community gardens to people around the world. Founded in 1978, City Farmer is a comprehensive information base and action group that is both

global and local in scope. Starting with its demonstration site in the Kitsilano district in Vancouver, City Farmer proposes a more sustainable and holistic approach to environmentally-conscious living (City Farmer 2001).

> Since 1981 we have shown the public how to grow vegetables and fruit organically on a small city lot. Over the years a variety of simple technologies have been added to the garden to show urban people how they can become involved in food, waste and water conservation. These include rain barrels, a composting toilet and vermiculture. (City Farmer 2001)

Obviously, a demonstration site goes a long way towards making environmental sustainability tangible to the public. We hope that the Trent garden will eventually do just that. The Trent garden has the potential to be an educational site for Trent students, the public and local elementary and high school students interested in learning about organic farming, composting, soil management, as well as practical and whimsical agricultural adaptations to urban settings. While the Trent campus is suburban and partially rural, a community gardening group could do much to green the concrete facade of the school and promote a more environmentally-productive use of space.

The City Farmer demonstration site is not only an interesting place to visit, but it is also a home-base for related workshops and programs. City Farmer operates a School of Urban Agriculture where community experts and City Farmer staff offer a variety of workshops related to ecologically-sustainable food production (City Farmer 2001). The School of Urban Agriculture features courses that teach about organic gardening, art in the garden, backyard composting, worm composting, grasscycling, biological pest control, and how to make natural dyes from plants in the garden (City Farmer 2001). Courses are open to the public, however, they are relatively expensive – for example, the introduction to organic gardening workshop has a fee of $100. Thus, while City Farmer does offer some interesting and extremely useful workshops, they are not accessible to people of all incomes.

On the other hand, course fees do accumulate funds to pay staff and maintain the demonstration garden. At the Trent garden, we hope to offer events that are mostly free, and to obtain supplies through donations, and network with local community members, the YWCA and academic departments to obtain seeds and seedlings. Unlike the City Farmer site, the Trent garden will likely be linked with the university, and we hope that we will obtain at least minimal financial support to cover costs for the initial tilling, supplies, water and soil inputs. At the same

time we realize that we will probably need to explore other ways of obtaining the necessary funds and materials. Because we will probably need to find some way to raise our own funds for the garden, The City Farmer demonstration site is inspirational because it is a non-profit organization that has successfully acquired and managed its own funds. With enough funds to acquire two full-time gardening and other office staff, this organization certainly has the potential to promote urban gardening on both a local and global level.

4.2 Montréal Community Gardens

The aspect of Montréal community gardens that is most worthy of emulation by the Trent garden is that they are fully supported by the local administrative agency, the Montréal City Council. A brief study of Montréal's community gardens may yield some ideas for establishing the Trent garden within the university or supportive community organizations, as community gardens in Montréal fit into a large social and political infrastructure – the municipality. However, Montréal's gardens haven't always been so entrenched in the city's agenda. Some community gardens in Montréal have roots in the Railway gardens and Victory garden programs during WWII, while others have germinated as "guerilla gardens" created on empty lots and tended by Italian and Portuguese immigrants (Pfeiff 2000: 69). Community gardens were also a major response to the energy crisis in the 1970's, when Pierre Bourque, (past director of the Botanical Garden, and present Montréal mayor) energetically ushered the gardens into the folds of the municipality. Since then, the city has hardly been able to keep up with the demands for gardening space (Pfeiff, 2000: 69).

Montréal's community gardens are extremely successful partly because of the involvement of the city's Department of Recreation, Parks and Community Development (Cosgrove 1997). Cosgrove states that the city provides supplies such as tools and toolsheds, soil, manure, toilets, fencing and water for community gardens (1997). The city also provides ongoing maintenance for gardens around Montréal as well as "five paid horticultural animators who are responsible for a group of sites" (Cosgrove 1997). The animators provide advice to gardeners with horticulture inquiries, aid garden group co-ordinators, and report maintenance problems to the city (Cosgrove 1997). While the support that Montréal gardens receive from the municipality seem to be beyond the wildest dreams of Trent gardeners, it is interesting to note that this kind of support can help a community gardening program to flourish.

Because of this, we hope that the Trent garden will become established within one organization or another. Ideally, we would like to be on amiable terms with the university, through Physical Resources and Security. Connections with these two departments may enable us to access services such as occasional watering, tilling, or use of university vehicles to transport supplies to and from the garden. The Trent garden should also be linked with student organizations and academic departments within the university. Creating a community gardening group for the students, staff and faculty would be a way of ensuring the longevity of the community garden. A garden co-ordinator (or co-ordinators) could be elected each year by group members. Other useful connections could be fostered between the YWCA, Peterborough Green-Up and the Trent garden. While both could provide informational support, the YWCA may also be able to help Trent gardeners acquire seeds and seedlings to get the garden started. Dialogue with the Ecology Park would be useful, as Ecology Park staff have incredible expertise in the area of organic gardening. Also, this link would help the Trent garden to establish educational programs that compliment and further those offered at the Ecology Park (Dueck 2001; pers. comm.). We feel that establishing strong connections between organizations with similar goals in the Peterborough region is extremely important. The Trent garden will be able to reach its fullest potential when Cupertino exists amongst all like-minded organizations and institutions with an interest in this project.

4.3 FoodShare – Toronto

FoodShare is an extensive organizational body based in Toronto that focuses on food security, public education and advocacy. Founded by mayor Art Eggleton in 1985, FoodShare is responsible for the creation of the Toronto Community Gardens network and offers many exciting food action programs (FoodShare 2001). It is our belief that many of the fascinating and ingenious program ideas developed by FoodShare could be adapted to fit in with activities in the Trent garden. Not only that, but the programs initiated by FoodShare may be the rich soil from which our own programs, tailored to our own community, may enthusiastically sprout.

When FoodShare was created in 1985, it was conceived as a response to the hunger problem in Toronto. FoodShare was responsible for operating the Hunger hotline and other emergency food services to help refer community members to food supplies when needed. FoodShare also had a strong advocacy component that enabled them to speak out against poverty

and hunger in the community, and to push for better government policies on employment and wages so that all people could earn enough money to ensure their own food security (FoodShare 2001).

However, frustration over the increasing hunger problem, the failure of food banks to act as a long term solution and a lack of sustainable responses to poverty mobilized FoodShare towards a broader, more proactive mandate.

> FoodShare began to explore self-help models like 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. (FoodShare 2001)

FoodShare takes a holistic approach towards eradicating hunger in Toronto. Not only do they support community gardens, but they have also developed programs that educate people about how to cook healthy meals and provide opportunities for community members to put their new knowledge to use in programs such as community kitchens (FoodShare 2001).

Community kitchens are often themed, so that participants are able to learn specific skills that they need. FoodShare organizes vegetarian kitchens, kitchens for new mothers and babies, and kitchens that cater to the needs of psychiatric survivors, to name a few. The range of benefits gleaned from a community kitchen can be diverse – some of them unexpected. FoodShare defines a community kitchen as follows:

> When people get together regularly in a public space to cook, that's a community kitchen. Community kitchens offer the opportunity to share skills, socialize and reduce costs by purchasing collectively. Kitchens are as diverse in their purpose and organization as the people who participate in them – some groups only prepare enough food to sit down and eat one meal together. Others prepare several meals in large portions to take home to their families. One group of immigrants may want to get together to cook "foods from home", another may prefer to practice their English or learn how to make new foods. (FoodShare 2001)

Community kitchens are an opportunity for community members to learn about each other as while gaining the skills and resources needed to feed themselves and their families. The kitchens can also be a way of recognizing and respecting diversity in a particular community.

Community kitchens could be a wonderful tradition to start at the Trent garden, where students, faculty and staff could get together to share their knowledge about nutrition and share in the creativity of cooking. International community kitchens would be an opportunity for

students to share their knowledge of international cooking with others, and to learn about the diversity that exists in our community. Benefits of these kitchens would be increased community interactions, better food security (through lower costs for food and nutritious meals) and improved health for students, who often have trouble purchasing quality food, or the knowledge or skills to prepare nutritious meals. Participants in Trent community kitchens could prepare enough food to freeze and save for a period of time. If community kitchens could happen weekly throughout the school year, using harvested food from the garden (i.e. root vegetables, canned and dried preserves and frozen produce) students would have little trouble finding nutritious foods to eat during stressful times. In the late summer and fall, community outdoor kitchens would be a wonderful garden event, where food could be harvested straight from the garden and cooked over an open fire or camp stove. The beauty of community kitchens is that the variations and opportunities for learning are endless.

FoodShare has many other community services that help people and small communities to gain control over food security. Because they have an established incubator kitchen, they are able to store great quantities of food for the community to use, and to prepare "power soups and power meals for the homeless" which they are able to sell at a subsidized price to food shelters (FoodShare 2001). Also, FoodShare's Good Food Box program gathers local and organic foods and offers them to the community at a subsidized price to ensure that healthy food is available to everyone (FoodShare 2001). The Food in Focus training program helps marginalized youth to gain valuable employment skills through volunteer work. Young volunteers pack food boxes and help out in the kitchen and community gardens, adding vigour to the services FoodShare offers to the public (FoodShare 2001). Finally, some of the workshops that FoodShare organizes focus on themes such as: healthy cooking; canning and preserving; homemade baby food; balcony gardening; growing herbs; seed starting; cooking for the homeless; and community garden and community kitchen leadership courses (FoodShare 2001).

The programs and services offered by FoodShare are infinitely tailored to the surrounding community. FoodShare's approach to food security is inclusive of all community members, and it is apparent that their dedication to creating strong and healthy communities is key to their success. We hope that some of the programs developed by FoodShare will be able to sprout up at the Trent garden, and to adapt to the needs of a university community. We also hope that the programs aimed at serving people who are homeless or living on a low-income will inspire

similar efforts through the Trent garden and create a strong link between students at Trent and the surrounding community. We feel that the Trent garden *should* be for everyone, and will aspire to infuse the gardening community with a sense of responsibility to the larger community and its own battle with hunger, poverty and environmental degradation.

4.4 *Strathcona Community Garden*

Even a brief look at the Strathcona Community Garden reveals that other communities have made an incredible effort to make their gardens inclusive to people of diverse cultures and socio-economic situations. An overview of the Strathcona garden also gives the reader a sense of the amazing transformative potential of local urban wastelands, and the power of a determined and dedicated community. The Strathcona garden was transformed by local citizens from "a tangle of junk, industrial fill, brambles and fetid swampland" to a garden with a wilderness tract, an allotment section and a common area (Cameron 2000). The garden is located in one of Vancouver's most populated low-income areas, an area stereotypically associated with vandalism and other crime. Yet, the garden has no gates, and allotments are offered to local residents for $5, plus a $10 membership fee (Cameron 2000). The garden is an inner-city oasis, with welcome signs in Chinese, Spanish and English (Cameron 2000). Clearly, this garden embraces both socio-economic and cultural plurality, and promotes an inclusive philosophy in community gardening. Gardens that promote pride in diversity, and welcome people in all cultures and circumstances are excellent role models for Trent gardeners, as we work towards establishing a garden that will include everyone in the Trent community.

4.5 *Community Gardens in University Settings*

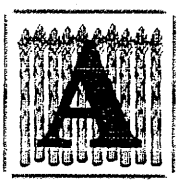
The community gardening movement has been seeping slowly into academic communities of late, and it is interesting to note that some universities in North America are working towards greening their campuses and creating community living situations. Community living and environmental principles are now being recognized for their pedagogical importance in academic settings by certain universities. For example, Oberlin College in Ohio has developed a "living machine" as an ecological design feature in its environmental studies building to act as practical

and pedagogical tool (Tittley 2001). David Orr, environmental studies professor at Oberlin comments that "[t]he curriculum embedded in any building instructs as fully and as effectively as any course taught in it (Tittley 2001). Indeed, the physical environment of a school *is* itself a pedagogical tool, and the environmentally-sustainable learning environment is more likely to affect lower impact lifestyles amongst students.

McGill's Macdonald Campus has also been working towards establishing environmentally-sustainable buildings on campus. One student residence which was doomed for demolition is being transformed into an eco-residence, through the efforts of biology student Alexandra Zum Felde (Dupuis 2001). The residence is centred around a principle of communal living, and features many environmental designs including recycled building materials, greenhouses and passive solar heating. However, other plans are in the works for a communal garden, a greywater filtration system, and a "living machine" (Dupuis 2001). We hope that examples set by Oberlin and McGill will help us to encourage a more progressive environmental attitude at Trent. Also, it is possible that the Trent community garden will eventually be a part of a larger movement towards reducing Trent's environmental impact and increasing awareness of lower-impact lifestyles amongst students, staff and faculty.

5. Ecological Management Techniques

5.1 Companion Planting as a Method of Pest Control



s organic agriculture continues to gain popularity, farmers, gardeners and scientists are exploring techniques that were previously marginalized or

considered obsolete. The last few decades of such explorations have yielded a particularly plentiful harvest of information about companion planting, which Anna Carr defines generally as "the practice of interplanting specific crops to make the best use of available resources and to create the healthiest, highest yields" (1985). If this broad definition makes companion planting sound like a kind of magical organic gardening cure-all, it is not without some justification. There are documented applications of companion planting to plant and insect pest control, water conservation, soil maintenance/ nutrient exchange, and efficient use of space in a garden. There is an overwhelming volume of specific anecdotal observations about "good and bad companions" for almost any crop - people were making such observations at least as long ago as 285 B.C. (Rice, 1985). More recently, scientists have added controlled experiments to the still-growing collection of traditional knowledge. For many sceptics, scientific testing has constituted reliable "proof" of what some gardeners claim to have known for centuries. However, new scientific understandings about companion planting may not have reliable practical applications. The result can be that different sources, scientific or otherwise, may contradict each other, even to the point of providing diametrically opposite information (Carr 1985). Fortunately, all sources agree on one point- companion planting can work, decreasing pests and resource demands and increasing yields dramatically (Bushell 1994; Carr 1985). Scientific testing, traditional anecdotal observations, local information exchange and personal experience form a tangled overgrowth of information about the specifics of companion planting. Gardeners (in a Trent community garden and elsewhere) must use their judgement to harvest what information they can use, and understanding how companion planting works can give them the tools to do so.

Any gardener setting out in search of companion planting resources needs to be aware of some typical difficulties with gathering reliable information. Even the most convincing results may not always be replicable in another garden or season, since outcomes may vary with climate, soil or light conditions, the composition of the pest community, and so on. In the words of Anna Carr, "completely controlled lab conditions don't always accurately mimic field conditions, and ...tests done in real gardens may not account for confounding variables adequately"(1985). Even if a plant companion is shown to repell a certain pest in a variety of conditions, it may not be useful because it overgrows other crops or produces phytotoxins (Carr 1985). In short, even the most convincingly documented plant combination may not work for all gardeners, whether the information comes from many years of observations from seasoned

gardeners, or from rigorously controlled scientific experiments.

Fortunately, companion planting can be so effective that gardeners who find out what works for them are well rewarded. For example, data from the majority of sources, both scientific and empirical, indicate that most mixed plantings suffer less insect damage compared to monocultures (Carr 1985; Riotte 1998). Other findings show that yields increase by up to 60% when crops are intermixed rather than grown in separate, monocultural plots (Carr 1985). These results may not be due solely to reduction in insect damage. Companion planting can be beneficial to crops by increasing shade and protection, preparing the soil through crop rotation, taking advantage of different root depths to prevent water competition, facilitating nutrient exchange, altering the physical environment in a variety of ways (i.e. corn provides a natural trellis for beans), or by decreasing insect damage. Gardeners must be knowledgeable about the types of benefits companion planting can provide if they are to use this technique successfully.

The possibility of biochemical pest reduction as a benefit of companion planting is currently receiving a great deal of attention. While it is certain that specific combinations of plants in proximity to each other can deter specific insect pests, no one is certain whether insects are actually *responding specifically* to the *chemicals* in neighbouring plants. As Rice (1983) explains, it is well known that various plants produce chemicals to manipulate the behaviour of insects. Chemicals in a plant can replicate insect pheromones to attract, stimulate, deter, or repel insects. It is thought that perhaps if one plant is especially susceptible to a particular insect, some protection can be afforded if a nearby plant chemically deters or repels this insect, attracts insect predators to prey on the pest, stimulates flight behaviour in the pest, and so on. It is by no means certain whether reduction of insect damage in mixed plantings is actually due to insects responding to specific chemical signals from plants, so research in this area is ongoing. In the meantime, it has been confirmed that insects are confused by the "cocktail" of chemical and physical stimuli in an intercropped garden, so that their ability to locate preferred feeding and egg-laying sites is impeded and damage is reduced or eliminated (Carr 1985).

A higher density and diversity of plants can make it difficult, undesirable or impossible for insects to locate their favourite crops when they are "hidden" amongst other crops, since insects navigate by smell and sight (Rice 1983; Riotte 1998). Leafy ground-cover crops such as densely planted lettuce makes it more difficult for tiny aphids to locate Brussels sprouts and other cole crops (Carr 1985). The contrasting smells of carrots and leeks can mask each other

from both the carrot fly and the onion moth (Riotte 1998). Other plants may actually help intercept insects physically, as Anna Carr explains:

> Although you can't actually see it, tall crops and hedges create a strip of air turbulence on both sides. When you surround the garden with a windbreak like this, aphids and other wind-borne insects are deposited in the hedge, instead of in the garden. (1985)

Stephen Risch demonstrated this phenomenon when he created a barrier of corn around a sweet potato crop and effectively controlled two beetle species (*Diabrotica* spp.) that typically preyed on the sweet potatoes (Carr 1985). Due to various physical and chemical interactions between plants, thoughtful companion planting can be a very effective method of controlling insects.

Increasing diversity in these ways can have the added benefit of attracting predators to control harmful insects. Ladybeetles, mantids, lacewings, hoverflies, robber flies, wasps, spiders, predatory mites, toads and some birds all prey on harmful garden pests and can be encouraged in gardens, either by generally increasing the variety of plants, or by adding specific plants to attract predators (Bushell 1994; Philbrik and Gregg 1966; City of Toronto 1997). Gardens with a greater diversity of plants have more microhabitats for insect predators, since there is higher variability in light levels, and more places to shelter, hide and lay eggs. Toads, for instance, need more shade and cover than can be provided by growing crops in traditional rows (they can also be encouraged by providing small pools or containers of water). Members of the Umbelliferae family, such as dill, are especially good at attracting parasitic wasps, which lay eggs on other insects and their larvae, including tomato hornworms and aphids (Bushell 1994). Birds such as swallows, bluebirds, cardinals, catbirds and chickadees are helpful insect eaters in the garden, and can be encouraged by creating a more diverse garden or yard. According to Carr,

> A variety of wild fruiting and flowering trees, shrubs and weeds around and about the year will provide food and shelter for these garden friends. Autumn olive, bittersweet, crab apple, dogwood, elderberry, firethorn, hawthorn, highbush cranberry, holly, honeysuckle, sunflower and Virginia creeper are particularly good bird plants. (1985)

Interplanting crops and well-selected wild plants makes a vegetable garden more attractive to creatures, like some bird species, that prey on insect pests. A diverse garden more closely resembles a natural habitat where there is shelter for creatures that eat harmful insects.

Intercropping creates physical-spatial interactions between crops that are beneficial for a number of reasons in addition to insect pest control. There are many well-known examples of such benefits. Plants from the legume family, such as lentils and clover, increase nitrogen available to their companions or successors. Tall crops such as sunflowers and corn provide natural trellises for beans and other vines. Squash or pumpkin vines, which are prickly, help protect corn from racoons and other corn-eating pests. Growing shorter, shade tolerant species underneath tall, sun-loving plants uses space efficiently so gardeners can get more produce out of less space.

There is such a multitude of literature available about companion planting that it can be difficult to distill information of practical use, especially when different sources disagree with each other about whether certain plant combinations are beneficial or harmful. The following criteria should help community gardeners, at Trent and elsewhere, to use companion planting to their advantage. As future Trent community gardeners, we will try to find literature that is as relevant to our garden as possible. We will look for studies and anecdotes that used similar climates, soil types, surrounding plants, and so on. During this search, literature that lists exactly *how* a particular plant combination is beneficial will be preferred over sources that say only whether a the combination is "good" or "bad". A source may suggest planting marigolds with beans, for instance, but this may not be of interest if the Trent community garden does not suffer from Mexican bean beetles. It is helpful to know why certain crops are grown together, since some benefits may not concern the Trent garden. Anna Carr's Companion Planting for Gardeners is an excellent source for more complete information. Some plant combinations are supported by both scientific and empirical evidence; if relevant these should be given priority in the Trent community garden. Some experimentation will certainly be necessary (and desirable!) however, so detailed logs will be kept of companion planting attempts and results. Complete logs should contain information about weather, soil, length of growing season, time of year, water availability, nearby plants, results, and other pertinent details. When recording results, gardeners should give thought to what exactly they are measuring. Depending on the situation, various measures of results, such as harvest yield or insect damage, may be required. Gardeners must take care when recording yield, since companion plantings occasionally appear to give greater yields when in fact the plant is simply taller or more lush but the yield has decreased.

Sharing information with other local gardeners is essential throughout the process of

information gathering. Trent gardeners should create opportunities ask other local community gardeners what companion planting strategies work for them, and try to find out as much as possible about the water availability, temperature, weather conditions, planting time, and other conditions that may have affected their observations. The Peterborough YWCA community gardening newsletter, currently under development, could be an excellent forum for this kind of discussion (Thompson 2001; pers. comm.). Ecology Park gardeners could also be extremely valuable for sharing such information. By using a combination of careful literature review, discussion with other local gardeners, and actual experimentation, community gardeners at Trent should have success using companion planting as an organic pest control technique.

5.2 Soil Maintenance and Fertility

To grow organic vegetables, we must embrace the idea of the soil as a living organism in need of nurturing and feeding. John Cloud, a columnist for *Eco Farm & Garden*, emphasizes the importance of microbial activity in the soil. Microbes are what he calls the recyclers, tiny organisms that "have the ability to create vast chains and networks beneath the soil" (Cloud 2000). These microbial networks have the astounding function of connecting all plant life together in an ecosystem (Could 2000) Cloud calls microbes (especially fungi) recyclers because of their special role in breaking down plant matter and carbon while releasing enzymes, sugars and other nutrients into the soil (2000).

Organic fertilizers; such as compost, manure, blood and bone meal or wood ashes, have low solubility - that is, they release nutrients slowly and are dependent on microorganisms and weak acids to continue decomposition (Brandis 1992). When organic fertilizers are added to the soil, the "recyclers" are attracted to the area. However, where chemical supplements are used, there is a greater risk that unwanted insects, fungi and bacteria will occupy the niche of the beneficial organisms that contribute to soil health (Brandis 1992). Diana Beresford-Kroeger comments that "[o]rganic gardeners and farmers have a living respect for the soil... [t]hey will not poison this life-giving system with pesticides... [t]he soil is their true testimonial, whatever their creed" (1999). The living things are what creates a healthy soil. Kroeger lists some of the many organisms that permeate every inch of the soil:

A teaspoon of soil contains about 20 million fungi, one million protoctists and five billion bacteria. These creatures are the bottom line of a healthy soil, they invite ants, spiders, wood lice, beetles and their larvae, earthworms, millipedes and centipedes, slugs, snails potworms, springtails, mites and nematodes, amongst others. (Beresford-Kroeger 1999).

At the Trent garden, we will want to encourage as many of these beneficial organisms as possible. Rather than directly feeding plants with inorganic fertilizers, we will aim to cultivate good soil in order to harvest healthy organic vegetables (Brandis 1992). Clearly, if soil is a living network in need of a variety of nutrients, then it is the gardeners' job to provide holistic inputs that encourage a web of beneficial organisms.

One of the most important inputs in the Trent garden will be compost. Peterborough Green-Up endorses compost as an excellent soil input for several reasons.

Pound for pound, compost is the finest soil conditioner there is. It helps to break up heavy soils, and it helps sandy soils to hold water. It acts as a magnet for keeping nutrients from washing away in the rain. The nutrients in compost are all in a form easily used by plants. (Peterborough Green-Up (c) n.d.)

Compost will be available through the City of Peterborough and the Ecology Park before we are able to begin harvesting soil through our own composting program. We will need to purchase compost in the first year, as non-intensive composting methods will take up to a full year to create enough dark brown, crumbly soil to apply to the garden (Peterborough Green-Up (c) n.d.) As we work towards an efficient composting system, Trent gardeners will need to be educated in the basics of composting. In fact, the Trent Community Garden volunteers may need to undertake a campus-wide education program to educate the Trent community about composting. As a result, waste reduction will be an added benefit of a large-scale composting system on the Trent campus. Eventually, campus cafeterias can have compost buckets to be emptied into the compost facility by Physical Resources staff (if they are able to be involved) or volunteer "compost stewards".

Kitchen and food scraps can be balanced with equal amounts of leaves and brush collected in the fall and spring by groundskeepers. Deadfall and trimmings collected by Trent Nature Areas staff can also be ground up and added to the compost bins. Garden waste will be a key addition to the composting program. Riotte recommends that melon leaves be added for

calcium, and argues that weeds such as dandelion, sheep sorrel and chicory add iron, phosphorous and potassium to the compost pile (Riotte 1998). Another interesting technique used by Riotte is the addition of invasive species from the gardener's local area to the compost pile, as a method of both helping to clear space for native species in natural ecosystems, and as abundant sources of nutrients. Theoretically, species such as European buckthorn, Norway maple and common lilac that are invasive in natural systems in Peterborough could be mulched and added to the composting systems at Trent. It is interesting to think about how a simple, age-old soil enrichment technique can be used in a large institution to promote a more environmentally-conscious attitude, and to help reduce waste output and improve the health of surrounding natural ecosystems. Indeed, an intensive and intelligent compost system that will fit into existing structures at Trent is a key factor in maintaining the soil quality in the community garden, and will help Trent to live up to it's reputation as an environmentally-conscious university.

Manure is another input that may be used on the Trent garden. However, there are many considerations to take into account before manure is chosen as a soil-enricher. John Cloud warns that manure that is improperly composted can be both hazardous to the natural environment and to human health (Cloud 1999). Because fresh manure will often burn plants, many gardeners use aged manure. However, according to Cloud, most aging processes result in the volatization of nitrogen, and do nothing to eliminate pathogens and weed seeds (1999). Cloud maintains that properly aged and composted manure can only be achieved through intensive management (i.e. turning, aeration and monitoring) of the pile (1999). Because the Trent campus surrounds the Otonabee River, and because we will grow many edible plants, it is important that the community garden only uses properly composted manure, free of pathogens that may escape into the local water supply and contaminate food.

Besides adding compost and manure, there are other methods of maintaining soil fertility in the garden. Garden rotations and green manures can play a key role in replenishing the soil after crops have mined most of the nutrients. Cover cropping reduces wind and water erosion and conditions the soil as the roots break up heavy aggregates and accumulate nutrients (Riotte 1998). Green manures can be planted in the fall or spring and plowed under at the end of the season. Specially selected green manure crops are chosen for their ability to send deep roots into the subsoil and mine nutrients that are unavailable to the vegetables and flowers that are usually

grown. When the manure crop is ploughed under, the nutrients they have accumulated from the subsoil are added to the surface soil and made available to subsequent crops (Riotte 1998). Rotations of nitrogen-fixing legumes such as alfalfa and clover are particularly useful, as nitrogen can only be fixed in the soil through lightening and rain (sporadically and over time) or by the rhizobium (nitrogen-fixing bacteria) that live in the nodules of legume roots (Riotte 1998). In her book, Carrots Love Tomatoes, Riotte lists several useful cover crops for gardeners, the most interesting of which is kale. Kale can be cover-cropped in the fall and harvested even after the frost. In fact, the flavour of kale improves with a hard frost (Riotte 1998). The practice of cover-cropping with kale will certainly be useful for Trent students who are in need of a steady source of iron and calcium in the fall and winter months.

According to Riotte, cover crop plants can also be companion planted with desired crops (1998). Riotte is especially fond of weeds in the garden, and notes that in her experience jimsonweed can help pumpkins to grow, the best watermelons come from the weedy part of the patch, and that onions grow well with weeds (1998). A possible explanation for these observations is that the weeds are "diving" deep into the soil and bringing nutrients to the surface for other plants to use (Riotte 1998). In the Trent garden, however, we will need to do our own experiments, and make our own observations about what is working best in our climate and soil conditions.

Every gardener has her or his own advice on how to improve soil fertility. Whether it be cover-cropping, companion planting or compost, most techniques have roots in folklore and life experience. Traditional gardening knowledge, while not necessarily reliable in all conditions, can be a very powerful tool – especially when it is combined with the ingenuity of the gardener. Many gardeners create efficient soil-enriching systems that are tailored to the conditions of the soils in their area. One example is the organic garden at Carrigliath, a biennial garden where half of the land lies fallow every other year (Beresford-Kroeger 1999). Gardening at Carrigliath is centred on soil health, and all planting activities take place in accordance with the needs of the soil. The garden is divided into an inner plot and an outer plot. If the outer plot was to be planted this year, for example, the inner plot would be dug out and filled with aged horse manure, peat moss, bonemeal, wood ash and some dolomitic lime and thoroughly mixed (Beresford-Kroeger 1999). What remains in the middle plot is a large mound where winter squash is planted. The exposed soil surface is mulched with old hay or straw, or planted with

buckwheat as a green manure (Beresford-Kroeger 1999). Beresford-Kroeger explains how this particular system works towards creating a rich, healthy soil:

> The squash is allowed to run rampant on this mulched stretch. As the vines grow, they cool the hay and the ground beneath it, and this activates a perfect system for composting. While the hay is breaking down, the squash is running, blooming and bearing huge numbers of fruits, fed by the nutrients in the planting hole. In October, we harvest the squash, leaving the vines to add to the humus. We give the area a quick surface tilling and let the frost action of winter do the rest. (1999)

After years of such treatment, Beresford-Kroeger describes the soil at Carrigliath as "sweet, friable, loamy, well-drained, water-retentive, humusy, rich, black and clean" (1999). Clearly, the soil-enrichment system that takes place at Carrigliath is well-suited to the existing conditions on the farm. Because aged horse manure plays such a large role in the soil fertility, it can be assumed that the gardeners keep horses, and have access to large amounts of this input.

Other inputs such as peat moss, bonemeal, and dolomitic lime may be expensive to obtain. There are also environmental costs associated with the use of organic lime, as it must be mined from natural ecosystems before it can be made available to gardeners. Peat moss is expensive, and bone or blood meal (a by-product of the meat industry) may be ethically unacceptable to some people in a community garden setting. Thus, while this system of soil replenishment works for the gardeners at Carrigliath, Trent gardeners will need to make their own careful observations to determine what is best for the soil at the Trent garden. However, some of the interesting and clever techniques used at Carrigliath might be useful in designing an efficient soil-replenishing system at Trent.

In order to determine which soil maintenance measures will be needed for the Trent community garden, soil tests must be conducted on the plot. This will ideally take place the fall before the first planting, to allow ample time for gardeners to thoroughly improve the soil as needed. Cathy Dueck recommends having soil tested for pH, organic matter, phosphorus, potassium, magnesium, manganese, zinc, soluble salts, magnesium, manganese, zinc, soluble salts, nitrates, and lead. Soil test results could be obtained in one (or more) of three ways. Following the example of the Ecology Park and Peterborough Collegiate Secondary School, the Trent University community garden could partner with a local high school to do some of the required tests. Over the past year, Peterborough Collegiate has tested pH, nitrogen, phosphorus and potassium in Ecology Park compost samples, as part of an Environmental Science project

(Cathy Dueck 2000). A similar partnership could provide a beneficial link between Trent University and the wider community. Alternatively, Trent students could volunteer to complete the testing with the help of soil testing manuals (i.e. Jackson 1958; Soil and Plant Analysis Council 1992; Hesse 1971). It may even be possible to integrate soil testing as a course project option in GEOL-ERSC 356a (Pedology), through the Trent Centre for Community Based Research Education. As a final option, soil samples could be sent away to be tested, to a lab such as Agrifood in Guelph or Nutrite in Elmira. Once soil testing is completed, the community garden soil can be properly enriched and maintained.

Chemical soil testing will be key in determining the nature of the soil on the land that is chosen for the Trent garden. However, if uncultivated or unmanaged land is to be used, some general observations can be made regarding soil conditions and quality through documentation and research into the existing weeds in the area. Jean Burbidge writes that weeds can indicate different soil textures, give signs of nutrient abundance or deficiencies and give a general idea of the soil pH in a given area (2000). Surveying a certain area and noting prevalent weed populations can be a useful exercise for gaining a sense of the soil conditions present in the area. However, some weeds are tolerant of a variety of conditions, and may be indicating more than one condition (Burbidge 2000). Also, one or two indicator weeds do not yield any salient information about the soil at hand, reasonable populations of the indicator weed must be found (Burbidge 2000).

Thus, the most important factor in understanding and improving the soil quality at the Trent garden will be a detailed knowledge of the land. This knowledge will be obtained through careful observation of vegetational patterns, chemical testing, and experimentation with soil-enrichment methods. A thorough understanding of the soil at the Trent garden will enable gardeners to select appropriate techniques for maintaining soil fertility. At this point in time, the only thing that we are sure of about the soil at the Trent garden is that it will be treated with the utmost care, and will only be enriched with organic inputs.

5.3 *Heritage Seeds*

It is fairly well known that community gardening can help participants achieve better food security and self-reliance, choose from a greater variety of vegetables,

enjoy food that tastes better, and make their communities more visually captivating. It may be less well known that growing heritage seed varieties in a community garden can extend these benefits further.

As more and more of the food we grow is hybridized or genetically modified in some way, the movement to preserve traditional seed varieties is growing rapidly. There is much to be gained for a community garden by joining this movement, and ample resources for obtaining seeds and information.

Most widely-available vegetable varieties have been modified or selected according to criteria such as shelf-life or pesticide resistance, not according to flavour or consumer preference (Kneen 1999). For this reason, many small-scale, independent growers are returning to older, non-hybridized, non-modified varieties, or "heritage seeds". Benefits of these varieties are often overlooked by major agribusinesses, who are more concerned with large-scale production efficiency. Individual growers have the advantage of being able to select varieties that taste better, are more suitable to particular climate conditions, or are an essential part of their culture (Pittenger 2000). For instance, new immigrants of many ethnicities participate in the FarmFolk/CityFolk Diversity Project because it is difficult for them to find fresh foods that are integral to their culture in the "export driven, global market within which we live" (FarmFolk/CityFolk 2000). The program provides community garden space and heritage seed selection and exchange assistance for a number of immigrant communities in Vancouver, including Canadians of Japanese, Latin American, Somalian, and South Asian origin (FarmFolk/CityFolk 2000). Using heritage seeds means increasing the food choices available to gardeners, often leading to tastier, more suitable, and more desirable varieties.

The preservation of choice is a key issue in the race to save heritage seed varieties. Providing freedom of choice is synonymous with providing an opportunity for self-expression, which in turn aids with individual identity development and positive self-esteem. An increase in self-confidence is listed by Ohio State University Extension's Urban Garden Program as one of the main benefits of community gardening. But the maintenance of freedom of choice in relation to food production extend beyond everyday, immediate choices made by gardeners. Kent Wheatly remarks,

> If our vegetable heritage is allowed to die out, gardeners will become more dependent on transnational seed companies and patented varieties that those companies choose to offer. And that means giving up our right to determine the

> quality of the food our families grow and consume, and also the ability of gardeners and farmers to save their own seeds... (1999)

By supporting the preservation of heritage seeds, community gardeners are influencing the amount of choice available to consumers. The maintenance of choice with regard to food availability is significant not only in terms of whether one family is able to access the particular variety of vegetable they prefer, but also whether consumers and farmers worldwide are dependent on corporate, transnational seed companies for their sustenance and livelihoods.

Over the years, heritage seed varieties have been steadily disappearing from many seed catalogues (Pittenger 2000), but lists of what is available are well-maintained and easily accessible. Seeds of Diversity maintains a source list for companies offering heritage varieties, at http://www.seeds.ca, or by mail (SoDC, Box 36, Station Q, Toronto ON, M4T 2L7). The website also contains an overview of the Seeds of Diversity organization, an encyclopedia of heritage varieties, "facts and folklore" information, and news postings (http://www.seeds.ca). It is hoped that anyone planning a community garden at Trent University would make use of this information.

6.0 Conclusion

This report began with a vision of providing essential background information necessary for developing a community garden at Trent University. From the history of a community garden 25 years ago at Trent, it becomes apparent that such an endeavour is possible where there is enough interest in the community. Information about several community gardens in Peterborough shows what a central role established organizations such as the YWCA and the Ecology Park can play, and helps identify some successful strategies and some potential difficulties for beginning gardens. The resulting awareness about what resources and assistance are available locally for starting a community garden will also be invaluable. Notable features of some community gardens outside of Peterborough show garden planners the positive impact institutional involvement can have, as well as the benefit of opening the garden as an educational demonstration site for the public. This section also highlights effective strategies for food action projects, and for being inclusive of community diversity. Future garden planners at Trent will be

able to learn from the examples all of these other community gardens provide, and hopefully benefit from ongoing Cupertino with the featured garden organizers.

As much as a community garden must have community interest, institutional support, and organized planning, its ultimate success depends a great deal on how it is managed ecologically. On the assumption that organic growing is the most preferable method of pest control, we have outlined the basic rationale behind companion planting as a means of controlling unwanted insects and plants. It appears that while companion planting is effective for a wide variety of purposes, the selection of particular combination of plants varies with environmental conditions. In order to use companion planting effectively, therefore, we have suggested strategies for evaluating literature, conducting and interpreting experiments, and consulting with other local growers. We have also explored organic soil maintenance techniques in this report, which rely on a more soil-centred approach to gardening. As a result, we have found that there are many alternatives to chemical fertilizers, and their application depends on a thorough knowledge of soil conditions in the garden plot. While fertile soil can result in high produce yields, growing heritage seed varieties can yield benefits such as food-security, positive self-esteem, and better-tasting vegetables. We anticipate that future Trent community gardeners will wish to further these arguments as much as possible, so we have provided information on the benefits for heritage seeds, and sources for obtaining them. It is hoped that the information, resources and suggestions presented in every section of this report will be of practical use for future community gardeners at Trent.

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Trent University Community Gardens
Formal Report #2

Includes:
Research Report

By: **Christina Dance and Anna Sandilands**

OPIRG (Ontario Public Interest Research Group) - Peterborough
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Department: Environmental and Resource Studies
Course Code: ERST 383
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TRENT UNIVERSITY COMMUNITY GARDENS PROJECT

By Christina Dance and Anna Sandilands

Formal Report # 2- Table of Contents

Trent University Community Garden Project

Formal Report # 2

1. Introduction

In this final report on the Trent University Community Garden Project, we will focus on community input into the project, and detail some of the ways in which we will proceed with the project based on the community suggestions. All of the people who have responded to the project, through surveys or through input sessions, have been members of the Trent community. Unfortunately, we have not heard from members of the Peterborough community (except through a few formal interviews), and cannot include their reactions to the project. However, the community garden project has received an enormous amount of support from Trent students, faculty and staff, and we are grateful to our community for encouraging us to continue with the project. Indeed, now that we have conducted research within the Trent community, and research in other communities, we feel ready to begin planning for the Trent garden in earnest.

A key aspect of this final report is its focus on future actions for community members. In this report, we explore some of the current political and institutional conditions that may effect the garden project. Community input surrounding the function and format of the garden is discussed and analyzed here, and we have detailed some of the ways in which we may proceed in inviting interested community members to form a working group or garden collective for the fall of 2001. Procedures for selecting a garden location and securing funding for the project are outlined as well. In this report, we have attempted to set a loose template for a future management plan. This management plan includes the garden collective structure; an ecological management plan; a description of produce to be grown and product beneficiaries; and strategies

that will help the Trent garden refrain from undermining existing community gardens. We hope that this tentative future management plan will help us to organize and activate the project in the fall. Next year will be full of exciting initiatives and ongoing community-based research, and will hopefully lead to the creation of a community garden in the spring of 2001. It is our hope that the research presented here will help us to remain focussed on the needs of the community, and on what we have learned from other community gardens and gardening experts as we continue to take this project into its final phase.

2. Current Situation at Trent University: Opportunities and Constraints for a Community Garden

2.1 Grounds Services

Trent University Manager of Security, Parking and Grounds Services Dave McLauchlan is sympathetic to the idea of a community garden, but emphasizes that the process leading to finding a site is unpredictable. McLauchlan says that much of the land within the central space of Symon's campus will be built upon over the next 3 years, because of the Build 2000 process (2001, pers. comm.). Discussion of the implications of the Build 2000 process can be found in the following section.

McLauchlan gave us some suggestions for sites to consider for the garden – these options are discussed in Section 4.5. He also indicated that Grounds Services would be willing to help with transportation and set up tasks, such as securing a water supply, spreading compost, and helping to set up a shed. He emphasized that if Trent Gardners requested help well in advance, Grounds Services would be happy to help out (ibid.). This is an enormous relief to us, as students in the gardens group will likely lack resources such as vehicles for transportation. We will also benefit from the first hand knowledge of groundskeepers who can give us advice on

how to set up garden necessities such as a water pump or toolshed. We are grateful that Dave McLauchlan has shown support for our project, and look forward to working with Grounds Services next year. It will be a primary goal of ours to ensure that we maintain excellent communication and a good relationship with Grounds Services for the years to come.

1.1 Administration

1.21 The Build 2000 Campaign

With the reception of Superbuild funding and the initiation of the Build 2000 Campaign this year, there is arguably less space available for a community garden on campus. The Build 2000 Campaign will require us to convince Build 2000 planners and Trent University administrators to formally allocate space for a garden, and may require that we negotiate for a mutually acceptable site. Current Master Plans for Build 2000 indicate that almost all of the "empty" greenspace within the borders of Symon's campus (such as the lawn in front of Otonabee College) will be used for new buildings eventually (Baird et. al. 2001, http://www.trentu.ca/trentnews/build2000 .html).

Small lawns and gardens will form a part of the final Build 2000 design plan, but these will not be ideal places for a community garden in the spring of 2002. Dave McLauchlan pointed out that the plot should not be situated in place where building activity can interfere with the garden (McLauchlan 2001, pers. comm.). While it is important to us that the garden is central, we realize that it is even more crucial that the initial efforts of gardeners are not destroyed by construction after the first planting and harvesting. Unfortunately, Build 2000 will be moving ahead despite protest, and will likely show little concern for a group of students asking for a community garden space. Because of Build 2000, our garden may be located in a

space that is not central. If this is the case, we will have to put our best efforts towards ensuring that the garden is accessible to all community members.

2. Community Input

2.1 Methods for Gathering Input

Gathering community input was one of our most important goals for this project. We believe that there are many more experienced gardeners and planners at Trent and in the Peterborough community who could offer their advice and help in designing and implementing a community garden. However, we also feel that community members are the experts when it comes to understanding needs and visions for a project such as this. Because this garden will serve the needs of the Trent community, we feel that we must put a great deal of our energy into consulting students, staff and faculty about what they feel is important in a community garden. Also, there is no exact method for developing a community garden. We learned in our first report that each community garden follows its own course to fruition, and depends largely on the community's energy and enthusisasm for its creation. Community is the essence of a community garden – without its input, the garden cannot serve its needs or interests.

We asked community members a variety of different questions on several related topics. For example, we asked students, staff and faculty what they would like to see grown; whether we should divide the garden into individual plots or cultivate it communally; and how they thought the social structure of the garden group should evolve (please see Appendix for sample survey). After talking to and receiving surveys from many individuals, we discovered that in spite of a

high level of interest in the project, it was difficult for community members to communicate specific visions for a community garden at Trent when they could not see the garden, or even imagine where it would be. For that reason we feel that despite the helpful input we have gathered so far, community input needs to be an ongoing process.

On two occassions, we advertised open input sessions inviting Trent and Peterborough community members to come and learn about the project and add their input. Our first input session was poorly attended. However, we feel that the timing (early December) and the weather (a severe snowstorm) affected the attendance more than lack of interest. Later on, we learned through surveys, our information table, and word of mouth that people were taking an interest in the community garden project. Our second input session drew just under ten people, and initiated discussion and questions about a range of topics related to the garden. Details of this input session can be found below. The input session was a good way to meet interested people, and find out about their ideas of how a community garden should work at Trent. The interactive forum of the input session made it an ideal method of gathering input, as community members had the opportunity to ask questions directly, and to receive immediate feedback when sharing their ideas, visions and concerns with us. However, input sessions failed to draw large numbers because of scheduling, location and student workloads.

In order to diversify our approach to gathering input and reach more people, we set up an information booth in early January in front of Bata Library. Our main objective was to publicize the community garden project, and to gather input from visitors to the booth through short surveys. We knew that gathering information this way would help us to reach out to a variety of people with different schedules. In all, we received 26 completed surveys from interested students, staff and faculty. These surveys were most helpful in determining general interest, and

in gaining some general understanding of what most people thought the primary focus of the garden should be. Even more beneficial were the encouraging comments and enthusiasm expressed by visitors, many of whom were surprised and excited to hear about the project. In the following two sections, we will outline some of the community responses we have received so far, list some future actions we are considering based on their reccommendations, and describe our suggestions for ensuring that community input continues to be the foundation of the Trent garden.

2.2 Community Survey Results

2.21 Figures

Figure 1: How are you willing to be involved in the Trent Community Garden?

Activity	**#**	**%**
Planting (Spring)	19	73.1
Weeding / Maintenance (Spring, Summer, Fall)	14	53.8
Harvesting (Summer, Fall)	19	73.1
Planning (All Year)	7	26.9
Fundraising (All Year)	5	19.2
Educational Programs (Spring, Summer, Fall)	12	46.2
Not at All	1	3.8
Other	5	19.2
Total Number of Surveys	26	n/a

Figure 2: Would you prefer the garden to be:

Organization	#	%
divided into individual (personal or family plots)	3	11.5
shared amongst all gardeners	15	57.5
other	12	46.2

Figure 3: Please indicate which aspects of a garden are important to you:

Plants	#	%
Vegetables and Fruits	26	100
Medicinal Herbs	21	80.8
Kitchen Herbs	18	69.2
Flowers	18	69.2
Other	4	15.4

What sorts of comments did people put in the “other” categories?

Interpretations of numbers

2.22 Comments and Suggestions

Many students, staff and faculty who filled out surveys submitted some interesting and important suggestions in the “comments” section. From the surveys, we found some experienced contacts who could offer help with the design and maintenance of the garden. Participants’ levels of experience ranged from none to first hand experience with community or home gardening. Suggestions involved issues of accessibility, food security/charity, organic gardening and environmental sustainability, educational opportunities, and campus beautification or greenspace. Many participants emphasized the importance of organic methods, sharing

produce with people in need, and the educational benefits of the garden. In keeping with our belief that community input must form the foundation of a successful community garden, the following sections outline some of the general topics survey participants said they would like to see addressed

Accessibility

Survey participant Erica Glossop brought our attention to accessibility at the Trent garden – an issue that we had been concerned about from the start. Glossop points out that the garden needs to central enough to be navigable for both wheelbarrows and wheelchairs (Glossop 2001). She also suggested that the garden "would have to be out of the way though still accessible" (ibid.). The idea that the garden should be at once central and peacefully secluded has many implications for site selection.

Accessibility has been an important issue in our minds as we have been researching and planning for the community garden. A few people have approached us and suggested that the garden should be located on the rooftop of one of the Trent buildings (though none of these people recorded their suggestions on a survey). However, we have maintained that although rooftop gardening is a fascinating way to fit food production gardens into crowded urban spaces, the Trent garden should remain at ground level to ensure easy access for community members of all ages and abilities. We certainly hope that people who are familiar with special physical needs will be able to advise the future garden planning committee about key characteristics of accessible locations, starting next fall. We will also endeavour to research this issue as a group in order to begin our planning as informed and supportive community members.

Food Security / Charity

Many survey participants commented on how the garden could help out with local food security and charity organizations. Participants suggested that we donate to food cupboards and contribute to the YWCA's "Grow-a-Row" Program (Glossop 2001), that charities such as Brock Mission should have access to the garden's produce (Cowin 2001), that garden produce should be used to support families in need or to create healthy meals (Burgess 2001), and that vegetables should be sold and the proceeds used to support people in need (Dong 2001). Becky Priebe indicated that workshops on canning and preserving would help to ensure access to fresh, healthy foods for workshop participants throughout the winter months (Priebe 2001).

Although we had found many of these ideas in the research process through written and oral sources from "experts", it was extremely helpful to hear community members express their interest in food security issues. From the community input we have received to date, we can see that there is a large interest in growing food in the Trent garden to help alleviate local food security issues. Participants have also expressed a great deal of interest in supporting organizations such as the YWCA and Brock Mission who address hunger on a daily basis. With the understanding that community gardeners wish to contibute to anti-hunger initiatives, the future garden planning committee will be able to implement policies and mechanisms for distributing food before the soil is broken and the seeds planted.

Organic Gardening and Environmental Sustainability

Several people's comments were focussed on organic gardening methods and environmental sustainability. Trent student Krista Russell emphatically wrote, "please make it ORGANIC!" (Russell 2001). Students Adam Fisher, Alison Clark (an experienced market gardener), and Ava Richardson (community waste reduction activist) offered suggestions to help

the gardeners to maintain an environmentally sustainable garden. Fisher suggested that crop rotations are an important way of maintaining soil nutrients (Fisher 2001), while Clark commented that planting in raised beds is a useful weed-control technique, and that biodegradable mulches can be used to prevent weed damage (Clark 2001). Finally, Richardson proposed several options for maintaining an environmentally-sustainable garden. First, Richardson suggested that we grow heritage vegetables to encourage pest resistance and to educate others about the unique varieties of vegetables that are available (Richardson 2001). She also pointed out that some of the garden space can be used for native tallgrass prairie plantings and perrennials (ibid.). Most importantly perhaps, Richardson advocates an extensive composting system that may help to reduce food waste from the Otonabee college cafeteria (ibid.). While there are "official" plans in place for food waste at OC, many students have complained over the years that food waste has not been separated effectively to be shipped to a local farmer. In light of students' concerns over the effectiveness of the existing system, Richardson's ideas for a new composting system to handle at least some of the cafeteria food waste may become a much needed solution.

Education

Many survey participants indicated that they would be interested in helping to plan and lead educational programs – others simply suggested that education should be a key feature at the Trent Community Garden. At its most basic level, education can consist of signage detailing organic methods used, origins of heritage plants, and benefits of biodiversity and wildflowers (Richardson 2001). Signage can also indicate contact names and information, and advertise upcoming events to help visitors to get involved in community garden activities (ibid.).

Installing signage around garden can at least ensure that visitors are always informed of the basic philosophy and composition of the garden.

Besides signage, many community members suggested that local highschool and elementary school students be involved in the planting, maintenance or harvesting of the garden. One student even suggested that a summer camp could be associated with the community garden to give children experience with organic gardening (Clark 2001). Jamie McKenzie commented that an associated volunteer or employment program could be developed to give "youth at risk" work experience (McKenzie 2001). This volunteer or employment internship would also educate youth about ecological sustainability and nutrition (ibid.).

Reading through the surveys, we gained an understanding of the level of enthusiasm and creativity the Trent community has for educational programs surrounding organic gardening, not only for the university, but also for students from local Peterborough schools. We know now that including plans for educational programs next spring will be a great way to draw more volunteers to the garden, and to make community gardening a richer experience for all.

Beautification / Greenspace

A few people suggested that the community garden will be an important addition to campus greenspace. Whitney McClallen and Ava Richardson both reccommended that native tall grass prarie plots be included in the design of the garden. Also, some students recognized the importance of the garden as not only a food production space, but also as a community gathering place. Because of this, flowers, benches and fountains may be attractive additions to the garden (Telford 2001; Dong 2001). Holly Dong suggested that spring bulbs, rose bushes and other fragrant flowers should be planted in the garden for the community to enjoy (Dong 2001).

Multisensory aspects of the garden (such as a fragrant garden) can be important educational tools and can bring extra enjoyment to people of all ages, especially to those who have visual impairments. Cathy Dueck also noted the ecological importance of flowers in the garden because of their ability to attract pollinators to other plants (Dueck 2001, pers. comm.). We feel that flowers are certainly a welcome addition to any garden, not only for their practical purposes (i.e. companion planting, pollinator attraction), but also because they add colour and fragrance to the garden. We hope that the Trent Community Garden will host many types of flowers, and will invite gardeners to try their hands at growing native wildflowers, rosebushes, or showy cut flowers as they please.

2.3 Community Input Session Results

The second community input session was an informal meeting held at Stratton House, PR. Participants contributed a variety of ideas and raised many questions surrounding the location, purpose, and planning of the garden. Robyn Kortright discussed her rooftop garden project that she plans to initiate this summer. Working under an NSERC Grant, Kortright plans to do scientific research on wildflowers, or vegetables, and may work at comparing the success of a variety of heritage plants and mulches (2001, pers. comm.). Although she is unsure of the precise direction of her project, we feel that Kortright's project may contribute to the success of the Trent Community Garden because she will be working with relevant issues and her research will be specific to our climate and soil conditions.

Jenny Liu asked some general questions about the philosophy and purpose of the garden that were helpful. Specifically, she wanted to know if the plot was going to be used for a demonstration or food production garden (2001, pers. comm.). After discussing this, we

unanimously decided that the garden would likely take on both roles. Because of our hopes to use the garden as an educational resource and food production area, we feel that it will be able to contribute to the community in a variety of ways. Participants brought up issues of food security and addressed the need for access to fresh, healthy food for people who are homeless, or living on low-incomes in the Peterborough area. Distributing produce through existing networks (i.e. foodbanks) may be difficult or impossible. However, through both surveys and input sessions, the Trent community has emphasized a desire to use the garden to address hunger and malnutrition in the surrounding community. We feel that this will be a major focus for the coming year, and will be sure to dedicate time and energy to discovering ways in which we can distribute the garden's produce to people in need. Participants also suggested that running cooking and preserving workshops would help community members (from Trent and the rest of Peterborough) to learn about healthy eating, and to maximize the use of garden produce.

Not only did participants pay special attention to the role of the Trent Community Garden in the Peterborough community, but we also began to think of the garden on a broader scale. Paul Gudnason suggested that the Trent Garden could somehow network with gardens or urban agriculture clubs at other universities or colleges. Gudnason mentioned the Guelph University Permaculture Club, the University of Waterloo, and University of Toronto may be potential networking partners (2001, pers. comm.). We agree that this it is an important aspect of local action to network with other groups and individuals who are working on similar projects in other communities. We hope that once our garden planning committee is formed that we can not only communicate with other groups at other universities, but also find opportunities to visit other gardens and see other systems at work to aid in our own planning (Lui 2001, pers.comm.).

4.0 Future Management Plan

4.3 Ecological Management Policy

With some community input gathered, we are now able to develop some of what will be an Ecological Management Policy for the Trent Community Garden. Through surveys and input sessions, we have found that community members expect the garden to be managed without the use of harmful herbicides or insecticides. We have also found that many interested community members are interested in various ecological management techniques, such as crop rotations (Fisher 2001), composting (Richardson 2001) and inclusion of native plants into the general garden ecology (McClallen 2001; Richardson 2001). While the community input we have gathered so far has been helpful, we are still committed to leaving space within this ecological management policy for more input. Thus, the ideas and reccommendations in this policy are not set in stone, and are merely a framework for further comment.

Input on the community garden that we have gathered thus far has indicated that the garden itself should be managed organically. However, many people have commented that the maintenance of lands adjacent to the Trent garden will be managed with inorganic pesticides and fertilizers. Ideally, the garden site will be surrounded by unmanaged land. Weeds can be controlled in the area by frequent mowing or by dedicated weeding in the garden plots. Otherwise, we may have to consider negotiating with Grounds Services to keep adjacent land chemical-free once the garden has started. Because Dave McLauchlan has already shown support for the garden, we feel that Grounds Services will be willing to work with our requests if we can provide reasonable justification and sufficient notice. If we are unable to negotiate with Grounds Services about the use of inorganic fertilizers and pesticides, the garden will continue to

maintain its principles of organic gardening as an example of ecologically sustainable gardening and grounds management. Below are some brief descriptions of how pests, weeds and soil will be managed ecologically in the garden.

Insect Management

Insects can be managed in the garden through a variety of organic methods. Fist of all, pest insects can be reduced by ensuring that natural enemies have alternate food sources nearby. Predatory insects can be encouraged them to colonize the garden area by allowing some weeds to grow within and around the garden (Altieri 1994). Weeds in the garden can act as hosts to alternate prey for natural enemies. Providing alternate hosts for predatory insects can help to ensure their survival and prolong their stay in the garden. Also, small, herbacious overwintering refuges can welcome predatory insects to the garden (ibid.). Increasing biodiversity in the garden not only provides shelter for predatory insects, but can also interfere with the activities of pests. In our first report, we discussed how companion planting can deter pests because of the ability of plants to replicate insect pheromones to attract, stimulate, deter, or repel insects. In a garden that uses biodiversity as pest control, many insects are confused by the cocktail of chemical and physical stimuli, and are less able to find preferred egg-laying and feeding sites (Carr 1985). Thus, as a means of controlling pests, the Trent garden will attempt to use a variety of companion planting patterns, as well as integration of naturally-occurring and native plants ("weeds") to confuse pests, and provide habitat for their predators.

Weed Management

Weeds in the Trent garden will be managed in several ways. Manual weeding will likely

be a large part of keeping unwanted plants from damaging vegetables and flowers. Because of this, we hope that garden collective members will be committed to doing their share of weeding. It may be a good idea to ask each member to sign up for a specified number of service hours in the garden. If manual labour is not a readily available or successful approach to weed management, mulches may help to keep the weeds down (Clark, 2001). Straw or woodchips spread over the soil at the base of plants are good ways to suppress weeds and reduce labour needs.

Soil Management

Soil management is one of the most important considerations in an organic garden. In our first report, we mentioned that we will aim to cultivate good soil rather than directly feeding plants with inorganic fertilizers. We feel that maintenance of rich healthy soil requires a diversified approach. Members of the garden collective will need to have an understanding of the soil – its composition, texture, and humidity – in order to decide on the proper approaches to improving its arability. In this section, we will reiterate a few of the approaches that we learned about in the first report, and detail how they will be used in the Trent garden.

First, soil testing will be a key aspect of maintaining soil health. At the beginning of the first year, we will need to take soil samples and send them off for testing. Depending on the skills and soil science knowledge of garden collective members, we may be able to test the soil in some ways using Trent laboratories and equipment. If we are unable to test the soil ourselves, we can easily send samples to the Soil and Nutrient Testing Services at University of Guelph (**www.uoguelph.ca** this is not the exact website, I think that I may have it bookmarked as Soil Testing or something. If not, just look up Soil Testing on the U of G. website and it'll take you to the page.) 2001) Either way, we will gain an understanding of the nutrient composition of our

soil, and decide what sorts of soil enhancers we will need to use.

We expect that compost applications will be key to soil health at the Trent Community Garden, because of its overall richness and diverse array of nutrients. Before we have created and harvested our own compost, we will be able to purchase it from the Ecology Park. We will need to find outside sources of compost for our first year, as our system will be in its beginnng stages, and non-intensive composting methods will take up to a full year to create enough dark brown, crumbly soil to apply to the garden (Peterborough Green-Up n.d.) Also, we will need to begin our compost program from the first year, gathering garden waste, and perhaps even kitchen waste from collective members, or from Trent cafeterias. By the fall of the following year, we should have some compost to spread onto our garden for the next spring. A composting program is a long-term, multi-season commitment, and will require a great deal of effort, knowledge and attention from collective members. Compost will need to be maintained throughout the year (i.e. not just in the growing season). Despite the amount of effort required by the composting program, it will reward gardeners in the end with a healthy, homegrown soil supplement, that will be cost free and nutrient-rich.

While we patiently wait for our compost to yield valuable, nutrient-rich soil, we can begin a program of rotating planting areas, and sowing green manures over the winter months. Green manures can be planted in the fall or spring and plowed under at the end of the season. Thus, after the fall harvest, we will be able to cultivate nitrogen-fixing legumes and other "deep-divers" to help bring valuable nutrients to the surface of the soil (Riotte 1998). Rotations of nitrogen-fixing legumes such as alfalfa and clover will help to enrich soil in the Trent garden with nitrogen. Soil in the Trent Community Garden will also be conserved and conditioned through cover cropping – Riotte points out that cover crops reduce wind and water erosion and

their roots break up heavy aggregates and accumulate nutrients (1998). Specially selected green manure crops are chosen for their ability to send deep roots into the subsoil and mine nutrients that are unavailable to the shallow roots of vegetables and flowers. The Trent garden will benefit from the mining abilities of green manure crops when they are ploughed under, and their nutrients are made available to subsequent crops (ibid.).

Cover-cropping can be thought of as a way of combining the abilities of several species of plants over time. However, the benefits of interplanting can be maintained during the growing season through simultaneous companion planting. Cover crops and desired crops can be grown together so that they are mutually beneficial in terms of nutrient acquisition and pest control (ibid.). Some cover crops provide shade, or grow close to the ground to suppress weeds. Others mine nutrients from the deep subsoil. No matter the variety of vegetable or flower, there is an appropriate companion for each region or climate. In our first year of gardening, we will begin to conduct an ongoing experiment to discover what plants work well together in our climate.

Thus, our approach to soil maintenance will require a multitude of techniques and a large body of knowledge. Understanding the soil at the Trent garden will be a long-term commitment, and will require experimentation and dedication on behalf of the collective. If our garden collective is convinced of the benefits of organic gardening, we must spend time and energy learning about the soil, and make careful decisions about the natural supplements we use in the garden.

4.4 Projected Financial Needs and Potential Funding Sources

At this point, we are uncertain about our budgetary needs, and must rely on approximations. Since we do not know yet whether we will be receiving donations in the form

tools, seeds and building supplies, we are unable to determine the exact budget we will require for setting up our garden. Also, we will need to know the size of the site before we can decide how much compost and mulch we will need. We may also be able to take manure from nearby farmers. In this case, we could reduce or eliminate the cost of compost from our budget.

If we are unable to find suitable manure for free, compost and mulch costs will take up a large portion of our budget. We will probably need to supplement the compost from our own system with that from the Ecology Park, or with manure until our own composters are fully functional. Costs of mulches and composts at the Ecology Park are listed below in Figure 4.

Figure 4: Ecology park compost and mulch price list.

Item	Quantity	Price
leaf compost	1 bucket	$1.25
leaf compost	15 buckets	$15.00
leaf compost	50 buckets	$30.00
compost/topsoil mixture	1 bucket	$1.50
mushroom compost	1 bucket	$1.75
straw	1 bale	$4.50
woodchips	1 bucket	$0.25
Sand	1 bucket	$1.50

Other initial costs, such as building supplies for composters, raised beds and a tool shed; tools and a garden hose will make our starting budget needs quite high. New garden tools are fairly expensive if they are to be purchased for a collective of gardeners. Below, we have listed some approximate price ranges for basic gardening tools in Figure 5.

Figure 5: Price list for garden tools found at Canadian Tire.

Item	Price
spade or flat shovel	$20-25
hoe	$20-25

pitchfork	$20-25
rake	$20-25
trowels	$7-10
wheelbarrow	$2-4
garden hose (100 ft.)	$40-60
gardening gloves	$27
total	$156 – 201

When we add up the costs of purchasing new garden tools, our budget needs may start to sound slightly unweildly. However, this is not unusual, as Connie Thompson of the Community Garden program at the YWCA says that it takes most community gardens need a large budget (approximately $500) to get started (2001, pers. comm.).

With the help of Grounds Services at the university, the YWCA, and community members, we may be able to find donations of tools, seeds, building supplies and soil enhancers. Part of the job of the garden collective in the fall and winter months will be to raise money for the budget, as well as hold drives for old gardening equipment. If we have collective members keeping an eye out for used building materials and tools, we may find that our budget does not have to be as large as we anticipate. However, we feel that it is important to err on the side of caution, and keep in mind the maximum costs we may have to face.

In the first year, we will commit ourselves to securing some varieties of heritage seeds to use in the garden. Each year, we will save our seeds so that we will not need to purchase as many in subsequent years. As heritage seed growers, there are many options for obtaining interesting and hardy varieties to grow in our garden. If we decide to become a member of Seeds of Diversity Canada, a $25 membership fee will enable us to trade seeds with other members (www.seeds.ca 2001). We may wish to pursue this route in our second year of growing, after we have had a chance to purchase some heritage varieties and test them out in our growing

conditions. Either way, we will need to purchase some heritage varieties through catalogues for the garden's first growing season. A catalogue from Cottage Gardener Heirloom Seeds sells seed packets for $1.85 - $2.50, these prices cost about $0.50 more than non-heirloom seeds sold by seed corporations in gardening and hardware stores (http://www.cottagegardener.com/heirloom, 2001). If the community garden can gather seed donations from the YWCA and community members, more of the budget can be focussed on purchasing heritage varieties. In subsequent years, heritage variety seeds can be harvested directly from the community garden, dried, and traded; or stored for future use.

Thus, although we cannot be sure, it appears that our budget needs for the garden will be quite high in the first year. It is likely that Thompson's estimation of a $500 start-up budget for gardens will be a reality for the Trent garden. We believe that this money can probably be attained through club funding through the TCSA or OPIRG, and fundraising efforts initiated by the garden collective. We also hope that some of the costs can be reduced through donations of used building supplies and garden tools. These donations would not only help the garden collective financially, but would also help to reuse old equipment that community members might otherwise throw away. Since the garden will be a community garden, funding and supplies will require ongoing community effort. We feel that the enthusiasm of community members for the community garden project will help us to obtain the necessary funding and supplies for the garden.

4.5 Evaluation of Possible Locations

Thus far, finding possible garden sites has been difficult. When speaking to Dave McLauchlan, he suggested that we rule out finding space in the central areas of Symons Campus.

McLauchlan reccommended that we pursue a site on some of the rental lands, or lands adjacent to the Trent property (ibid.). He told us that farmers rented out land on the outskirts of the main campus, and that it would be a good idea to negotiate with them for a plot. Another option is to approach a resident named Anne Mitchison, who lives next to the maintenance buildings on Pioneer Road. McLauchlan told us that her husband used to keep a garden in the back yard, and that if she is willing to lend it out, it may be a prime site for a community garden (ibid.). This may be a route for us to pursue in the fall. However, we must also remain aware of the implications of asking local residents for land for a Trent community garden. While some people might love to receive fresh vegetables in exchange for the use of their land, others may consider public gardening on their property an intrusive activity. If we decide to approach Mrs. Mitchison, we must be sensitive to her needs for privacy and ensure that we give her the option to decline.

We will need to take the same approach if we decide to ask nearby farmers for a plot of their rental land. While McLauchlan and others have told us that former community gardens existed on rental lands, the farmers who rented out the land were still paying for it. A groundskeeper made reference to one of the former community gardens at Trent, located on the Bolton Brothers' property. The soil on the Boltons' land is rich and suitable for growing a community garden, he said. He also mentioned that the former gardeners at Trent fertilized their soil with manure from the Bolton Brothers' dairy farm. According to this groundskeeper, the faculty tending the community garden grew excellent vegetables and healthy plants (Anonymous 2001, pers. comm.).

Since finding a plot of land will be difficult at best, McLauchlan agreed to meet with the community garden group that will be initiated next year to start planning for spring 2002.

McLauchlan told us that he would be happy to help us find potential sites, and to inform us of the advantages and disadvantages of each (ibid.). This will be immensely helpful to us as we seek out a site in the midst of the Build 2000 process. McLauchlan's rapport with nearby farmers will also be a great help to us as we navigate through a complex network of land use and new faces to find a suitable site.

6. Conclusion

We are extremely hopeful that the information presented here will act as a guide in the fall, when we invite community members to join us in forming a Trent Community Garden Collective. With a deeper understanding of community input on the subject of the garden, we feel prepared to respond to the needs of our community. However, we are aware that we must continue to solicit input from community members to structure the garden in a way that meets community needs and desires. We have heard input surrounding the importance of food security, ecological sustainability, educational opportunities and accessibility in the garden – we hope to put our understanding of the community's concerns into action when we invite staff, faculty and students to work together to ensure that the garden meets their standards in each of these categories. We also realize that there are many more issues that we have not had room to address in our reports. Next year's garden collective will provide a forum for ongoing input, and will facilitate communication, group brainstorming, inspiration, creativity and effective problem-solving in the Trent garden. We are extremely excited about utilizing the knowledge we have gained through community-based research into practice next fall with the formation of the garden collective. Ultimately, we know that the largest degree of satisfaction will come when the garden collective can harvest the first fresh vegetables and share them friends, family and the

Peterborough community. Of course, our goal is to provide a space where community is strengthened, and where individuals can restore their relationships with food and the natural world. Our aim is to address food security issues at Trent in an inclusively and creatively and we hope that this project is a way in which we can give something back to our community. Indeed, our desire to create an inclusive space where everyone can be connected to the food they grow, and can be empowered to take control of food production has been our inspiration for this project. Though academic in scope, this project has been one small step towards these goals.

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