

Urban Farms Hands 101

Final Report

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1. Introduction

While the City of Vancouver is a diverse and vigorous economy that is situated within close proximity to highly fertile food-producing lands and waters, food security is not ensured for the majority of Vancouver's citizens (Babolet *et al.*, 2004). With the secular trend towards urbanization, growing city populations are progressively introducing unsustainable food demands on the urban food supply system rendering it incapable of adequately nourishing the urban populace (Satterthwaite *et al.*, 2010). In attempt to address the burgeoning problem of food insecurity in the West End region of Vancouver, the Gordon Neighbourhood House (GNH) organization has established an Urban Agricultural Program which supplies essential produce for the Community Lunch Program through its 4 urban garden locations (GNH, 2016).

The aim of the Urban Farm Hands 101 project is to assist in the maintenance of the GNH network of urban farms by committing 3 hours weekly to beginner gardening tasks and to formulate a crop plan capable of laying down a foundation for improving the productivity of future garden endeavors. Since the establishment of urban gardens has shown to counterbalance the unviable trend of urbanization by providing inexpensive and nutrient-dense produce, this project's efforts have the potential to increase the West End region's levels of food security (Bellows *et al.*, 2005). More specifically, the continual maintenance of the urban farms decreases transportation costs and the farm-to-table time interval which ultimately, lowers the total price of food products and allows more food insecure residents to meet their dietary requirements (Smit *et al.*, 2001).

In the end, project participants aspire to develop a more profound understanding of urban agriculture, impart positive change on regional food security and apply their academic knowledge in a community context through community based experiential learning (CBEL). Furthermore, while working cooperatively with GNH, project participants intend to improve the productivity of the 4 urban gardens by comprehensively answering the following question:

What types of in-garden modifications must be inaugurated into the crop plan to increase the overall productivity of the 4 urban garden plots?

2. Methods

Data Collection

Throughout the entire term, the project group assisted the head farmer in all farm-based activities on a weekly basis while conducting detailed observations of all 4 garden sites. Following every 3-hour gardening session, the recorded observations were condensed and summarized into the “Observations Table” (see Appendix A). Our recurrent involvement enabled every member to gain strong familiarity with the gardens and techniques which is necessary to complete our project objective.

Our third task involves interviewing the head farmer, who is most familiar with the urban garden locations and the relationships established with the West End residents. Succeeding the recordation of observations, two select students conducted a short 10-minute interview with the head farmer and recorded responses on the “Interview Sheet” (see Appendix B). The interview session allowed us to develop a better understanding of GNH’s past successes and future ambitions which ultimately, set the foundation for the development of the crop plan, our project objective.

Data Analysis

Following the final gardening session, the data transcripts were thoroughly examined by conducting a thematic analysis to identify emergent and meaningful themes. The colour-coding strategy was applied by assigning each theme a particular colour and highlighting those which appeared more than once in the “Observation Tables.” Succeeding key theme identification, the highlighted themes were categorized into two groups which revealed their overall impact on urban gardens: beneficial and detrimental. While referring to the two categories, group members discussed collaboratively on what types of in-garden modifications must be implemented to diminish the effects of the “detrimental” themes and increase the effects of the “beneficial” themes.

The interview transcripts were thoroughly examined by applying a coding scheme. The process of interview analysis began by labeling repeating phrases and concepts, bolding opinion statements and italicizing garden-related facts. Secondly, the interviewee’s explanations to various phenomena were highlighted to better conceptualize any underlying patterns.

Ethical Considerations

Following the completion of the TCPS 2 Tutorial, our group acquired the consent of the head farmer to emphasize his/her confidentiality during the interview process. The collected data were transcribed onto a computer data-base system only accessible to group members and presented in an unbiased raw form. The head gardener was briefed about the project goals and his/her rights to withdraw from participating in a professional manner. Lastly, the Urban Farm Hands 101 project applied an asset and deficit-based approach by leveraging existing in-garden strengths in concurrence with ongoing weaknesses.

3. Results

Our completed “Observation Table” in Appendix A revealed that the Blenheim Garden exhibits medium weed pressure, high pest pressure, variable overcrowding and low productivity. The forenamed garden site is centrally located between 3 apartment buildings, giving rise to highly favourable conditions for pest proliferation and growing unsuitable crop types such as kale. The Crystal Court Garden displays low levels of overcrowding, weed pressure and pest pressure and high productivity in addition to the presence of earthworms and cover crops. The Crystal Court Garden crop beds are routinely exposed to direct sunlight and grow season-suitable crop types. With regards to Nicola Place, the urban gardens reveal moderate levels of pest and weed pressure, low levels of overcrowding and variable productivity. The raised crop beds grow a few suitable crop types and experience direct sunlight throughout half of the day. Lastly, the Rooftop Garden demonstrates high levels of weed pressure, overcrowding and productivity and medium levels of pest pressure. The crop types are unsuitable for the upcoming winter season and are exposed to direct sunlight throughout the entire day. Given these trends, our group found that unsuitable crop types grown in shady and crowded conditions were highly vulnerable to weed and pest invasions which impart a detrimental effect on crop productivity. Hence, the uncrowded growth of suitable crop types may be a solution towards increasing overall garden productivity.

During the interview session, the head farmer described urban agriculture as an essential component of the food insecurity equation that provides invaluable volunteer opportunities to the surrounding public. By allowing residents to become more involved and connected to nature, the interviewee stated that urban gardens serve as an important therapeutic that suppresses feelings

of isolation and unwantedness in lonesome individuals. According to the head farmer, green vegetables and cherry tomatoes are the easiest crops to harvest, while *Brassica oleracea* plant species are the hardest due to their high proneness to agricultural pests. With regards to the Produce Market and Community Lunch Program, the public most commonly purchases garlic, while the culinary chefs mainly request zucchini and tomatoes as shown in Appendix B.

4. Discussion

Having conducted on-site observations and an in-depth interview, our project group was better equipped to identify in-garden modifications capable of improving garden productivity. Ultimately, this newly-acquired knowledge along with the creation of a crop plan enabled our group members to answer and complete our project's inquiry question and objectives mentioned above. Following data analysis, our group observed that garden locations with lower levels of sunlight gave rise to a higher prevalence of invasive pest and weed species. Ciancio and Mukerji (2007) support this claim by revealing that the continued lack of sunlight introduces a humid atmosphere often favoured by most invasive species. Furthermore, the same urban gardens exhibited low productivity while accommodating season-unsuitable crop types in crowded conditions. Our group speculates that inappropriate plant species are highly vulnerable to weeds and pests due to their weakened state, giving rise to notable infestations. Pessaraki (2010) supports our interpretation and further states that these forenamed growing conditions significantly decrease overall garden productivity. An additional research study also suggests that crop overcrowding exacerbates the issue by introducing inter-crop nutrient competition (Ford, 2014).

Our group conjectures that the development of a more comprehensive crop plan with each crop's growth cycle will address the problem of inappropriate crop placement and weed and pest pressure. Through this, gardeners will plant season-suitable crop types which are more resilient to competition and invasion and productive during the growing season. Since food security is becoming increasingly difficult to achieve due to urbanization in the West End region, our recommendations and complimentary crop plan will increase garden productivity which will in turn, generate higher quantities of produce capable of feeding more individuals. According to the head farmer, our involvement has also increased community awareness which is crucial to gain general acceptance and expand garden projects into additional city areas. Despite our significant

findings, the CBEL project transpired for only 3 months which was an insufficient time interval to fully analyze all garden sites. Furthermore, a single key stakeholder was interviewed, providing only one perspective on a broad subject. Consequently, a longitudinal study would be more appropriate as it would provide researchers with a larger time frame to observe the gardens and interview more participants.

5. Conclusion

In conclusion, the Urban Farm Hands 101 project revealed that the crowded growth of unsuitable crop types in highly damp growing conditions increases crop vulnerability to weed and pest invasions which ultimately, reduces overall garden productivity. Hence, our suggestion to spaciouly plant suitable crop types along with our developed crop plan, may improve overall garden productivity and elevate the West End region's level of food security. Despite our inquiry question being answered, further steps can be taken to advance GNH's knowledge of alternative shortcomings of the 4 garden sites. Consequently, prospective research projects must consider implementing a longitudinal design to better identify the direct relationship between crop overcrowding, crop season-suitability and overall garden productivity.

6. References

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Appendix A – Observation Table

Observational parameters	Sites			
	Blenhiem	Crystal Court	Nicola Place	Rooftop
Sizes (ft x ft)	3.4 x 3.1	16.1 x 4.3	9.3 x 4.8	7.5 x 3.2
Weed pressure [1]	Medium	Low	Medium	High
Pest Pressure [1]	High	Low	Medium	Medium
Overcrowding	Variable	Low extent	Low extent	High extent
Productivity	Low	High	Variable	Low
Microclimate factors [2]	-Very Shaded, humid/damp -Little to no direct sunlight + wind	-Full sun and wind exposure	-Afternoon sunlight exposure only, surrounding buildings provide wind protection	-Direct sunlight + full exposure to wind
Others	-Low quality soil infested with pests (tomatoes, kale)	-Presence of earthworms -Garden beds surrounded by grass -Use of cover crops (radishes, spinach)	- “Best site for greens and worst site for root veggies” – Head Farmer - No direct sunlight (radishes, garlic, spinach)	-Wooden beds not as deep as others (carrots, potatoes, parsley)

[1] The level of weed and pest pressure will be determined during an interview with our community partner.

[2] Any factors that contribute to creating a microclimate by affecting sun exposure, wind, precipitation.

Appendix B – Interview Sheet

Interview Sheet

1. Which crop types are most commonly used by chefs and bought by customers?

A: There are many greens used in the Lunch Program, in addition to tomatoes and zucchinis. The most popular crop type that is bought from the produce market is garlic.

2. What are the hardest and easiest crop types to harvest and manage?

A: Easiest: Greens and cherry tomatoes – very manageable
Hardest: *Brassica oleracea* plant species – high proneness to pests

3. How would you describe the effect of urban gardening on regional food security?

- Urban agriculture is not a solution to food security on its own, but we are not getting any closer by not doing it
- It provides an opportunity to learn many essential skills most of us have forgotten
- It raises awareness and changes people's minds

4. In what way does urban agriculture affect the West End residents?

- Urban agriculture allows participants to “feel better” by suppressing feelings of loneliness.
- It acts as a therapeutic activity for every West End resident and a “great equalizer”
- It makes people feel more part of the community and more involved.

5. What are the major obstacles in Vancouver which prevent the creation of further urban gardens? What is the first step to overcome these challenges?

- There is a delay in people's attitudes towards urban agriculture
- There is a lack of openness and willingness to create urban gardens in vacant plots
- Property owners prefer to develop alternative projects
- Public should become more open towards the development of urban gardens – city council will be more willing to accept urban garden project

6. What do you enjoy most about job?

- This occupation enables the Head Farmer to legitimize many goals by bringing in food from the urban gardens

Appendix D – Critical Reflections

Student 1

Overall, the Urban Farm Hands 101 project was an invaluable and enlightening experience. This LFS 350 CBEL assignment allowed me to regain a deep connection with nature and become more conscious of urban garden's influential role in reducing regional food insecurity. By participating in weekly planting and harvesting sessions, I was able to acquire a new set of fundamental gardening and blogging skills, advance my plant knowledge base and develop key relationships with the Gordon Neighbourhood House staff. Furthermore, the day-to-day collaborations with my five group members allowed me to develop a variety of skills that are increasingly important in the professional world, such as teamwork and problem-solving skills. Despite this, the collaborative process was often hampered by non-active team members and busy school schedules. In addition, our scheduled meetings often coincided with terrible weather conditions, decreasing my overall avidity towards the CBEL project. In concurrence with bad weather, the materialization of frequent cold-like symptoms interfered with my project responsibilities by lowering my availability, engagement and energy-levels. Through reflection, I came to understand that my past common illnesses were attributed to my unpreparedness and lack of water-proof boots. In the end, I plan to apply my newly-acquired knowledge and skills towards in-home gardening projects and future blogs. Moreover, I hope to continue helping the Gordon Neighbourhood House and their food security initiatives in an effort to support the West End residents and raise awareness of urban gardens' critical role in combating food insecurity.

Student 2

At a personal level, both the CBEL project and the time given to us during flexible learning sessions were extremely rewarding experiences. These sessions were important as they allowed us to not only understand what the theories in LFS 350 are but also, to apply them at our community outposts. To me, the greatest learning experience is to be able to apply what you learn and then directly see the impact your work has on those around you in a community setting. For our project, this experience was seeing the process from the seed at the gardens all the way to the plate in the Community Lunch Program. This timeline allowed us to see the results of our contributions to the Gordon Neighbourhood House.

In addition, to be able to work on this project as a group was an equally challenging but rewarding experience as group work teaches one to account for each other's strengths and weaknesses. This process definitely increased my patience as well as my adaptability around what each group member can contribute. Overall, my progress on this project trained my problem solving skills and my ability to think critically about the research conducted and most importantly its implications.

Student 3

As a student in Applied Biology, I was excited to participate in a CBEL project that directly relates to the area of my studies. This project gave me an opportunity to gain some hands-on farming experience and apply the theoretical knowledge I have gained from various university courses. Through weekly volunteering alongside the head farmer of GNH, I had a chance to see with my own eyes how soil-beneficial macro biota and plant health are affected by site microclimate, soil quality and farming practices. This experience was further enhanced by an opportunity to ask questions and run ideas about site health improvements through our project coordinator. Through personal communications with the project coordinator, we also learned about various ways GNH uses the produce grown on the farms to help West End community residents. All the above would not be possible without a proper LFS 350 course. Flexible learning sessions and blog postings were the two most important parts of the course to help our group organize our work. Flexible learning sessions offered our group a valuable opportunity to volunteer at the urban farms all together, which otherwise would be impossible due to conflicting schedules. Blog entries helped our group follow a timeline and set grounds for discussion and resolution during group dynamics issues. Overall, Urban Farm Hands 101 was a positive real-life learning experience that allowed me to apply the knowledge acquired at school as well as improve my written communication skills and enrich my team work experience.

Student 4

Over the course of the CBEL project, I came to realize that gardening is a heuristic experience that should be treasured. Additionally, the project allowed me to recognize the connection between urban gardening and its deeper role in the West End community. Despite this, the project was initially not engaging due to various factors such as bad weather conditions and a

repetitive and labor-intensive workload which included weeding, cleaning and harvesting. Fortunately, my frequent attendance allowed me to better appreciate the urban gardens' important role and contribution in addressing community food insecurity. Although the concept of urban gardening is undervalued, my weekly engagement was a worthwhile experience.

Furthermore, this project allowed me to practice and increase my blogging and data collecting skills, which were applied on a frequent basis. Initially, it was challenging to collect observational data such as square footage and pest pressure in the various garden sites; however, the acquirement of gardening tips from the head farmer allowed the process to become more efficient over time. Lastly, I believe that the good spirit of contributing to the community through urban farming should be promoted to increase awareness of community food security. Hence, I plan to volunteer in similar community-based projects in the near future.

Student 5

During the past three months, our group was working with the GNH Head Farmer on the Urban Farm Hand 101 project. During the term, group members rotated to assist in weekly farm maintenance activities such as harvesting and seeding. On flexible learning weeks, all group members met together with our community partner to maintain and improve the urban farms, to discuss the progress of our project and to research related topics. Flexible learning sessions were extremely helpful in allowing us to attain skills of independence by providing us with free time to identify and resolve project issues collaboratively. While working with group members and our community partner, I have gained practical farming, teamwork, and problem-solving skills. An interdisciplinary team also allowed me to think differently and critically while dealing with the community food-related issues together. Furthermore, while engaging in urban farming, I was able to gain more knowledge of the advantages and disadvantages of urban agriculture and its deeper role in addressing food insecurity. As a result, I am interested in continuing my studies on urban agriculture, local and global food systems, and food security. Consequently, I will be able to apply my knowledge and skills acquired in LFS 350 and other university courses to additional community issues.

Student 6

After taking numerous courses in our faculty, I have developed greater knowledge in areas such as food metabolism, food chemistry, and food security. Despite this, I have never experienced the activity of gardening during my life. Furthermore, while learning about abstractive and conclusive concepts in LFS 250, I have never applied them in my day-to-day life. By volunteering in urban gardens with our community partner, I felt a greater sense of self responsibility as a student in the Faculty of Land and Food Systems. Additionally, I learnt that the differences between a community garden from a private garden are a sense of connection to the community as well as motivation to act actively for the community. By harvesting produce from GNH urban farms, I had an active role in the community and gained a sense of satisfaction from knowing that the produce will be on the table for the low-income in the neighborhood. This direct relationship between the work that was conducted and its outcomes was extremely rewarding. Lastly, I got to feel the positive and friendly environment of the community lunch program and the weekly farm market at the GNH, which incorporated produce that I had a hand in harvesting.