

April 11, 2012

The Current and Potential Influence of Urban Agriculture on Local Food Systems:



PHOTO: New West Community Garden, Simcoe Site SOURCE: Author

A Case study of Community Gardens in New Westminister, British Colombia

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Introduction

A topic currently popular in urban academia is that of urban food systems. A food system encompasses the activities impacting food in an urban space, namely food consumption and production. A city whose food system has a large amount of food that it consumes being provided by the food that it produces has what is called a high food sufficiency rate. This paper will examine these food systems and focus on the influence of urban agriculture on their food sufficiency. More specifically, the research questions I am seeking to answer pertain to the case study of the city of New Westminster, British Columbia. These research questions are as follows: What is the current food sufficiency rate in New Westminster? (i.e. what are the current food consumption and production rates?) What is the *potential* food production rate in New Westminster? (what *could* the food sufficiency rate be?) And finally, what are the major challenges New Westminster is facing in reaching its potential food sufficiency rate?

The research presented in this paper will provide insight into the data needed for figures of current local food consumption and production, as well as a viable figure for potential production. These figures will be estimated based on varying sources such as recent or past government reports for Greater Vancouver and similar cities, statistics from this project's partner organization The New Westminster Gardening Society, and research on strategies for urban agriculture. Once these figures have been presented and the production gap calculated – that is, the gap between the actual rate and potential rate of food production – the largest causalities for this gap will be identified. Among these obstacles include ignorance of

opportunities, differences in values, lack of resources, and lack of motivation. Finally, based on these findings and further investigation, suggestions will be recommended for how to overcome these challenges facing urban agriculture in New Westminster and get closer to achieving the city's true potential for food production.

Background: Food Systems and Urban Agriculture

Our complex food systems are truly what allow our cities to exist. In fact, urbanism and agriculture were born together in history, and each is bound to the other. From the ancient settlements banked on the Nile river to the Mayan civilizations that inhabited Machu Pichu, early versions of the world's modern food systems go far back in History (Havaligi, 2011). People would not be able to coexist in the great densities most of the world lives in today if not for the enormous and complex processes of our food systems keeping the (majority of the) population fed.

Alarming, these wildly important food systems are in peril. Economically, socially, and especially environmentally, these systems are poorly planned and operate in patterns that are unsustainable. The industrialization of these food systems has put significant distance in between the consumption and production of food (Alastair, 2005). These distances have been brought to more of the public's attention in recent years, as waves of '100-mile' and 'locavore' diets have been gaining in popularity.

These are diets in which those who partake seek to eat 100% of their food, or as much as possible, from local sources. Often as a general rule, this consumption aims to be within 100 miles of the point of production (Broadway and Broadway, 2011).

This is an aim to mediate and repair the physical distance between the consumers and producers of food, a form of this separation that most affects the environment. The transportation of food is the main cause of this harm to the environment. As produce is flown, shipped, and trucked around the world, green house gasses are emitted at every stage. Much of the food demanded in our food systems have flown and driven great distances. Most consumers do not consider the true travel costs that go into their simple grocery trip, very possibly containing avocados from Mexico, mandarins from China, pineapples from Hawaii, coffee from Panama, and Rice from Thailand. These increasingly complex and extensive transportation logistics to continue to feed the world's cities have caused environmental alarm. In a paper by Schmidhuber and Tubiello, the case is made for Urban Agriculture solely based on the argument of its necessity for diverting the planet off the path towards catastrophic climate change (2009).

The concept of 'food-miles' incorporates these transportation distances as a valuable piece of information that can be attached to every item of food, and ideally visible on a label. This 'eco-labeling' could not only provide consumers with the useful information of how far their food has traveled, but also serve as an opportunity to educate the public to look for and consider these issues (Alistair, 2005). As Feenstra states in her article 'Local food systems and sustainable communities', "not only does an adequate, varied diet contribute to individual health, but the *way* food is grown, distributed and eaten also profoundly impacts the environmental, social, spiritual and economic well-being of the community. In many places, a logical and appropriate way to revitalize a community is by the

development of a local food economy” (1997). When considering the economics of urban food systems, BC residents spend an average of \$6,800 per household a year on food (Hohenschau, 2005). This is money spent that in a healthy food system with local production could stay within the local economy and help support the local agricultural industry, which would allow them to provide not only more local, but more nutritious food for a better price. There is also much discussion around the social problems that have surrounded urban food systems and how people belong within them; people’s emotional separation from and unfamiliarity with their food and those that produce it. These markets have also have also seen solutions arise from urban agriculture such as community gardening, farmer’s markets and food festivals (Hohenschau, 2005).

Many of these problems of our city’s food systems outlined above can be resolved through urban agriculture. Although issues such as the detrimental economic and social implications that stem from the current systems and possible improvements that can be made in these areas will be considered, the emphasis of this paper will primarily be on the present environmental and ecological problems involved in food systems and the solutions that urban agriculture offer.

Urban Agriculture in New Westminster

This research project was undertaken in partnership with the New Westminster Community Garden society, and hence, the case study of the city of New Westminster will be the context upon which these issues of urban agriculture are discussed. New Westminster is an urban area on the outskirts of the Greater

Vancouver Area. About 29 kilometers from downtown Vancouver, New Westminster offers a less dense residential experience with a total population of 66,000 people living in the 15.3 square kilometer city zone. The citizen population consists of a predominant majority of middle-aged, English-speaking citizens of Anglo decent (Stats Canada, 2007). Urban Agriculture in New Westminster is in the very early stages of development, as there does not seem to be any significant production of food outside of the gardens of the New West Community Garden Society.

Consumption

To investigate the food sufficiency rate of the city of New Westminster, first the rate of consumption must be examined. Investigating other food sufficiency rate case studies, the figure for a city's rate of consumption is most easily calculated through its population size and consumption averages. For the sake of simplicity for this research project, although the processes of meat and other foods are important pieces of urban food systems that should be considered, a purely vegetarian diet will be examined for both food production and consumption.

In his Master thesis, Lam also examines these consumption and production rates and calculates some figures to examine the food sufficiency of Kingston, ON (2007). So for New Westminster, based on the figure of a 66,000-person population size, and taking the average of 87.16 Kg of vegetables consumed annually retrieved from a 2009 Vancouver Food Policy Council report, the annual consumption rate is approximately 5,752,500 Kg. This will be the figure used for analyzing New

Westminster's food sufficiency rate, however there is also a very large amount (some claim close to 50%) of food that is wasted before and after consumption, for example food spoiling before it is sold, leftover food being disposed of, and inefficient food preparation processes. This is to say that the juggernaut that is the figure for New Westminster's consumption rate is actually on the minimal-side of estimating the city's consumption (Vancouver Food Policy Council, 2009).

Current Production

As mentioned earlier, the only known food production that is taking place within New Westminster is in the New West Community Gardens. This is not to say that outside production is non-existent, rather that it is safe to assume that it is comparatively insignificant. This makes the work of measuring the city's food production rates much less menacing, however even early rough estimations would see that the production rate only amounts to a very small fraction of the city's comparative gargantuan consumption. After estimations, this fact is still true.

As it currently stands, there are three community gardens in New Westminster that the Society operates. The first and main garden is on the grounds of Saint Mary's Anglican Church in Sapperton, the second is about half the size in the yard of another church in Marymount, and the other is at Simcoe Park on Brow of the Hill behind an Elementary school. The Saint Mary's site is considered the 'main' site because it was the first garden and is where the Gardening Society officers have their plots, while the Simcoe Park site has the most participation out of the three gardens (Anstey, 2012). Members from the society have alluded to this more

extensive participation based on the park that holds the garden, the proximity of the school and its involvement, and the larger and more spacious size allowing for more members to garden.

In all, the three gardens equal an approximate total area of 500 square meters. For garden plots such as community gardens, the Food Secure Vancouver baseline report lists an average output of 1.77Kg per square meter (Vancouver Food Policy Council, 2009). Using this average output number to calculate the annual production of the gardens, 500m of plot space at 1.77Kg a square meter comes to 885Kg of vegetables a year. As these gardens act as the only significant source of urban agriculture in New Westminster, 885Kg of vegetables a year is what this project will use as its current food production rate. This production then accounts for 0.000154% of the food consumption in New Westminster, a food sufficiency rate that has plenty of room for improvement.

The next step of this research is to examine how much more food New Westminster could possibly be producing. In order to do this, two scenarios will be provided, one detailing medial improvements to the society that are either planned for the near future or easily possible, and another estimating the potential food production approaching ideal conditions.

Potential Production: Scenario 1 – Minor Improvement

The first scenario investigates what the production rate of the gardens would be with the improvements and expansions that are already planned. The main site at the Saint Mary's Anglican Church has a planned expansion to almost double it.

The plan is to lay down more layers of mulch on the grass surrounding the current plots, and create a few more descending levels of plots. This expansion will be approximately 250 additional square meters.

An additional 250 square meters of plots to the main site would make it the largest site of the three gardens and allow for a significant addition of members, also easily making it the site with the most participation. Following in the footsteps of the Simcoe site – the current largest garden with the most unified community – the main site at Saint Mary's is attempting to bring more members together in the garden and cultivate a more communal feeling. This sense of unity actually benefits the gardening efficiency as well; when members are giving each other tips and helping each other garden, this mutually raises the output of the garden plots (Deelstra and Giradet, 2000). The calculations for this output of the new garden space plus possibilities for increased efficiency turn the potential food production figure towards an approximate 1400kg a year or more.

Other improvements such as adding more signage and visibly identifying the community gardens for the public would add more interest, participation, and cohesion to each setting. This signage could also include contact information or ways to get more details on that garden, on the New Westminster Community Garden Society, and ideally on urban agriculture in general.

Potential Production: Scenario 2 – Major Improvements

Calculating the truly viable potential amount of food that New Westminster could produce is a dubious task. The most challenging aspect of this process is in

choosing a definition of what is considered 'feasible'. A list of major improvements could be made that are more obvious, such as expansions in the same vein as the minor improvements foreseen above. This could also include the addition of more sites, perhaps attached to other schools, churches, or even government buildings. This expansion would obviously add much more membership, which could create a slight critical mass in the organization. With the addition of more volunteers would come more dedication to the community and perhaps a few more committed volunteers. With the addition of more sites and space could possibly come some communal areas such as an office where members could gather and the public to gain more information or speak with a member of the society. This space would hopefully feature toilet facilities (as of current, the 'main' site has no bathrooms, and thus limits member's ability to stay lengthy times) and could potentially have a communal kitchen for members to be able to also gather and share their food consumption experience.

These outlines for more major improvements are what can be possible for the New West Community Garden Society, a group such as a small volunteer organization that still carries some influence in its city as the only producers of local agriculture. The additions of an arbitrary hypothetical three more sites to double the space of the Society's gardens would put the total area around 1500 square meters, making a total annual output of approximately 2700Kg or more a year. Regarding the near future, this is about the extent of which the Society's goals could be, which is both reasonable and plausible for the community. There is, however, still more potential for the concept of urban agriculture in New Westminster.

Returning to the paradigm introduced earlier, finding the true potential production rate of urban agriculture within the city of New Westminster is largely based upon the definition of feasibility that is utilized. Many studies published that examine the food production potentials of cities look at great lengths as to where opportunities lay. Total area of vacant flat rooftop space for rooftop gardens, total area of citizen backyards for home plots, total amount of brownfields in a town that can be reclaimed as a site for urban agriculture, the total vertical surface area of buildings with direct sunlight for window farming, even the total number of basements in a county that can potentially house hydroponic systems; each could be considered in the slippery slope of attempting to concretely claim what is feasible (Hohenschau, 2005) (Lam, 2007).

Conclusions: Challenges and Suggestions

The quality in question should not be of food production's feasibility, but of its possibility. In truth, all of these goals of urban agriculture are *possible*, but not without obstacles and challenges to first be overcome. In the case of the New Westminster Community Gardens Society, many of the challenges are based upon the fact that it is a completely volunteer run organization that has very little to virtually no funding and relies on donated space for their sites. Some of the minor improvements outlined in the first potential production scenario are small solutions to these answers. More signage identifying the sites to the public and offering more information about the Society to those seeking it would be helpful in overcoming

some of these obstacles facing the community gardens and stopping them from reaching higher prospective production rates (Anstey, 2012).

More extensive solutions to the general problems facing urban agriculture have been proposed by many people, much of which overlap with the same of those in New Westminster. One example of an interesting proposed solution to many of the problems of community gardens is the suggestion of implementing larger umbrella organizations to oversee and lend assistance to smaller community garden satellites (Chisholm, 2008). For example, a larger organization such as this could aid the New Westminster Community Garden Society with providing support for logistics, offering advice for gardening efficiency, and connecting the smaller community to the larger urban food system. In a 2006 article, Jacobson points to farmer's markets as having an immense potential for connecting the larger public's food consumption to their source of production and get people aware of and thinking about their local food systems.

There is also a heavy portion of research on urban agriculture that claims urban planners should consider the food systems of a space and plan these farmer's markets and community gardens into cities (Hohenschau, 2005) (Vancouver Food Policy Council, 2009). Deelsta and Giradet are also adamant about this planning process as being crucial, as a well-planned food system that facilitates the public's closeness to their food will also bring people closer to nature (2000). In Roehr and Kunigk's 2009 article on food planning for Metro Vancouver, planning was sited as holding significant responsibility for the food systems, however, as was its interaction with landscape architecture. The proposed solution being, instead of

consuming vast amounts of fresh water to maintain a demanding manicured lawn and trimmed bushes that produce nothing, cities should replace the foliage around residences, schools, and businesses with fauna that actually work for them in their food systems and consume less resources. In 2010 and 2011 reports from the Metro Vancouver Agricultural Committee, encouragement for more social engagement from the public is heavily emphasized and suggestions are provided to implement a much wider scale national food strategy for Canadians and their food systems. In the aptly titled article 'One thousand friends of food', Morris speaks of just this, and the power that social networks wield in mobilizing revolutions. For that is what this – recently surpassing 51% urban and even more recently surpassing a population of 7 billion – world is desperate for, nothing short of a revolution to fix this broken system. This is what is imperative for our civilization's survival and we only have one chance at getting it correct; and New Westminster is exactly what it looks like at the microcosmic level.

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