Key Urban Agriculture Trends in Vancouver for 2040

UNIVERSITY OF BRITISH COLUMBIA

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Executive Summary:

The aim is to find and analyse the localized trends of urban agriculture that are taking place in Vancouver and then categorize them according to their efficiency, viability and long-term potential, as we are looking at a 2040 time frame, with their barriers and enablers. Literature reviews were executed to understand theory, ideology, concepts and local trends from periodicals and websites to gain an extensive understanding of urban agriculture in the wide scope. Urban agriculture within the city of Vancouver is struggling to find a long-term foothold due to many issues including: Overuse/misuse of technology, Funding (underfunding or poor budgeting), Community attitudes, Lack of knowledge about agriculture/food safety, Long-term, sustained relevance, Bureaucratic struggles and Lack of usable space in terms of a growing city. Having stated the barriers urban agriculture trends are facing in Vancouver for 2040 I would recommend focusing on those trends that emphasize: strong community involvement through social media and programs, therefore securing the long-term commitment of the people supporting and encouraging them; educational programs that teach the community to overcome their fears of agriculture and prepare them to individually explore farming; movable or adaptable planting spaces with technology and permaculture models that complement yet do not detract from the purpose at hand; and alternative food assets such as farmers markets and kitchens that complement the agricultural processes and reach out to the community also maintaining the profit cycles and closed-looped energy systems. Having community gardens incorporate these trends in manners such as SOLE food has, but taking them a step further to include other spaces and technological benefits would be ideal.

Introduction:

The concept of urban agriculture is booming alongside the Green revolution taking place all over the world. When it comes to Canada and Vancouver we can say the same, but to what degree are the forms of urban agriculture being employed locally actually causing a positive impact on our lives and environments? There are many trends in the green urban development world being taken on by governments, institutions, communities, etc. but finding the megatrends within them that will prevail and succeed for Vancouver by 2040 is the main goal at hand. My research will be included in furthering the Food Energy Descent Action Plan (FEDAP) that Village Vancouver Transition Society has been developing with the Vancouver Food Policy Council and The Museum of Vancouver, to develop a Community Food Resilience Plan.

The aim is to identify and analyse the localized trends of urban agriculture that are taking place in Vancouver and then categorize them according to their efficiency, viability and long-term potential, as we are looking at a 2040 time frame, with their barriers and enablers. As Vancouver is attempting to become the Greenest City in the world and sustainability and urban food systems are thriving in this environment, there are many different types of solutions to the sustainable food problems that are surfacing. Within this context I am trying to evaluate which systems will provide the most benefits, or which ones will simply fail to accomplish their goals in the long term and why.

Research Methods:

A literary review was conducted of journal articles, books and research information that to provide a knowledge base and review of the theoretical concepts of urban agriculture and

methodologies of implementation being utilized elsewhere, particularly in Germany, where urban agriculture is at the forefront of innovation and concept design.

My main method of discovering the types of urban agriculture that are emerging within the city at the time was by conducting a literature review of periodicals, websites and journals that are current and finding articles that demonstrate examples of local implementation of urban agriculture processes. As there are constant additions to the growing urban agriculture scene, it is important to focus on websites and periodicals that would provide constant, real-time, updated information and not solely focus on scholarly journals or databases of locations. One purpose of the literature review is to identify naturally emerging categories to then assist in analysing the efficiency of trends.

An interview with an expert, Ross Moster of Village Vancouver Transition Society, was also conducted to obtain his perspective of what the practical barriers and enablers are to trend success and what local advocates are leaning towards as their preferences in trends within Vancouver.

Literary Research:

The concept of a Green City is something that has been a theory for quite some time now but the practice being carried out in a fashion that has a significant positive impact on both the city and the environment is actually more recent. Even though the research question at hand considers urban agriculture and farming it is important to understand the key theories supporting the idea of this type of urban planning. Permaculture, food security and safety, sustainability and food justice are the main concepts that require comprehension to then analyse the potential of the trends presented.

As one of the central trends occurring in Vancouver, and as a concept itself, permaculture requires definition. The co-creator of the theory himself defines permaculture as "a creative design response to a world of declining energy and resource availability, with many similarities and overlaps with Lovins' emphasis on design processes drawn from nature […]complementary to the industrial focus of the 'green tech' optimists" (Holmgren 2002, xvi). It is key to emphasize that Holmgren believes this redesign process is one that must begin at the bottom, with the individual, and then progress up to then reach markets, communities and cultures, implementing trends of change and efficiency (Holmgren 2002, xvi-ix). In practice, permaculture deals with many factors including: low energy organic food production, sustainable water management, alternative energy systems, energy efficient house design, local food security and sovereignty, habitat restoration and land reclamation, equitable and sustainable organization, disaster preparedness, etc exemplified in an executed design in Figure 1.

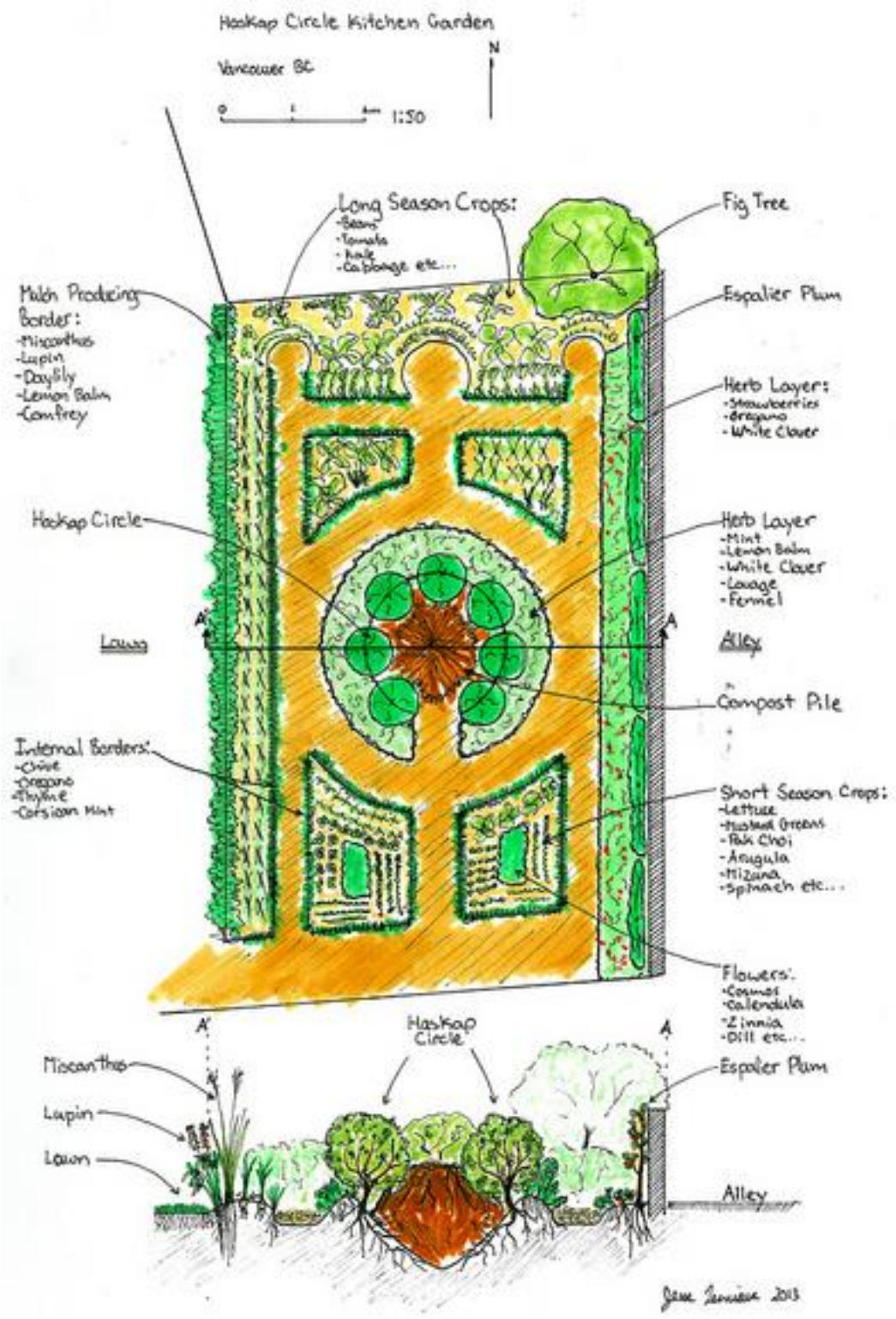

Fig. 1. Permaculture Design (Pacific Permaculture, 2012)

Food security is one of the main goals of urban agriculture; with this being "when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life" (Government of Canada 1998, 9). It is also crucial to define food systems within a sustainable framework that is a collaborative network that integrates several components in order to enhance a community's environmental, economic and social well-being. Closely tied to these concepts is that of resilience, which is "the capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes. A resilient eco-system can withstand shocks and rebuild itself when necessary" (Cox 2008, 6A).

In practice these terms are interrelated, as when creating urban agriculture designs one must find systems that not only provide the most efficient agricultural yield but also that have the potential to sustain themselves and become sufficient, closed-looped, resilient farms that are not unnecessarily dependent on external factors. In terms of the City of Vancouver, "resilient neighbourhood food systems mean that residents have access to fresh produce, to a community kitchen, or to a network of people who can help start and support projects" (City of Vancouver 2010, 66).

Sustainable eating practices and other benefits from these urban agricultural projects are crucial to Canada's growing and sprawling cities. As the levels of urbanization rise along with population, cities need to find alternative ways to feed their inhabitants sustainably, effectively and at lower financial and energy costs. This can be accomplished to a degree when we start looking at city alternatives for food production. Vancouver has the benefit of parks and small amounts of unused land, but other cities are losing that advantage and will have to take considerable measures to rectify their production levels. If the City of Vancouver can take

measures sooner rather than later it can avoid food shortages or increased prices, but also avoid jeopardizing the quality of the product. Urban agriculture is all about going back to the root of food production but also about returning to a set of values and social responsibilities that we no longer feel as city dwellers for the most part. The Vancouver Board of Parks and Recreation has mapped the Food Assets to provide context and exemplify the variety of assets in Metro Vancouver.

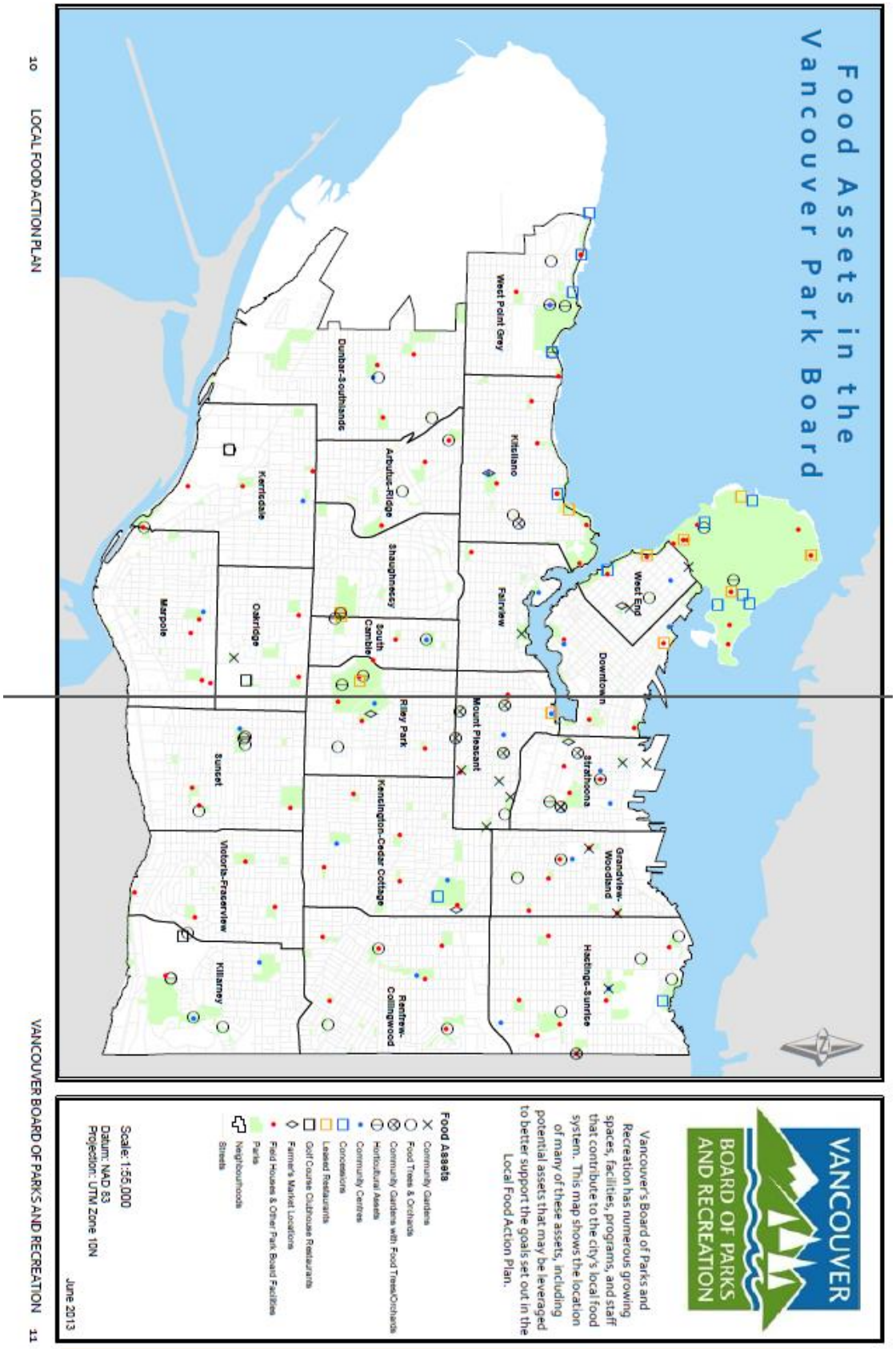

Fig. 2. Food Assets in the Vancouver Park Board (Vancouver Board of Parks and Recreation 2013, 10-11)

First one must identify the broad overview as to the urban agriculture scene in Vancouver and therefore according to the *Greenest City Action Plan* the numbers of food assets (including community gardens and markets) in the City of Vancouver are as follows as of 2010:

Food asset growth

FOOD ASSET	CURRENT	2020 GOAL	PER CENT INCREASE
Community Kitchen	69	100	45%
Farmers Market	4	22	450%
Community Produce Stand	3	15	400%
Community Food Composting Facilities	0	5	500%
Community Garden Plots	3,260	5,000	53%
Urban Orchards	3	10	330%
Urban Farms	1	5	400%
Food Hub	0	1	100%
Total	3,340	5,158	54.4%

Fig. 3. Food Asset Growth in Vancouver (City of Vancouver 2010, 66)

In the Implementation Update released for 2012-2013 there is a new tally for food assets in Vancouver stating a 24% increase in food assets to now have the total at 4,141 (City of Vancouver 2013, 42). No breakdown is provided as to where there main increases are in and which particular goals they are meeting.

Many restrictions and guidelines must be followed in the City of Vancouver when attempting to start a community garden or any food/agriculture related practice, therefore it is important to consult environmental policy and bylaws as barriers or enablers to the process. Metro Vancouver is attempting to promote the *Greenest City Action Plan by 2020* along with other city-wide measures and sponsoring community gardens in an attempt to encourage sustainability within the city. In the *Greenest City Action Plan*, the target is to "increase city-

wide and neighbourhood food assets by a minimum of 50% over 2010 levels" (City of Vancouver 2010, 65) when pertaining to their Local Food goals. There are a number of actions the city is attempting to accomplish, but their highest priority actions are: to develop an overarching food systems strategy, to simply grow more food within the city and to make the local food more available in a number of locations such as parks, farmers markets, community centres, etc. (City of Vancouver 2010, 66). The City has a series of bylaws and policies which have been put in place to encourage the increase of urban agriculture and its complimentary programs, although bureaucracy is somewhat impeding progess. Some of these are the Food Policy Council, bylaws allowing beekeeping and hen raising, the Vancouver Food Charter, and city-wide compost and Green Bins programs. Although the city of Vancouver has been producing more food, it is also important to note where and to whom it is being sold or consumed by and its evolution over time.

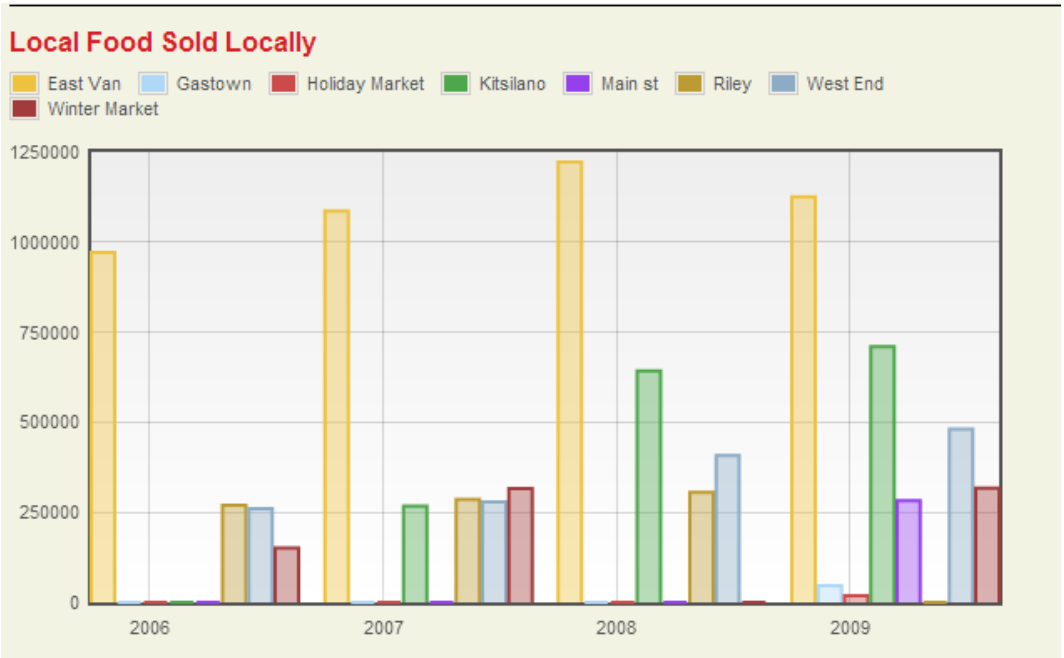

Fig. 4. Local Food Sold Locally Between 2006-2009 (Food Secure Vancouver 2010)

There was significant progress between 2006 and 2009 and it is crucial to see these numbers increasing even further, with more neighbourhoods becoming involved and selling food production locally, keeping the energy at the lowest levels possible and attempting to feed our own population.

Along with city-wide action plans for urban agriculture there are also *Operational Guidelines* for the community gardens within the City of Vancouver. First and foremost the city must define a community garden; "…a community garden is defined as a place on City-owned land, other than City parks, operated or overseen by a non-profit Society, where people grow and maintain ornamental and edible plants. Residential boulevard gardens, Green Streets Program gardens and beautification projects are not included in this definition of community gardens" (City of Vancouver, 1). It is important to distinguish that ornamental plants are part of the definition, making food production only a portion of the core of urban agriculture as defined by the City of Vancouver.

When conducting research within the literature, I have found that it is essential to dedicate an important amount of time to German ideology and innovation, as they are at the leading edge in designing new systems that involve technology and concept evolution along with other European urban farmers. They maintain a strong position in the development and improvement of rooftop gardens, a type of urban agriculture that also manages to incorporate design and planning. These types of alternative methods and effective use of space are what bring forth promising results. European nations have been developing concepts to manage food needs for 2050 in Food Futures, therefore designing a series of plans by category to involve everyone in sustainable eating practices for our future. Some of the essential concepts are illustrated in the Fig. 5 and Fig. 6, where the strong emphasis on education is evident and

remains a world-wide issue (Davies 2013, 5-6). Other innovators are designing city-wide concepts to tie urban planning into the future development of metropolis exemplified in the Fig. 7 and Fig. 8.

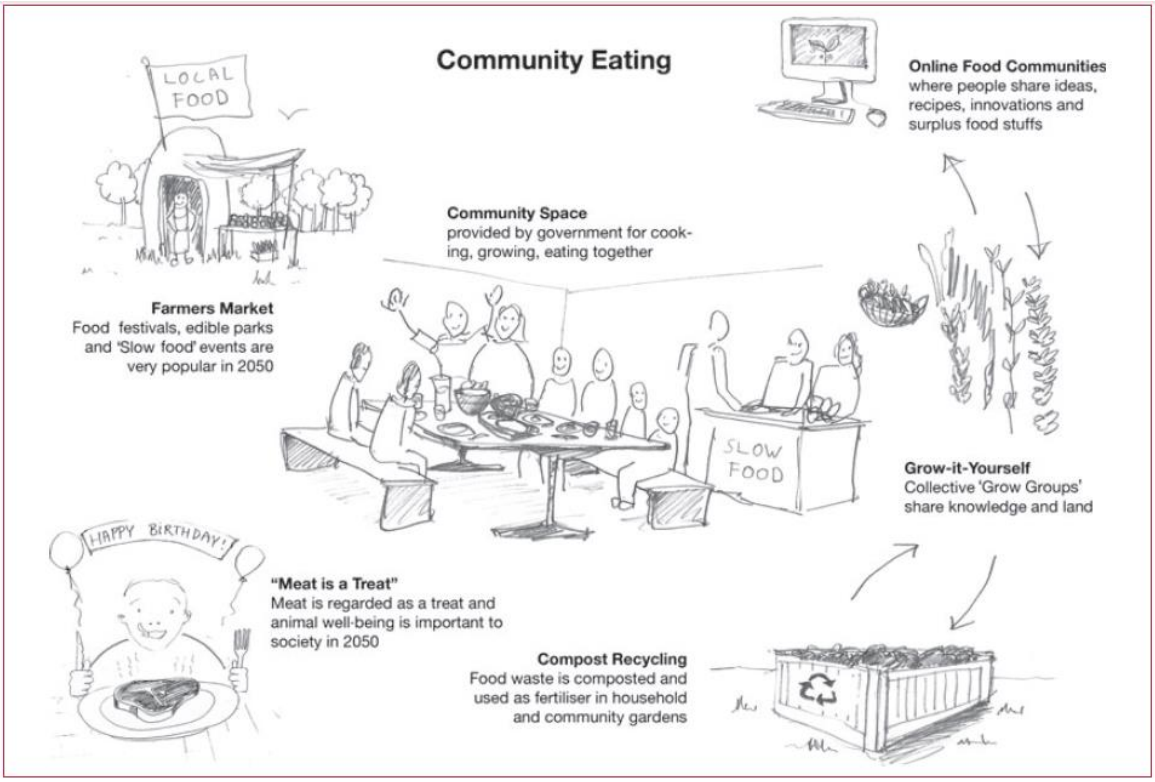

Fig. 5 Community Eating Plans for 2050 (Davies 2013, 8)

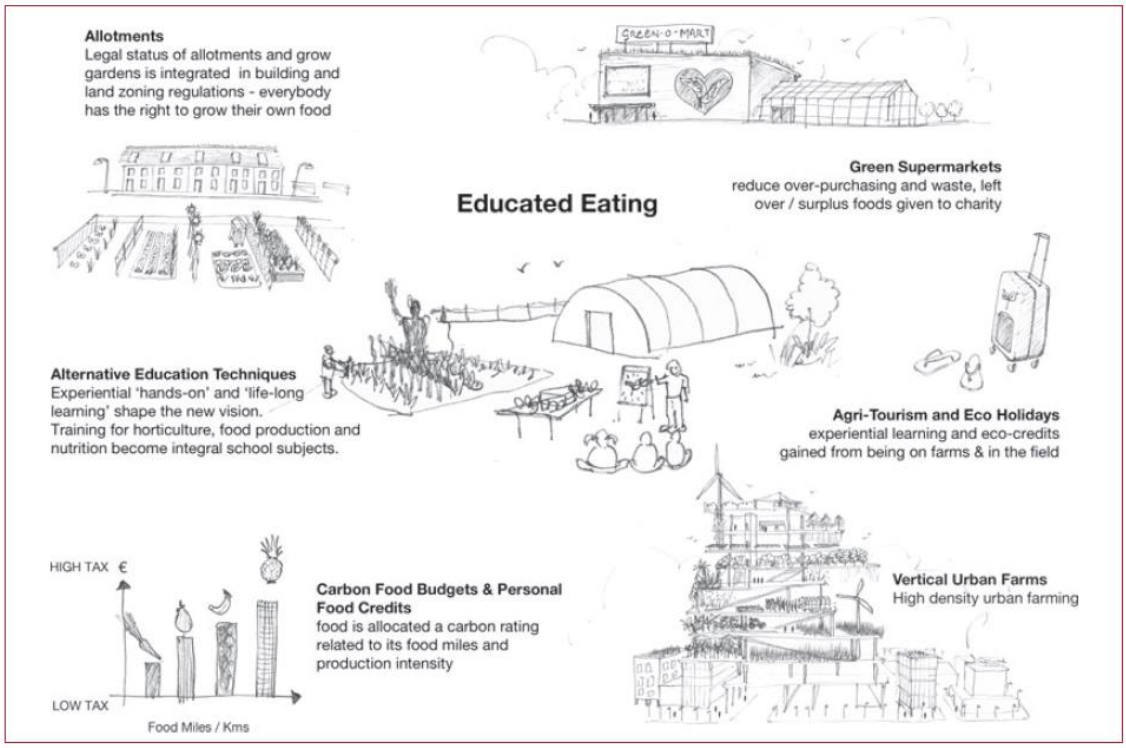

Fig. 6 Educated Eating Plans for 2050 (Davies 2013, 8)

The following Figures 7 and 8 are planning models for city-wide approaches that could be taken by municipalities to broaden the areas being used for agricultural production in large metropolises. These concepts could present opportunities for ways to address lack of land and space in a long-term timeframe, as cities only get larger and land either must be set aside or readdressed. Cities such as Vancouver need to address setting aside land for agricultural purposes, available urban spaces which could be planted on or change existing policies considering park land, to allow types of agriculture such as permaculture to increase levels of production but continue to benefit the ecosystem. Both parcel structure development and membrane designs are being conceptualized by Germans to innovate how cities are addressing their own growth.

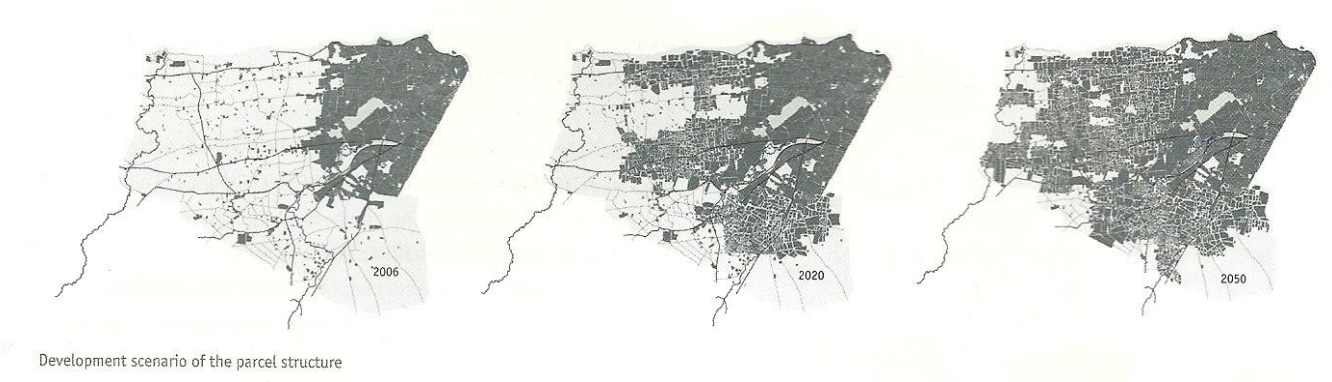

Fig. 7 Development of parcel structure (Giseke 2011, 46)

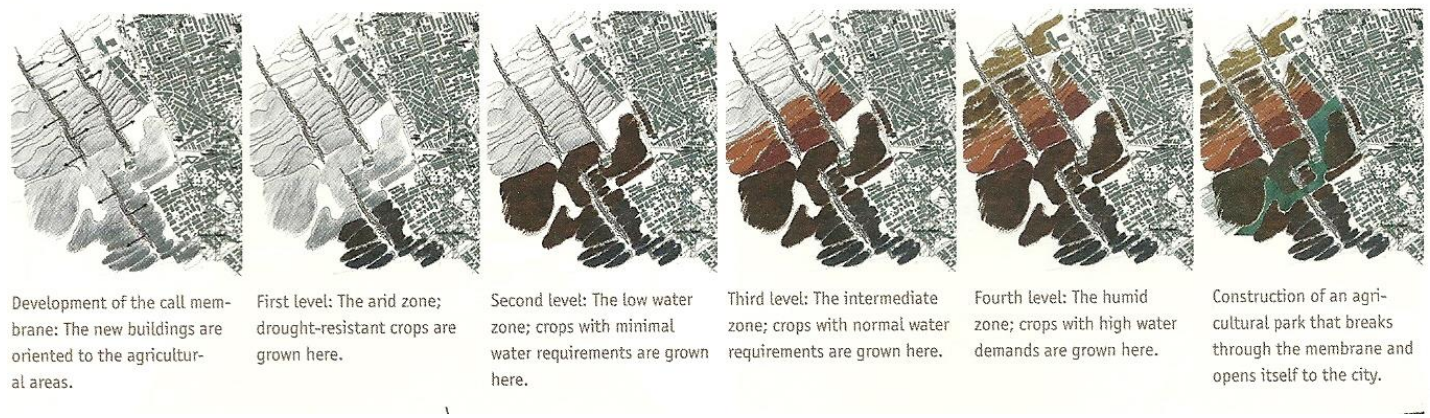

Fig. 8 Interactive Membrane Stages Design (Giseke 2011, 47)

Vancouver has been using new complimentary aspects to connect urban agriculture with other forms of community involvement to perpetuate ideas such as food security. Food trucks, community gardens, food banks, schoolyard plots, chickens and exchange or swap programs are being utilized to not only provide jobs but also to incorporate communities at a larger scale and incentivize interaction.

These types of efforts to incorporate the communities are strongly encouraged, as research seems to attest to the fact that making social and cultural changes or shepherding in new

perspectives tends to lead to more effectiveness. Also, with widespread community approval, the chances of succeeding long term and at range increase exponentially. Social factors need to be validated and addressed by whomever is funding or sponsoring the project, as these gardens become part of the infrastructure, planning and urban landscape in general of the neighbourhood and the city.

Case Studies:

As an essential component of my research a number of case studies were described to gain detailed evidence of what types of trends are not only occurring in Vancouver, but also how and why they are succeeding.

My first case study is that of Victory Gardens, a team of urban farmers that focus primarily on assisting others to transform their urban spaces and convert them into urban gardens, therefore providing assistance and education on many levels to land owners. This program therefore does not own its own farm, but focuses on a very crucial part of urban agriculture which is Education, Infrastructure and Maintenance, attempting to have individuals become more involved with farming and closing the intimidating gap between community member and active farmer. They also supply tools, resources, consultations and short or long-term assistance depending on the needs and lifestyles of their participants. The systems they utilise to garden are garden and raised beds, patio containers, custom containers and edible garden designs all in an attempt to maximize efficiency and space, while implementing permaculture systems where able, to optimize growth (Victory Gardens 2014). Ross Moster from Village Vancouver strongly encourages permaculture designs when possible as they are energy efficient and attempt a return to nature that the city is striving towards. Their balcony and

apartment garden solutions are struggling to take off and can obviously only provide enough area to grow some herbs and a few other species in incredibly limited quantities. These efforts are extremely important, as even these can make small differences, but it is relevant to expand on this type of space use and broaden its usage.

Secondly, I studied the example of a failed rooftop garden, Alterrus, here in Metro Vancouver. They were located on the roof of a downtown EasyPark facility and were partnered with Local Garden Vancouver. They recently went bankrupt with an approximate shortfall of $4 million, leaving an impression on one of the scale of some of these urban agriculture ventures for profit (Shore 2014). The garden produced greens for salads, herbs and other small greens in their 6,000 square-foot greenhouse, with their products being marketed to boutique grocers, restaurants and cafes in primarily downtown Vancouver, due to their bicycle delivery system (Shore 2012). The growing system was almost entirely reliant on the technology being used, which entailed high end 4 meter high bed systems that suspended hundreds of trays rotating and moving to maximize sun/natural light exposure. The technology itself is quite impressive, with water consumption down to 8% of a California farm, nutrient recovery and hydroelectric power (Shore 2012). Despite the fact that the system has been working in a London Zoo for 3 years now, the Vancouver model just did not succeed (Shore 2012). The technology was in place and a select few vendors were eager, but the sheer scope of the project and the rapid turn-over that would be financially necessary made this project fail. We must be aware that even though these technologies are impressive they might not necessarily fill the needs of a certain community and suit the financial climate in which they are newly implemented. Potentially scaling down and then expanding to the current size when funding was more constantly accessible would have

been a more secure plan, reminding us that the advanced use of technology, and therefore reliance on it, is not always the most efficient, long-term way to solve the problem at hand.

The next case study is of SOLE food, a non-profit organization that operates successfully out of the city of Vancouver, with several farms, farmers' markets and other programs being run to complement the community involvement. Their growing statement is: "We have developed a system of raised moveable planters that can be stacked on a truck with a forklift and moved. This isolates the growing medium from contaminated urban soils, allows for production on pavement, and satisfies landowners who cannot make valuable urban land available on a long-term basis" (SOLE Food 2014). The organization has many ways in which the community can become involved from working the farms as a community member seeking to overcome a personal challenge, to participating and donating through the Community Supported Agriculture program (CSA), Farm Share, Market Share, Egg Share and Bread Share. SOLE foods also actively engages the cyber community, updating and live-streaming Facebook, Instagram, Twitter and other social media sites to engage with a younger, untapped crowd on a real-time basis (SOLE Food 2014). Their success in maintaining a long-term relationship with the community but also implementing technology that is easily accessible, teachable and movable has allowed them to transition from a temporary urban farm collective, to a larger network that allows for success and security while optimizing resources.

The final case study is of a proposed project, the Cityfarm Greenhouse Container Concept. Although it is has not been executed in practice, new design concepts that incorporate reusing materials such as old shipping containers to build homes and greenhouses that could be located in previously urbanized areas or rooftops, maximising space efficiency with the potential for stacking and accommodating the installation areas, prove to be valid trends for the future.

These units could not only reuse old containers and second hand materials but they provide interior alternative living spaces, greenhouse space and adaptable exterior plating areas. They can also be customized and stacked to accommodate for the amount of availability and square footage needed. These new concepts also do not need long term technological investment, and will run on low maintenance, making them more feasible in the long-term.

Fig. 9 CityFarm Greenhouse Container Concept Design (City Farmer Society 2013)

This is a small sample of gardens in Vancouver with a variety of sponsors as examples.

Garden	Address	Area	Number of Plots	Notes	Code	Sponsoring Org.
Adanac Park [proposed]	Adanac Park			Proposed - not yet developed	Park	Adanac Co-op
McSpadden	2125 Victoria Drive	150m²	18		Park	Alyssa Hall
1755 West 14th - Private apartment building garden	1755 W. 14th				Private	Apartment residents
Attira Community Garden	400 Block Hawks St	350m²	15		Private	Atira Community Resources
Champlain Place Community Garden	3201 E 58 Av	75m²	8		Private	BC Housing
China Creek Housing Co-op	1230 E 8th Av	1130m²	30	address is immediately east of the garden	RES	China Creek Housing Co-op
Arbutus Victory 1	7176 East Bl	8400m²	41	address is immediately east of the garden	Engineering	City of Vancouver

Arbutus Victory 2	8280 East Bl	2025m²	25	address is immediately east of the garden	Engineering	City of Vancouver
Collingwood Community Gardens	5288 Joyce St	700m²	30	At CNH?	1	Collingwood Neighbourhod House
Urban Acres	1601 W 1st	1510m²	30	Upper - 730 Lower - 780 under Burrard Bridge	CPR ROW	

(Food Secure Vancouver 2010)

Conclusion:

After obtaining said examples of urban farms and analysing their characteristics they are beginning to naturally fall into categories by size, type of funding, sponsorship, types of technologies implemented or location. The barriers being faced have also become apparent, with them primarily being: Overuse/misuse of technology, Funding (underfunding or poor budgeting), Community attitudes, Lack of knowledge about agriculture/food safety, Long-term, sustained relevance, Bureaucratic struggles and Lack of usable space in terms of a growing city. My interview with Ross Moster uncovered many of the bureaucratic issues that Vancouverites struggle with when attempting to start a community garden, including the challenging processes and approvals that are required making it difficult for smaller organizations to enter the workspace. Vancouver residents, even those involved in urban affairs, are also being inhibited by the intimidation that comes with starting a garden, as the average citizen does not have much agricultural knowledge and does not know where to acquire these skills. Residents are also interested in the concept behind home agriculture but crossing the barrier into action is a considerable obstacle. Inaction by individuals in the community will prevent the levels of production to increase.

Having stated the barriers urban agriculture trends are facing in Vancouver for 2040, I would recommend focusing on those trends that emphasize: strong community involvement through social media and programs, therefore securing the long-term commitment of the people supporting and encouraging them; educational programs that teach the community to overcome their fears of agriculture and prepare them to individually explore farming; movable or adaptable planting spaces with technology and permaculture models that complement yet do not detract from the purpose at hand; and alternative food assets such as farmers markets and kitchens that complement the agricultural processes and reach out to the community also maintaining the profit cycles and closed-looped energy systems. Having community gardens incorporate these trends in manners such as SOLE food has, but taking them a step further to include other spaces and technological benefits would be ideal.

Future Research:

As a student my research is limited by time and also agricultural experience but furthering the study into a more extensive, hands-on investigation would be ideal. Also analyzing how the city could potentially reach a goal of feeding the population with primarily local resources, creating jobs for homeless or unemployed populations and altering and creating bylaws or policies to encourage and not burden progress would provide key information into the future potential of urban agriculture in Vancouver.

Appendix A:

Vancouver Food Charter:

VANCOUVER FOOD CHARTER

January 2007

The Vancouver Food Charter presents a vision for a food system which benefits our community and the environment. It sets out the City of Vancouver's commitment to the development of a coordinated municipal food policy, and animates our community's engagement and participation in conversations and actions related to food security in Vancouver.

VISION

The City of Vancouver is committed to a just and sustainable food system that

- contributes to the economic, ecological, and social well-being of our city and region;
- encourages personal, business and government food practices that foster local production and protect our natural and human resources;
- recognizes access to safe, sufficient, culturally appropriate and nutritious food as a basic human right for all Vancouver residents;
- reflects the dialogue between the community, government, and all sectors of the food system;
- celebrates Vancouver's multicultural food traditions.

PREAMBLE

In a food-secure community, the growing, processing and distribution of healthy, safe food is economically viable, socially just, environmentally sustainable and regionally based.

Some members of our community, particularly children, do not have reliable access to safe and nutritious food. In addition, much of the food we eat travels long distances from where it is grown and processed and is dependent on fossil fuels at every stage. Dependency on imports for our food increases our impact on the environment and our vulnerability to food shortages from natural disasters or economic set-backs. Overall food security is increasingly influenced by global factors that affect our community's ability to meet our food system goals.

Community food security needs the involvement of all members of our community, including citizens, consumers, businesses and governments. When citizens are engaged in dialogue and action around food security, and governments are responsive to their communities' concerns and recommendations, sound food policy can be developed and implemented in all sectors of the food system and the community.

In 2002, the City of Vancouver adopted sustainability as a fundamental approach for all the City's operations. The goal of a just and sustainable food system plays a significant role in achieving a "Sustainable Vancouver".

PRINCIPLES

Five principles guide our food system:

Community Economic Development

Locally-based food systems enhance Vancouver's economy. Greater reliance on local food systems strengthens our local and regional economies, creates employment, and increases food security.

Ecological Health

A whole-system approach to food protects our natural resources, reduces and redirects food waste, and contributes to the environmental stability and well-being of our local, regional, and global communities.

Social Justice

Food is a basic human right. All residents need accessible, affordable, healthy, and culturally appropriate food. Children in particular require adequate amounts of nutritious food for normal growth and learning.

Collaboration and Participation

Sustainable food systems encourage civic engagement, promote responsibility, and strengthen communities. Community food security improves when local government collaborates with community groups, businesses, and other levels of government on sound food system planning, policies and practices.

Celebration

Sharing food is a fundamental human experience. Food brings people together in celebrations of community and diversity.

To create a just and sustainable food system, we in Vancouver can:

- Be leaders in municipal and regional food-related policies and programs
- Support regional farmers and food producers
- Expand urban agriculture and food recovery opportunities
- Promote composting and the preservation of healthy soil
- Encourage humane treatment of animals raised for food
- Support sustainable agriculture and preserve farm land resources
- Improve access to healthy and affordable foods
- Increase the health of all members of our city
- Talk together and teach each other about food
- Celebrate our city's diverse food cultures

City of Vancouver. *Vancouver Food Charter*. Vancouver: City of Vancouver, 2007.

Appendix B:

Database of a Range of Vancouver Community Farms:

Garden	Address	Area	Number of Plots	Notes	Code	Sponsoring Org.
Adanac Park [proposed]	Adanac Park			Proposed - not yet developed	Park	Adanac Co-op
McSpadden	2125 Victoria Drive	150m²	18		Park	Alyssa Hall
1755 West 14th - Private apartment building garden	1755 W. 14th				Private	Apartment residents
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Arbutus Victory 1	7176 East Bl	8400m²	41	address is immediately east of the garden	Engineering	City of Vancouver
Arbutus Victory 2	8280 East Bl	2025m²	25	address is immediately east of the garden	Engineering	City of Vancouver
Collingwood Community Gardens	5288 Joyce St	700m²	30	At CNH?	1	Collingwood Neighbourhod House
DTES Neighbourhood House Garden	501 E Hastings	30m²	5			DTES NH
Pine St. Community Orchard	1754 West 5th Av	270m²	29	adjacent address	Engineering	Engineering
City Hall Garden	453 W 12 Av	540m²	36		RES/Facilities	Evergreen
Crows Point Community Garden	Vaness Ave & E 24th Ave				RES & Eng	EYA
Means of Production	East 6th and St Catherines	675m²			RES & Parks	EYA
Garden of Eatin'	2670 Victoria Drive	425m²	20		Private	First Christian Reformed Church
Chester's Field Community Garden	5333 Chester St	560m²	9		RES & Eng	Friends of Chester's Field
Frog Hollow Neighbourhood House Garden	2703 E 1st Av	50m²	5	adjacent address	1	Frog Hollow Neighbourhood House

Frog Hollow Neighbourhood House Garden	2131 Renfrew St	140m²	5		1	Frog Hollow Neighbourhood House
Pandora Park	Templeton Drive & Franklin Street	930m²	64		Park	Grandview Woodlands Food Connection
Habitat Villa - Metro Housing	3859 W 2 Av	50m²	4			Habitat Villa/Metro Housing
Hemlock Court	1411 E 17 Av	40m²	4			Hemlock Court Housing/Metro Housing
Jacob_s Well 1	449 E Hastings Av	430m²	120	Might be 475 E Hastings	Private	Jacob's Well
Jacob_s Well 2	460 E Pender St	300m²	120	Might be 400 E Pender	Private	Jacob's Well
World In A Garden	7249 Cypress St	220m²	46	adjacent address	Engineering	Jewish Family Services Agency
Kaslo Gardens Community Vegetable Garden	2765 Cooperative Way	30m²	16			Kaslo Gardens Housing Cooperative
Kerrisdale Community Garden [proposed]	East Boulevard and Angus Dr		30	Proposed - not yet developed	RES & Eng	Kerrisdale Community Garden Committee (under Kerrisdale Community Centre Society)
Kitsilano Christian Community Church	1708 W 16th Av	35m²	7		Private	Kitsilano Christian Community Church
Kitsilano Maple	2150 Maple St	460m²	80	adjacent address	Engineering	Kitsilano Community Garden Soc.
Kitsilano Neighbourhood House	2305 W 7th Av	20m²	8		Private	Kitsilano Neighbourhood House
Kiwassa Neighbourhood House Garden	2425 Oxford St	50m²	11			Kiwassa Neighbourhood House
Wall Street (Cambridge)	2099 Wall St	450m²	42		Park	Kiwassa Neighbourhood House
MOBY	1737 E 11th Av	820m²	45		Eng & BC Transit	My Own Back Yard
City View Baptist Church	4370 Sophia St		6		Private	Neighbours
Or Shalom Community Garden	2710 Fraser Street	1m²	3		Private	Or Shalom Synagogue
Pine Garden	2130 Pine St	360m²	63	adjacent address	Engineering	Pine Community Garden Association
Hastings Street Folk Garden	117 E Hastings St	470m²	150		Private	Portland Housing Society
LadyBug Garden	Commercial and 8th	250m²		Fiskars/Cdn Tire	RES/ENG	PosAbilities
UP! Elgin community garden	5332 Windsor Street	350m²	28			PosAbilities

La Cosecha	1290 E Broadway	530m²	56		RES	REACH Community HealthCentre
Cheyenne Street Garden	2775 Cheyenne Ave	1080m²	30	new. 1080, 1/4 with beds	RES	Renfrew-Collingwood Food Security
Salsbury Green Community Garden	1240 Salsbury Drive	115m²	8			Salsbury Green Coop
Grass Roots Community Garden	478 E Hastings St	175m²	10			Servants Canada
South Vancouver Family Place 1	7710 Nanaimo St	40m²	8			South Vancouver Family Place
South Vancouver Family Place 2	7715 Muirfield	9m²	3			South Vancouver Family Place
City Hall Child Care Centre & SPEC garden	2615 Cambie St	90m²	25	at City Square mall	RES	SPEC
SPEC Rooftop Garden	2150 Maple St		9		Private	SPEC
Purple Thistle	260-975 Vernon Dr	315m²	9	315 sqm - 200 authorized, 115 not-official	Engineering	The Purple Thistle Centre
Purple Thistle Garden II (proposed)	1100 block Vernon Dr			Proposed - not yet developed	Engineering	The Purple Thistle Centre
Cedar Cottage Community Garden	2021 Stainsbury Av	1200m²	61	1200 combined with Phase 2	BC Transit	Trout Lake Food Security Network
Cedar Cottage Phase 2	2019 Stainsbury Av	0m²	40		RES & Eng	Trout Lake Food Security Network
China Creek South	1255 E 10th Av	340m²	23		Park	Urban Diggers
Robson Park	565 Kingsway	400m²	40		Park	Urban Diggers Society
Sahalli Garden	2398 Fraser St	1140m²	55		Park	Urban Diggers Society
Windemere High School	3155 E 27th Av	900m²	6	School Garden?	VSB	Vancouver School Board
Davie Village	1157 Burrard St	2400m²	100		Developer Public	VPSN
Mole Hill	1132 Comox St	450m²	70		Park	West End Residents Association
Nelson Park	1030 Bute St	300m²	37		Park	West End Residents Association
Stanley Park	975 Lagoon Drive	350m²	32		Park	West End Residents Association
Westport	1691 West 75th	50m²	12		Private	Westport Innovations Inc
16 Oaks	1018 W 16 Av	1700m²	55		Developer Public	
2624 Franklin Street - Apartment	2624 Franklin St	110m²	2	private apt.bldg.		

2805 Revelstoke Court	2805 Revelstoke Court	360m²			Private
Acadia Park	Acadia Park Lane	1100m²	84	Acadia Park Lane and Melfa - UBC Lands	1
Chimo Terrace Youth Garden	2107 Wall St	90m²	5	adjacent, property to north	Engineering
Cottonwood	Malkin Avenue	9700m²	89		Park
Cottonwood/Collingwood 2	759 Malkin Av		50	768 Prior - Address beside	Park
Cypress	2027 W 6th Av	460m²	65	adjacent address	Engineering
Elizabeth Rogers	110 W 7th Av	950m²	56		Park
Grandview Baptist	Victoria and 1st	770m²			Private
Grandview Elementary School	2150 Mclean Drive	990m²	39	both school and community gardens	VSB
Grandview Terrace [proposed]	Grandview Terrace			Proposed - not yet developed	
Kitsilano West/Delamonte Park	West 6th Avenue and Arbutus		55		RES/Park?
NEU Community Garden	1st Ave and Spyglass Place		45		Engineering?
Pearson Farmers	1012 W 57 Av	455m²	32		Private
St Paul's Hospital, Rooftop	St Paul's Hospital	100m²		140 window boxes	Private
Stainsbury Garden	2009 Stainsbury Av	810m²			
Strathcona	857 Malkan St	13950 m²	200		Park
Tea Swamp Park	255 E 16 Av	300m²	21	address is immediately west of the park	Park
The Rise on Cambie	485 W 8 Av		18		Private
Urban Acres	1601 W 1st	1510m²	30	Upper - 730 Lower - 780 under Burrard Bridge	CPR ROW

Food Secure Vancouver. *Urban Agriculture: Community Gardens in Vancouver*. Database. 2010.

Bibliography:

City Farmer Society. 2013. "Container Concept Design for City Farmer Society in Vancouver, BC." Linked by Michael Levenston. Accessed February 2014. http://www.cityfarmer.info/2013/10/08/container-concept-design-for-city-farmer-society-in-vancouver-bc/#more-45396

City of Vancouver, *Greenest City: 2020 Action Plan*. Vancouver: City of Vancouver, 2010.

City of Vancouver. *Greenest City: 2020 Action Plan. 2012-2013 Implementation Update*. Vancouver: City of Vancouver, 2013.

City of Vancouver. *Operational Guidelines for Community Gardens on City Land other than City Parks*. Vancouver: City of Vancouver.

City of Vancouver. *Vancouver Food Charter*. Vancouver: City of Vancouver, 2007.

Cox, Craig A. "Resilience". *Journal of Soil and Water Conservation* 63 (2008), 6A.

Davies, Anna R. "Food Futures: Co-designing Sustainable Eating Practices for 2050". *EuroChoices* 12. (2013), 4-11.

Food Secure Vancouver. *Urban Agriculture: Community Gardens in Vancouver*. Database. 2010.

Giseke, Undine, edit. *Urban Agriculture Casablanca: Design as an Integrated Factor of Research*. Germany: TUB, 2011.

Government of Canada. *Canada's Action Plan for Food Security*. Report. 1998

Holmgren, David. *Permaculture: Principles and Pathways Beyond Sustainability*. Victoria: Holmgren Design Services, 2002.

Pacific Permaculture Inc. 2012. "Pacific Permaculture Design". Last modified 2012. http://pacificpermaculture.ca/www/

Shore, Randy. 2014. "Failure of high-tech rooftop greenhouse in Vancouver leaves $4-million trail of debt." *The Vancouver Sun*, January 27. Accessed February 2014.

http://www.vancouversun.com/business/Failure+high+tech+rooftop+greenhouse+Vancouver+leaves+million+trail+debt/9436678/story.html

Shore, Randy. 2012. "Vancouver rooftop greenhouse grower secures a high-end market for greens." *The Vancouver Sun*, November 21. Accessed March 2014. http://www.vancouversun.com/news/metro/Rooftop+greenhouse+grower+secures+high+market+greens/7572632/story.html

SOLE Food Farms. 2014. "SOLE Food Street Farms". Last modified 2014. http://solefoodfarms.com/

Vancouver Board of Parks and Recreation. *The Local Food Action Plan of the Vancouver Park Board*. Vancouver: City of Vancouver, 2013.

Victory Gardens. 2014. "Victory Gardens Vancouver". Last modified 2014. http://victorygardensvancouver.ca/