The Resilience of Food Production in Vancouver: Proposal Report

LFS 350 – Valley
Group One:

Ebod Shojaei

Jessica Chan

Kyle Morton

Lixin Zhang

Mariana Berlanga

Sam Puddicombe

October 10th, 2017

Definitions

Food capacity: Food capacity is the yield of food that can be produced per square foot or acre of land and per cost of production (Will Valley, October 6th, 2017).
Food production: Food production is the systematic conversion of raw ingredients, which are classified as inputs, into marketable and consumable products, which are classified as yields or outputs (Food and Agriculture Organization. (n.d).
Food security Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life. (World Food Summit, 1996)
Resilience: Resilience, "in agriculture, is the degree to which a system can respond acceptably to climatic change and other forms of stress and perturbation" (Gliessman, 2014).
Urban agriculture: Urban agriculture is a type of food production system that is established within and around close proximity of cities (Food and Agriculture Organization. n.d).

Introduction

Vancouver is part of the 100 resilient cities project, this project created by the Rockefeller Foundation is dedicated to make cities more resilient to the stresses and changes of the 21st century (100RC, 2017) Currently the City of Vancouver is interested in evaluating the resilience of its food system. Their goal is to implement a resilient food system strategy for Vancouver. It has identified localized agricultural production as one of five important aspects of this goal. Our goal will evaluate the downtown core of Vancouver's current production capacity, which will provide a baseline for the potential of implementing a range of proposed agricultural systems.

The goal of this project is to evaluate the current production capacity of Vancouver's urban downtown and the potential of implementing rooftop agricultural systems. The proposed types of agricultural systems are rooftop greenhouses, and rooftop gardens utilizing the Grey space in Vancouver downtown.

Significance

The City of Vancouver has a robust and well documented farming scene. There are currently 13 registered urban farms within Vancouver with 7 acres under production (VUFS, 2017).

There is documentation of Vancouver's urban agriculture from such Organizations as Vancouver Urban Farming Society (VUFS) and Farm Folk City. However, Vancouver is behind in documenting its resilience.

There is a trend within metropolitan areas to recognize and study their city's resilience in relation to food. The Rockefeller Foundation and Initiative for a Competitive Inner City (ICIC) funded a report published in 2017 on "The Resilience of America's Urban Food Systems: Evidence From Five Cities". New York City published a 2016 report on its Food Distribution & Resiliency. Vancouver has no current literature recognizing its food resilience.

Literature has shown that localized food production contributes to food system resilience. Stephan Barthel and Christian Isendahl within their study argue that it is as vital a service as "transport, electricity, entertainment, and sewage" (Barthel and Isendahl, 2012). Downtown Vancouver currently has 44473 ft^2 of farm plots (VUFS, 2017). Vancouver Farm census that reported the primary methods of urban framing are small indoor farms, high tech capital-intensive farms and yard sharing (VUFS, 2017). In our analysis we will researching high tech farms such as roof top gardens and greenhouse's excluding the Yard-sharing and small indoor due to their limited growth possibilities in the downtown area (VUFS, 2017). Downtown Vancouver pollution is 54,690 people and only 44473ft^2 of farm plots to improve resilience production capacity should increases to be able to feed more people. Downtown Vancouver's green space is both limited and expensive, while Grey space is more abundant and available. By focusing on Grey space we can maximize Vancouver urban food production capacity.

Objectives

1. To evaluate roof top gardens and greenhouses in grey spaces according to efficiency of production

2. To determine the amount of grey space available for urban agriculture within Vancouver.

Methods

Our primary focus will be spent researching grey spaces and the use roof top gardens and greenhouses and current Vancouver infrastructure. Our sources of information for data collection will include our listed potential sources below. After collecting this data, we will analyze the feasibility of our four food production systems according to costs,

Vancouver's available space and climate, and look at production per capita. This information will then be created into tables and charts, and presented in an infographic presentation and final report.

Potential Sources

Potential interviews

Brooklyn Grange LLC, New York

Anastasia Cole Plakias
Vice President & Founding Partner
Note: To engage Anastasia for Live Appearances and Speaking Engagements, please contact: Laurie Barnett at Gotham Artists, laurie@gotham-artists.com, 646-578-8788
Official Phone: (347) 670-3660
Email: info@brooklyngrangefarm.com

Lufa Farms Inc., Montreal
Phone: 514-669-3559
Email: info@lufa.com
Website: http://corpo.lufa.com/en/

Sky Harvest, Vancouver
Aaron Quesnel
Email: aaron@skyharvest.ca
Website: http://skyharvest.ca/index.php/contact-us/

Green City Growers
Phone: (617) 776 1400
Email: info@greencitygrowers.com
Website: http://greencitygrowers.com/about-green-city-growers/contact/

Literature

Key Urban Agriculture Trends in Vancouver for 2040
Lhotka, G. (2014).

The social production of community garden space: Case studies of Boston, Massachusetts and Havana, Cuba
By: French, Charles A.. University of New Hampshire,

Development and application of a building energy performance metric for green roof systems
Author: Seth S. Moody David J.Sailor

Exploring the production capacity of rooftop gardens (RTGs) in urban agriculture: the potential impact on food and nutrition security, biodiversity and other ecosystem services in the city of Bologna

By: Francesco Orsini
Email author

Life cycle cost analysis of rooftop gardens in Singapore

Author Nyuk Hien Wong

Perception and acceptance of agricultural production in and on urban buildings (Farming): a qualitative study from Berlin, Germany

Author Kathrin Spech

Life cycle assessment of layers of green roofs

Sanaz Bozorg Chenani

Objective 1 Methods

1. The two food production systems we will be researching are the following: **rooftop greenhouses**, and **greenhouses.** Additional data will be gathered through interviews of key stakeholders, examples above, we will be asking the following questions:

    a. What is the size of your production space? Are there limiting factors between the maximum and minimum scale?

    b. What is the total yield of the operation?

    c. What are the short and long-term total costs of your operation?

    d. What is the necessary infrastructure to run your operation?

Objective 2 Methods

Grey Space

The grey space (Rooftop space) will be analyzed in order to estimate the amount of area that is available and unoccupied. By doing so, this will provide a baseline for estimating the scales of our potential systems that could be

established on open rooftop spaces. A rooftop greenhouse and rooftop garden are the two practices we will be evaluating.

Outcome

We will be creating a report, which will evaluate the production capacity of downtown Vancouver and will analyze the efficiency of our selected food production systems in terms of cost and yield. This report will be completed by December 3rd, 2017. We will be conducting a presentation at the University of British Columbia's student union building on November 29th, 2017. The presentation will feature an infographic that illustrates the potential food production capacity of Downtown Vancouver with models and data of our selected food production systems.

References

Broadway, M. J., & Broadway, J. M. (2011). Green dreams: Promoting Urban Agriculture and the Availability of Locally Produced Food in the Vancouver Metropolitan Area. *Focus on Geography, 54*(1), 33-41,45. Retrieved from: http://ezproxy.library.ubc.ca/login?url=http://search.proquest.com/docview/1319837530?accountid=14656

Food and Agriculture Organization. (n.d) Retrieved from http://smallplanet.org/content/fao-definition-food-production

Food and Agriculture Organization. (n.d) Retrieved from http://www.fao.org/urban-agriculture/en/

Gliessman, S. R. (2014). *Agroecology: The Ecology of Sustainable Food Systems, Third Edition, 3rd Edition*. Retrieved from: VitalSource Bookshelf file.

Lebedeva, J. (2008). *Climate Change Adaptation and Mitigation Through Urban Agriculture: A Montréal Case Study.* McGill University. Retrieved from: https://www.cip-icu.ca/Files/Resources/Report3-Lebedeva

Lhotka, G. (2014). *Key Urban Agriculture Trends in Vancouver for 2040*. University of British Columbia. Retrieved from: https://open.library.ubc.ca/clRcle/collections/undergraduateresearch/34125/items/1.0075678

Schutzbank, M. H. (2012). *Growing Vegetables in Metro Vancouver: An Urban Farming Census.* University of British Columbia. Retrieved from: https://open.library.ubc.ca/clRcle/collections/ubctheses/24/items/1.0058494

Vancouver Urban Farming Society (n.d.) *Vancouver Urban Farming Society*. Retrieved insert date accessed from: http://www.urbanfarmers.ca/category/vufs/

100RC (n.d.). *100 Resilient Cities: What is Urban Resilience.* Retrieved from: http://www.100resilientcities.org/resources/