

Vertical Agriculture: Exploring Its Role in Sustainable and Resilient Community Food Systems



WHAT IS VERTICAL AGRICULTURE?

Vertical agriculture is a form of 'controlled environment agriculture' that involves growing a variety of crops indoors using stackable shelves, LED lights, and plant nutrients that are circulated to root systems by water pumps.

THE RESEARCH PROJECT

We are working with communities to explore the role vertical agriculture can play in local food systems in British Columbia. We are examining considerations and different scenarios/approaches for vertical agriculture development. Below is a summary of a focus group held in February, 2022 with government and food systems stakeholders in the Fraser Valley. We asked participants what they see as the key environmental, social, and economic benefits for vertical agriculture, and what are key considerations for integrating this technology in local and regional food systems.



Environmental

Vertical agriculture optimizes crop growth, producing high volumes of a crop using low amounts of resources such as land, water, and nutrients. Vertical farming techniques provide great opportunities for developing urban agriculture capacity to increase local supply of fresh, year-round products in BC communities. Robust systems of local, urban food production would decrease food miles and associated greenhouse gas emissions.

Social

Vertical agriculture can occur in a variety of places, including home kitchens, farms, supermarkets, or even hospitals. In each of these circumstances, crop production can contribute to local food security while restoring relationships people have with their food. However, it is critical that information about vertical farming be communicated clearly, particularly regarding its growing techniques, product nutrition, and potential impacts for food insecure groups in local communities.



Economic

Vertical agriculture is done in an indoor, controlled environment, decreasing the risk of crop failure. This is key for regions in BC that are vulnerable to floods and fires. Its freshness, shorter growing cycles (compared to conventional agriculture), environmental benefits, and pesticide-free production add value to the products, and these are all potential selling points.

FUTURE DIRECTIONS

Vertical agriculture has great potential to shape British Columbia's food systems. Yet, we must continue to work with communities to implement these technologies in ways that best contribute to sustainable and resilient food systems. For the next phase of our research, we will be undertaking surveys, interviews, and focus groups with consumers, restaurateurs, store managers, and others who could potentially become involved with vertical farming. Using these data, we will map and examine scenarios to determine where putting a vertical farm makes the most sense.



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