

## **Day Five – If wanted to create an integrated, sustainable local food system, what might it look like?**

Our final day expands our horizons a bit more. If we want to move the bar on urban agriculture and local food towards creating an integrated and sustainable system, what might that look like? How do we envision a future where urban agriculture and local food producers were able to supply a significant portion of our food needs, if we wanted to build a local food ecosystem, what might some of the innovation and technology applications look like?

There is a growing interest in two - often interconnected - innovations. They include the integration of aquaponics into the food production system and the design and operation of vertical gardening.

### ***Aquaponics***

#### **Sustainable Microfarms Introduces Innovative Technology to Revolutionize Urban Farming and Promote Global Solutions to Food and Water Shortage**

[Sustainable Microfarms, Inc.](#) (SMF) has developed new technology to ignite the growing industry and help farmers, big and small, grow their product more quickly, with less effort, and at a considerable financial gain. From greenhouses in the desert to vertical farms located near dense urban centers, SMF not only affects how, but also where we can grow food. With the shortening of food supply chains, these technological advances in hydroponic farming will reduce spoilage, time to consumer, transportation costs, and oil consumption.

Sustainable Microfarms created their flagship product - the [Genesis](#) dosing controller - to fulfill the vision of a de-centralized urban culture, by allowing residential and industrial purpose growers to have all-in-one self-sustaining gardens. The Genesis monitors plant life and growth, dosing the garden with nutrients, water, and pH solutions (customizable by the grower), using 90% less water and 70% fewer nutrients, while generating 10 times the output, of manual farming techniques. Comparable systems cost 4-5 times as much as the Genesis, making this type of system inaccessible to most.

(<http://www.prnewswire.com/news-releases/sustainable-microfarms-introduces-innovative-technology-to-revolutionize-urban-farming-and-promote-global-solutions-to-food-and-water-shortage-215060221.html>)

### **Aquaponics**

The future of aquaponics looks bright at Brooks. (2005). Aquaponics technology being developed in Canada is likely to morph into a new way to organically grow fresh fish and vegetables. In cold climates that will mean profitable use of greenhouses. Canadian

research has shown that growing plants utilizing fish wastes in greenhouses in cold climates is significantly superior to growing them hydroponically in the same greenhouses using inorganic fertilizers dissolved in water.

<http://www.greenhousecanada.com/content/view/965/38/>

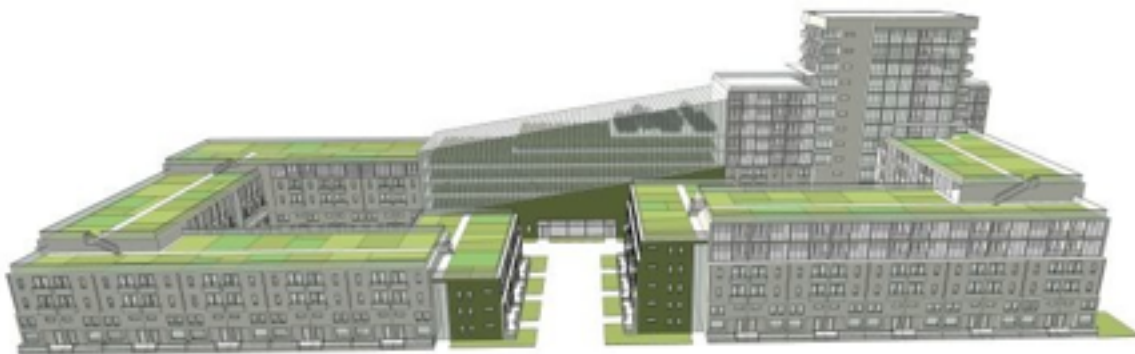
<http://canadianaquaponics.ca>

<http://canadianaquaponics.blogspot.ca>

<http://portablefarms.com>

Aquaponics is easier and more productive than organic gardening or traditional agriculture and uses 95% less water. Portable Farms® Aquaponics Systems also use less electricity and less labor than any other aquaponics system in the world.

### ***Vertical Farming***



Dickson Despommier, a professor at Columbia University, is one of the biggest advocates of vertical farming.

Take a look at his website

<http://www.verticalfarm.com>

in particular, his You Tube Video - Big Ideas - Dickson Despommier's Vertical Farming

[http://www.youtube.com/watch?feature=player\\_embedded&v=1clRcxZS52s](http://www.youtube.com/watch?feature=player_embedded&v=1clRcxZS52s)

“By the year 2050, nearly 80% of the earth's population will reside in urban centers. Applying the most conservative estimates to current demographic trends, the human population will increase by about 3 billion people during the interim. An estimated 10<sup>9</sup> hectares of new land (about 20% more land than is represented by the country of Brazil) will be needed to grow enough food to feed them, if traditional farming practices continue as they are practiced today. At present, throughout the world, over 80% of the land that is suitable for raising crops is in use (sources: FAO and NASA). Historically,

some 15% of that has been laid waste by poor management practices. What can be done to avoid this impending disaster?"

Other vertical farming sites:

### **These Farmscrapers Are Entire Cities In Crazy, Wobbly Looking Towers**

Architect Vincent Callebaut's "Asian Cairn" project imagines a future where we house residences, offices, and even entire food systems in gorgeous, stacked skyscrapers.

<http://www.fastcoexist.com/1681553/these-farmscrapers-are-entire-cities-in-crazy-wobbly-looking-towers#1>

### **Dynamic Vertical Farm Networks Could Provide More Space for Growing Food in China**

China supports 20 percent of the world's population through food production, but as more land is used for development, less is available for arable land. One possible solution to this problem is vertical farming, and Spanish firm [JAPA Architects](#) has proposed the [Dynamic Vertical Networks \(Dyv-Net\)](#) scheme that could be located close to city centers. Built from lightweight metals, the Dyv-Net farms could produce crops year round, support the local economy and be close to market.

<http://inhabitat.com/dynamic-vertical-farm-networks-could-provide-more-space-for-growing-food-in-china/>

### **What is possible?**

Work cafeteria food just got a lot more interesting. A downtown Tokyo office building is one of the first urban farms in Japan, connecting the ideas of green energy and sustainability with the day-to-day realities of office life. Office workers at [Pasona](#), a staffing firm specializing in farming and related jobs, are encouraged to cultivate indoor and outdoor gardens and eat the fruits (and vegetables) of their labour.

Pasona's headquarters in the bustling Japanese metropolis features both interior and exterior "green" ideas. There are vegetable and fruit bushes -- beans, tomatoes, eggplant, broccoli and passion fruit -- next to desks and work stations. There's a rice paddy field on one office floor. There's a pumpkin patch by the reception area.

<http://thestar.blogs.com/worlddaily/2013/04/pasonas-headquarters-in-downtown-tokyo-all-photos-courtesy-of-kono-designs-work-cafeteria-food-just-got-a-lot-mor.html>

### **Discussion Question**

**If you are attempting to develop a large-scale, sustainable urban food movement, what technologies and innovations are required?**