

Growing Up: Greenhouse Designs for Urban Spaces

James Adams // B.S. Sustainable Built Environments // College of Architecture, Planning and Landscape Architecture // Fall 2019 Capstone Showcase

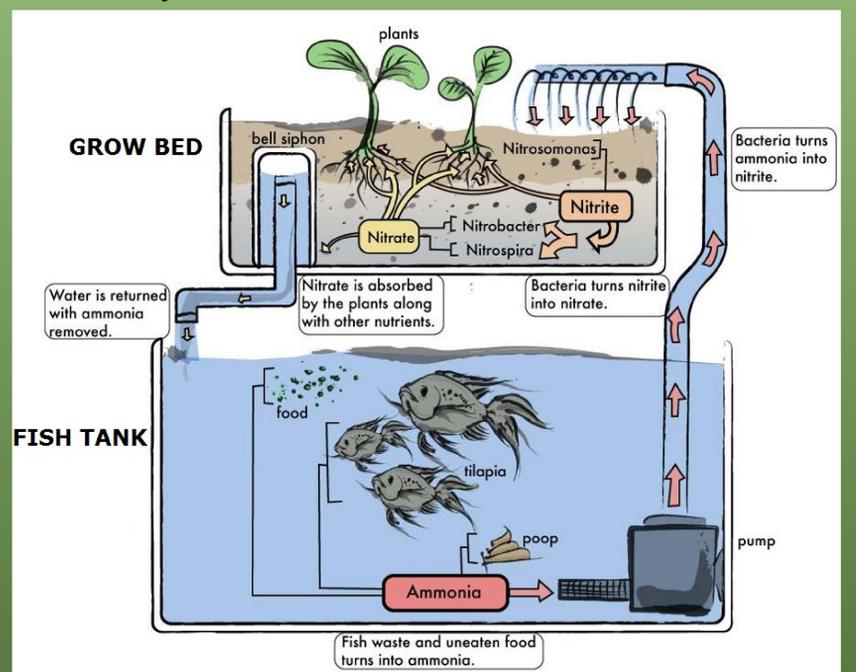
New Growing Methods



The Bowery is an example of vertical farming where plants are grown in tiered systems. They use nutrient pods, water, and artificial light sources to raise a variety of crops.



Tower gardens use columns with built in pockets where seeds can be planted in nutrient pods. Water is then trickled down these columns to supply plants with moisture. Examples of these can easily be installed at home.



Aquaponics systems create a circular system to grow fish and plants. The plants provide the fish with food, and the waste from the fish provides the nutrients the plants need.

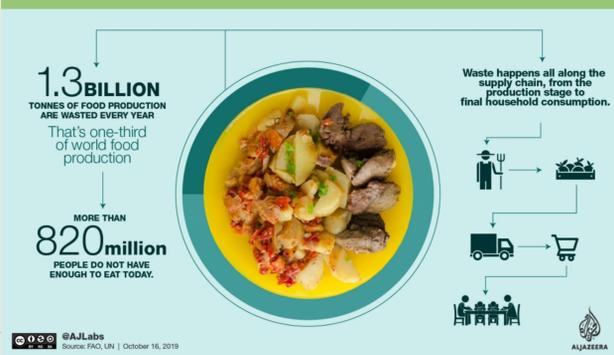
Conclusion

As methods get better, greenhouses become a more viable solution to the impending food crisis.

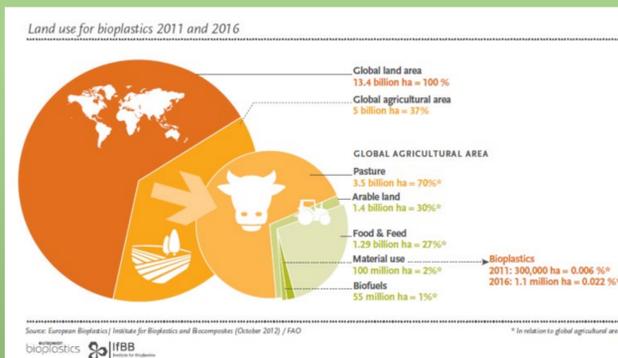
Introduction

One of the biggest problems the world faces is the potential for a food shortage. As the population increases, food production must increase at a matching pace. An estimated 55% of the world's crops are used for human consumption, but roughly 1/3 of that food is wasted annually.

Roughly 1.3 Billion Tons of Food is wasted annually!



It is estimated that by 2050, we will need more farmland that is currently available to feed the entire world's population. So we need to start looking for current solutions to tomorrow's problems.



While greenhouses have been around since Rome, they have been built as very basic structures for much of their history. However, as new technology and growing methods arise, they can quickly become one of our best options for a solution.

New Building Materials

Semi-Transparent Photovoltaic Cells

Self-Healing Concrete

Electrochromic Glass

Self-Sensing Concrete and Nanotubes