A Malthusian Catastrophe is in the making…

Not Enough Soil.

We are engaging in agricultural strip-mining.

We are turning the farmable land to desert by poisoning the microbiology with fertilizers.

Not Enough Water.

Agriculture is responsible for 87 % of the total water used globally.

It takes over 500 gallons of water to produce one pound of rice.

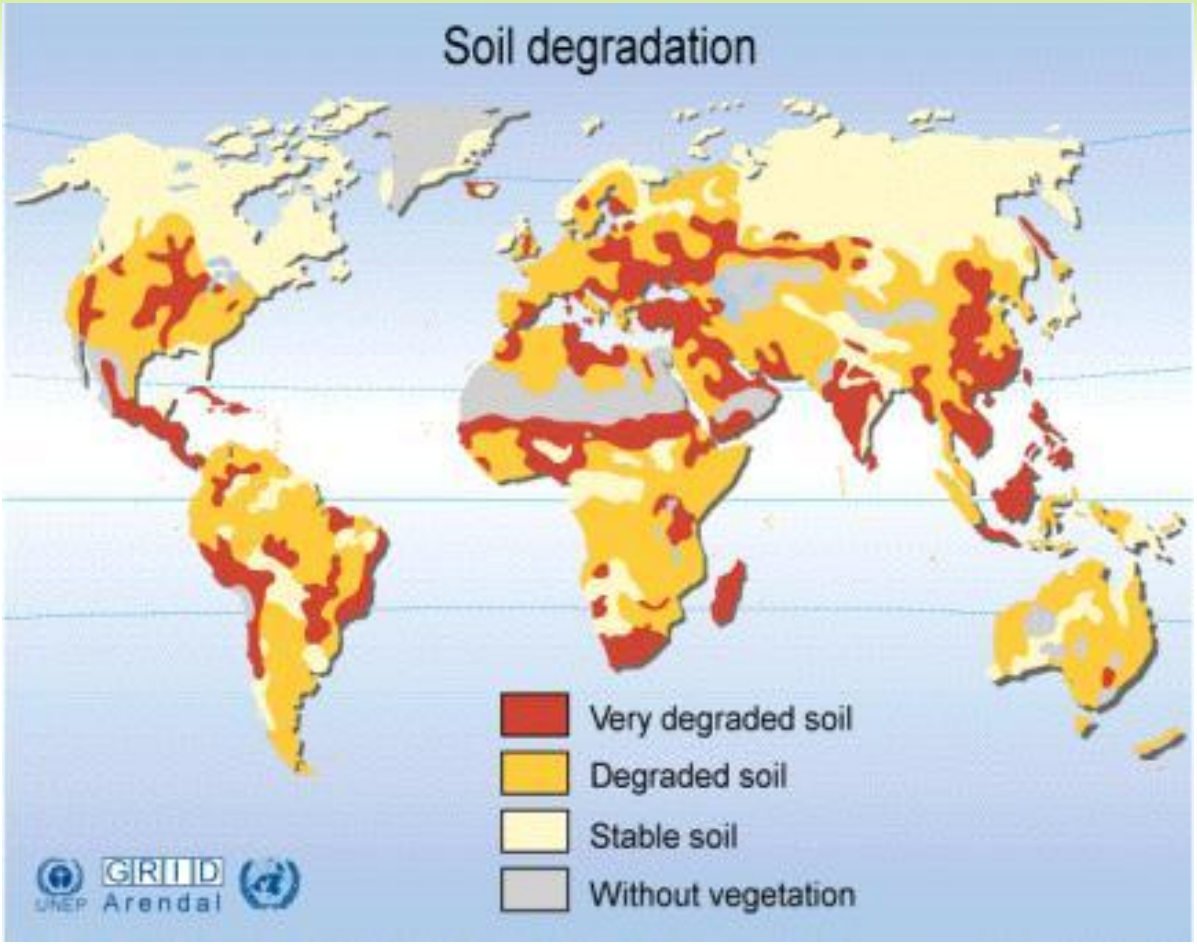
Billions more humans on the way.

There is not enough water, there is no more soil to be had.

We must become more efficient In our use of water and protection of the earths soil, we must address the cause Agriculture.

Soil Degradation Map

At this rate we will turn the world into a desert in a desperate attempt to not starve to death our selves.



The Coming Crisis

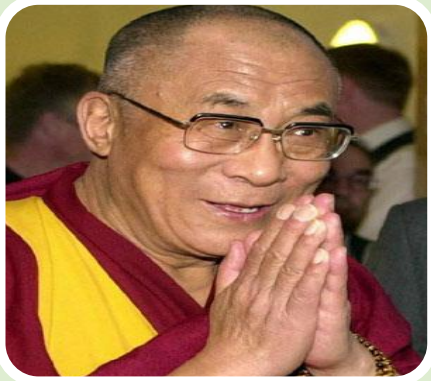
- We are headed toward a “Malthusian Catastrophe” as a people if we do not address the impending threat.
- Water supplies will be at crisis levels in the next 30 years if we do not address the source of the problem.
- Soil erosion is happening at a rate that far outpaces even the most optimistic soil creation estimates. Leading to the desertification of the worlds farm belt.

Thomas Malthus (1766-1834)

Malthusian Catastrophe

Over 200 years ago Malthus had the foresight to see the earth could not support exponential population growth for ever.

He put forward the idea that exponential population growth would lead to an inability to produce enough food and thus mass starvation would ensue.



"The threat of nuclear weapons and man's ability to destroy the environment are really alarming. And yet there are other almost imperceptible changes - I am thinking of the exhaustion of our natural resources, and especially of soil erosion - and these are perhaps more dangerous still, because once we begin to feel their repercussions it will be too late."

-The 14th Dalai Lama

"I say, that the power of population is indefinitely greater than the power in the earth to produce subsistence for man. Population, when unchecked, increases in a geometrical ratio." – Thomas Malthus

Hydroponic & Aquaponics Overview

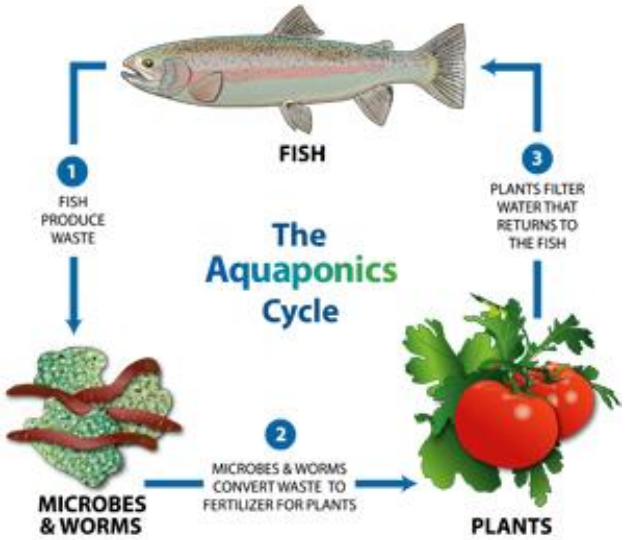
Hydroponics is the act of growing plants without soil. Plants receive all their basic needs from the controlled application of nutrient enriched water.

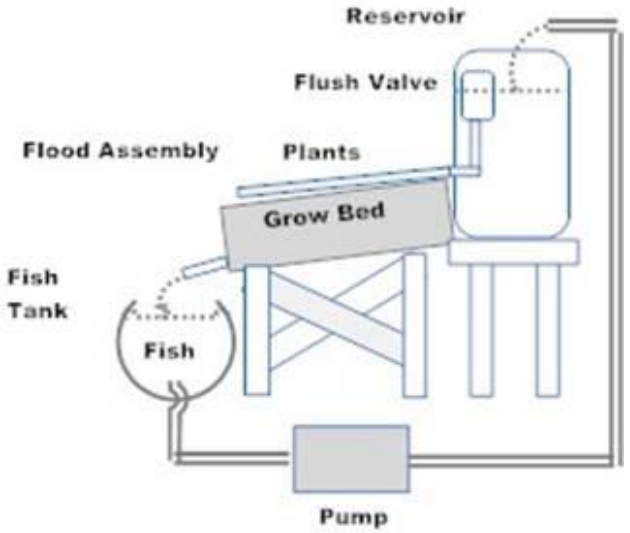
Hydroponic systems work by saturating the roots of a plant with water that has been enriched with nutrients and oxygen. The method of delivery can vary from roots permanently submerged in a reservoir of aerated nutrient solution to roots suspended in an open-air dark casing sprayed on timed intervals by a mist form of aerated nutrient solution. The benefits of these deliver methods are numerous.

Aquaponics is the merging of Hydroponics with Aquaculture, the farming of fish and other aquatic creatures.

Basic Aquaponics-

Hydroponics fertilized by fish farms





Statistics

The greatest benefit of Hydroponic agriculture is it can produce in excess of 100 times the crops per acre as traditional agriculture. (Willis, 2008)

The benefits start to truly add when you count up the hours of labor for a single acre of tomatoes can be as high as 200 hours. No Tilling, No weeding, No spraying, No watering, and now even harvesting machines are becoming more and more common place.(Willis, 2008)

In a one acre green house of hydroponic tomatoes 1.2million pounds of fruit can be produced annually according to USDA statistics. (Willis, 2008) To put that into prospective the large numbers of family owned urban farms that make up the South Central Farmers group produced 300,000lbs of produce in 2009.

Ecological Benefits

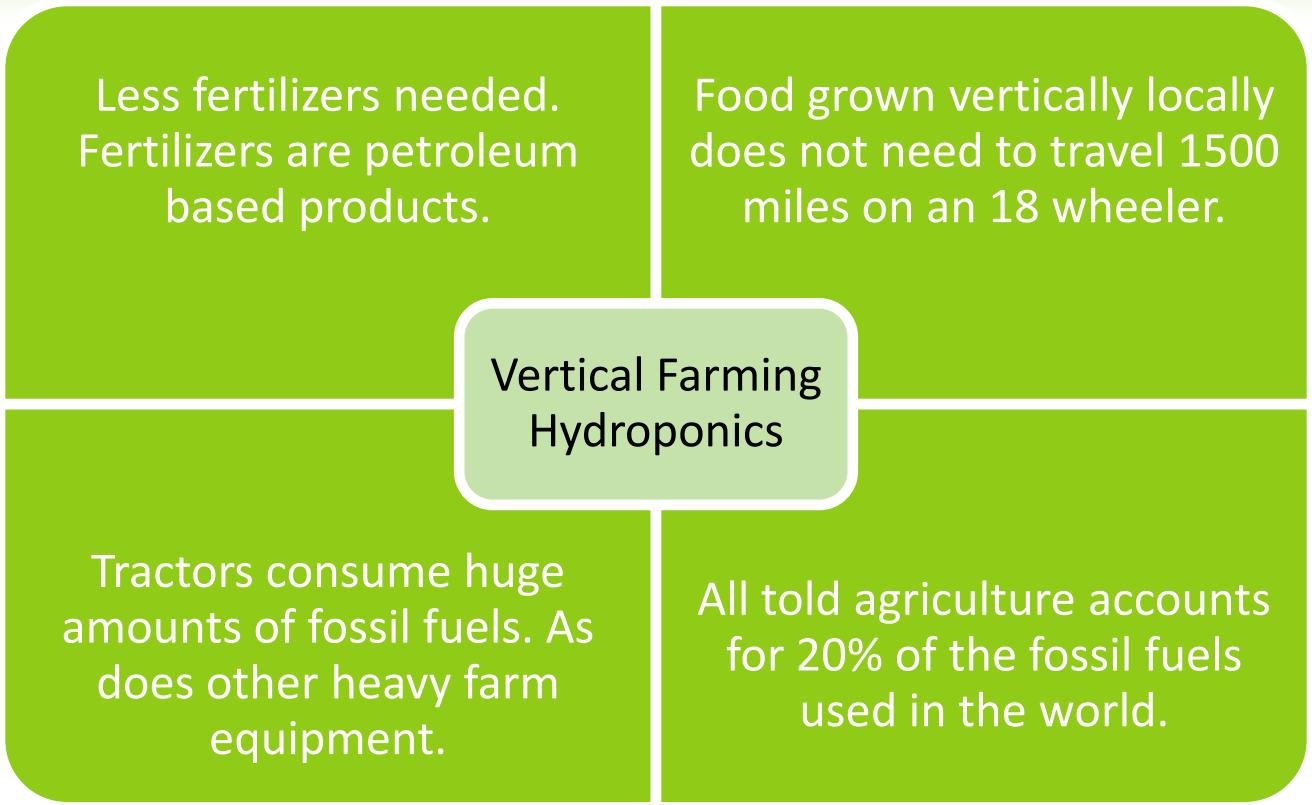
Water

- Aerated nutrient solution being pumped in a Hydroponic system uses only 5% of the water of traditional agriculture.
- Aerated nutrient solution is kept in reservoirs and pumped into watertight housings preventing 99% of damage to the water table caused by traditional methods.
- Hydroponic Agriculture that is properly maintained requires the use of little to no pesticides.

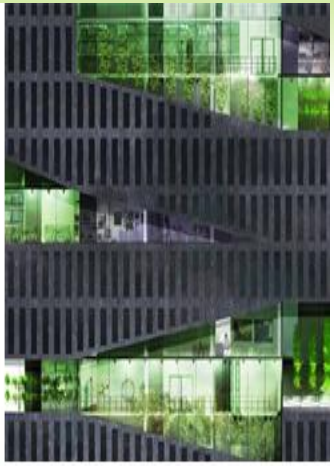
Soil

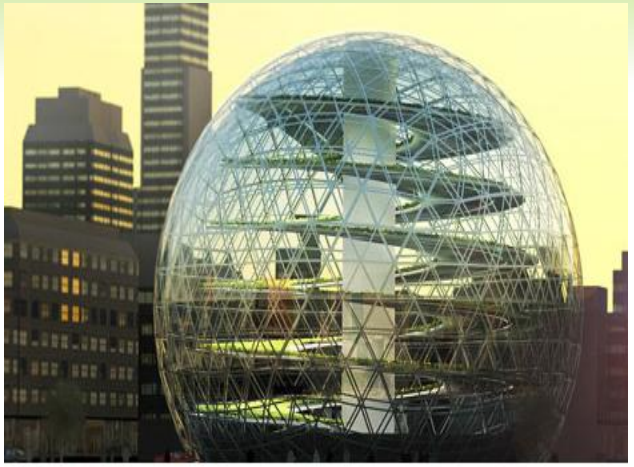
- Hydroponic production does not affect the biology of the soil thus preventing the damage to local ecosystems experienced in large scale agriculture.
- Hydroponics requires no soil and no tilling.
- Hydroponic systems can be stacked 100 stories tall in buildings preserving huge amounts of land.

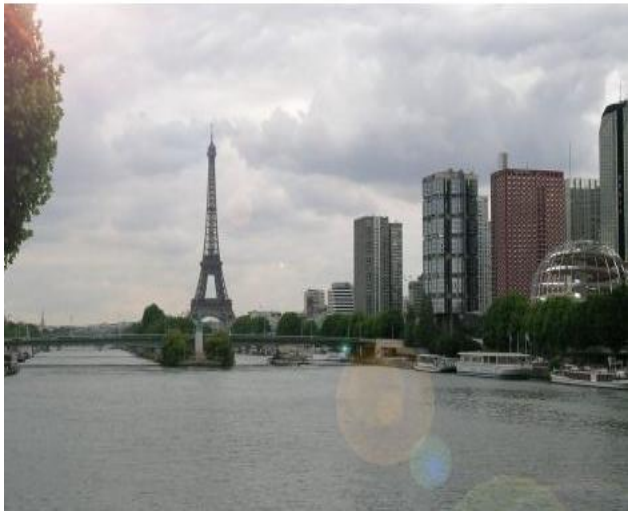
Greenhouse Gas Emissions



Vertical Farm Designs







Vertical Farm Designs

A Reality In Motion, Disney's "Living with the land"

Fish farming

Eggplant trees

Walls of Salad Greens

Disney's Tomato Tree

Disney 's tomato tree entered the Guinness book of world records by Yielding 32,000 tomatoes at a total weight of 1,151 pounds of fruit in one year! Imagine a skyscraper full of plants like these.

Nine Pound Lemons!

Disney also does nine pound lemons.

Future of Mechanization

Future of Mechanization

From robotic picking arms to automated planters. Modern agriculture will become even more efficient then it currently is.