Selected Slides on Hydroponic Routes to Nutritionally Enhanced Produce and Nutraceuticals

An Innovation Bridge to Help Address Strategic 21st Century Food Security Needs

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For A. Green

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Sustainable Functional Hydroponics

Nutritionally Enhanced Food
A Commercial Hydroponic System
Some Retail Home Hydroponic Systems

The price of commercially available hydroponic systems represents a significant barrier to community use.


[$250](https://www.planetnatural.com/product/ez-clone-machines/)
Example of a Home Built Hydroponic System

Construction materials costs range from <$20-$45
Healthy and Pesticide Free Greens

Lettuce and Basil
Various sizes of CPVC pipe and spray nozzles

Submersible water pump, air stones and tubing, timers for lights

CPVC pipe connectors

The water pump is attached to the water circulation system
Plexiglass with cut holes to hold the starter plugs and cut to fit in the top of the hydroponic system box.

Hydroponics nutrient solutions.
Instead of starter plugs, we can use starter mats.

Growth: nutrients

Photosynthesis
Summer Science Academy for Rising 9th Graders

A Platform for Hands-on Teamwork and Creativity

Hydroponics engages our youth with relevant hands-on learning. ... and enables healthy and accessible food options for families.

The 2015 Team

The 2016 Team
Hydroponics Enables High Crop Yields

Efficient, Compact, and High Yield Farms

Low water consumption

Hydroponics Enables Rapid Crop Growth
A Sustainable Way to Address Food Deserts

BokChoy Planted on December 26, 2016

From seed to harvest in <1.5 Months

15 Days
January 10, 2017

33 Days
January 29, 2017

42 Days
February 6, 2017
Advanced Hydroponics Enables Extended Harvests

*Ex. Year Long Basil Harvest*
... the smallest sustainable chemistry factory?

Ultra-micro-bacteria (~200 nm)

Extracted from a glacial ice core sample, 120,000 years old  Miteva (2005)

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