A Comparison of Media to Determine Optimal Growth in Aquaponics: PRG Virtual Showcase January 2021

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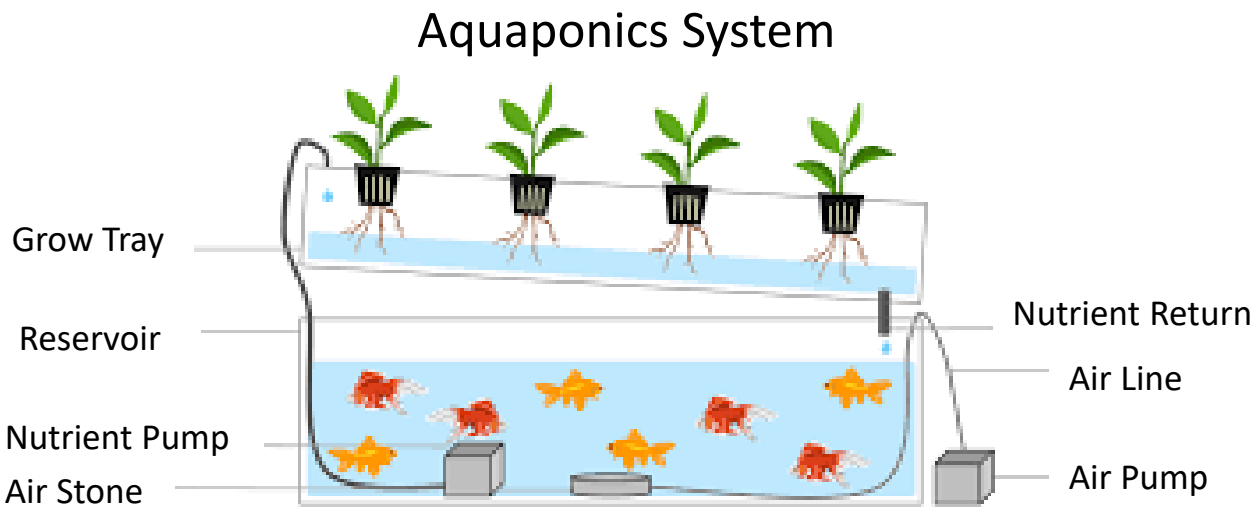
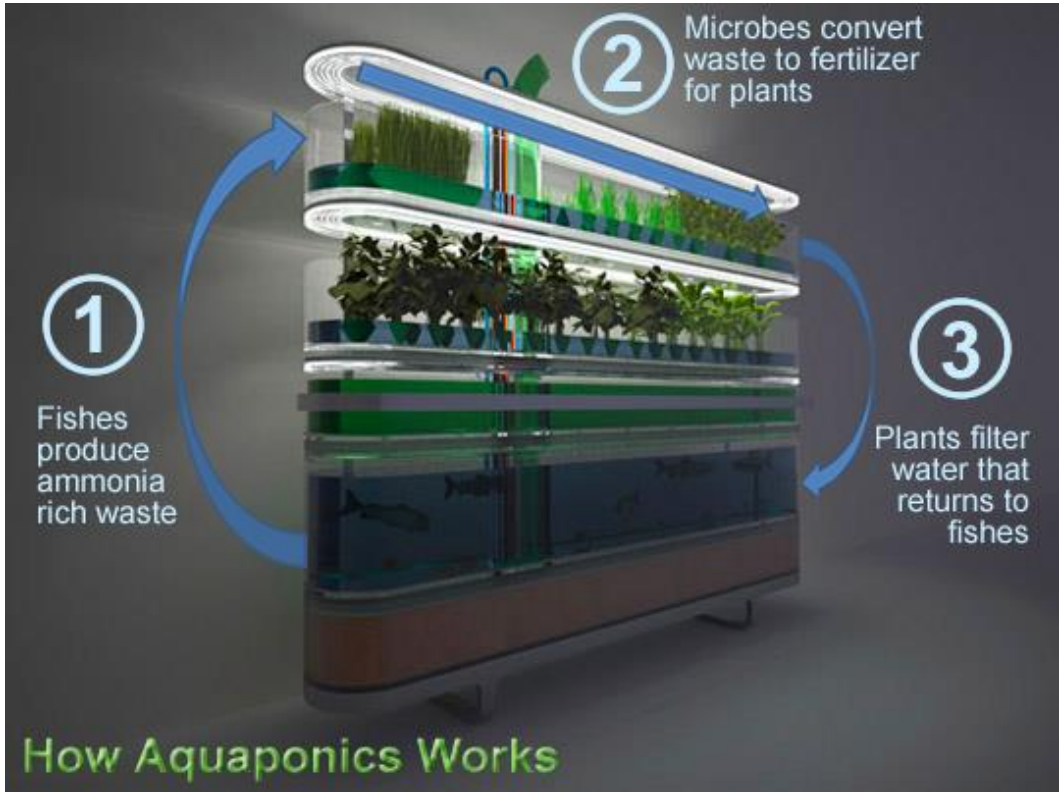
Aquaponics Intro

- Combination of aquaculture and hydroponics
- Growing environments
- Grow medias

Aquaponics: A Closed-Loop System

- Ammonia-rich water from the fish tank is treated using microbes to produce nutrient-rich water to sustain and fertilize the plants
- Plants filter the water which is then returned to the fish tank





PRG 19 → PRG 20 Transition

- 2020 – Extension
  - Removed Oasis growth medium from comparison
  - Added coco coir, burlap, and traditional soil
  - Focus on families of plants that would grow best under conditions

Research Question – Nutritional Content

- Nutritional value is commonly assessed using the following parameters:
  - Carbohydrates: Viability of plant, nutritional content
  - Chlorophyll: Plant health, nutritional content
  - Lipids: Plant health, nutritional profile
  - Moisture Content: Freshness, viability, growth
  - Minerals: Nutritional content uptake into plant
  - Proteins: Nutritional content uptake into plant

Research Completed / Truncated

Growth Conditions

- ✓ Selection of Grow Media
- ✓ Selection of representative array of crops
- ✓ Seeding into Grow Media
- Preliminary harvesting of crops for nutritional analysis protocol testing
  - Harvesting of crops for nutritional analysis
  - Statistical analysis of results

Nutritional Value Analysis

- Moisture Content – Preliminary Findings with lettuce leaves
- Chlorophyll – Protocol fine-tuning
- Proteins – Protocol fine-tuning
- Minerals – Protocol in development
- Carbohydrates – Protocol researched
- Lipids – Protocol researched

Future Directions

- Greenhouse renovations to compare aquaponics to hydroponics
  - Assess which grow environment is preferred
  - Complete nutritional content analysis

Questions