



BUSINESS ANALYSIS

Crop Yield

On average, lettuce plants take about **60** days. At the conditions supplied by the sandponics system, the calculated yield is **4.5 kg/m²**. The planned unit size of a sandponics-based lettuce farm is **350m²**. Hence, the estimated monthly yield is **788 kg** per unit. Given the wholesale price of about L.E. **2/kg**, the average monthly lettuce income of a sandponics farm is L.E. **1580** per unit.

Fish Yield

The planned grow bed volume is **$350 \times 0.5 = 175\text{m}^3$** , which equals the fish farm growth volume. The project should yield about **8.75-17.5 tons** of fish given a yield density of **50-100 kg/m³**. With the market size reached in about 6 months, the expected tilapia yield per unit is **1.45 - 2.9 tons** per month. For a wholesale price of about L.E. **37 /kg**, the average monthly tilapia income of a sandponics farm is L.E. **80500** per unit.

Hence, the expected total monthly income of a sandponics farm is L.E. **82080** per unit.

LIMITLESS BENEFITS

- **Low Water Usage:**

Through recycling the water, Sandponic system uses approximately 90% less water than conventional agricultural.

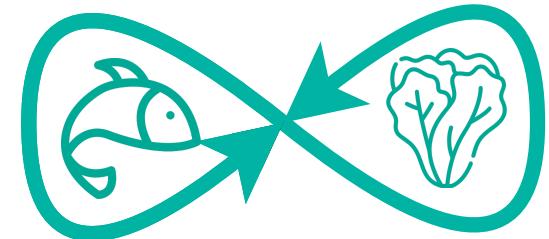
- **Two sources of Income:**

Aquaponic offers two streams of income, both fish and vegetables.

- **Small Footprint:**

Sandponic farming doesn't require farmland with fertile soil.

PROTOTPE MEDIA



SANDPONIC AUTOMATED PLANTATION

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"Minimize the Inputs,
Maximize the Outputs"

PROBLEM

FROM TILAPIA TO CROP

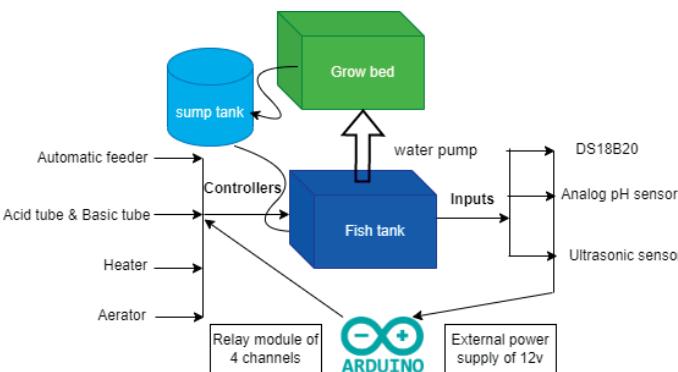
 Nutrients deficiency for crops

 Unlimited Spaces

 Water Scarcity

OUR VISION

Solve resources misuse in agriculture by involving IoT. The main purpose is to introduce a sustainable cycle of water as the transport media for nutrients to the plant without any resource consumption. The feedback mechanism ensures the automaticity of the whole system.



Tilapia Fish exerts wastes that considered as nutrients for crops.

Feeding rate of fish was controlled through a servo motor attached to a perforated plastic can.

Two parameters are monitored for the fish (Temperature & pH level)

Through Analog pH sensor, pH levels is controlled through two water pumps, one for acid and one for basic solution.

Through Temperature sensor, pH levels are controlled through two water pumps one for acid and one for basic solution

The water is pumped to the grow bed and then back through a constructed bell siphon.

Over the cycles, Ultrasonic sensor is used to calculate the water loss percentage

OUR TEAM



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