

# MADE

MODULAR

AQUAPONICS

DESIGN AND

EQUIPMENT



Aquaponics and Instructions on How to  
Make Aquarium System

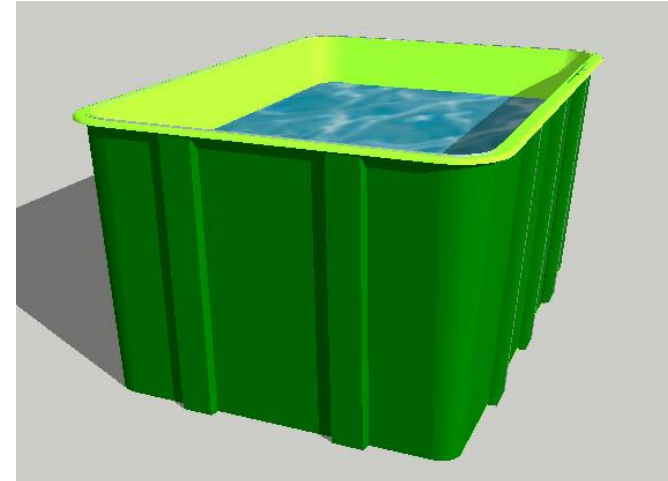
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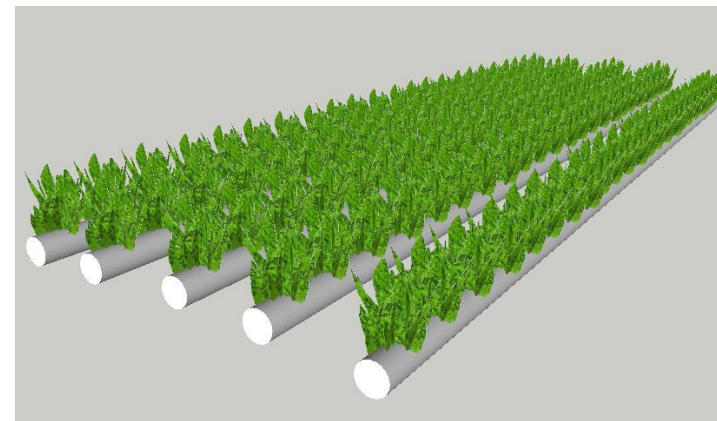
## What is Aquaponics?

What is Aquaponics?

- It is the integration of AQUAculture and hydroPONICS
- AQUA + PONICS
- Aquaculture
  - Culture of aquatic organisms like prawns and fish under controlled conditions. Can be either in open lakes with nets, tanks, or ponds.
- Hydroponics
  - Growing plants using water with nutrient solution.
  - Chemical nutrients are dissolved in the water and is then readily absorbed by the plants to grow.



Aquaculture example.



Hydroponics using NFT example.



## What is the Relationship of Aquaculture and Hydroponics in Aquaponics?

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- In aquaculture, fish produce waste and when a certain level is reached, water is disposed and fresh water is supplied.
- Water disposed is already waste and can pollute the bodies of water due to excess feeds and sludge contained in the water.
- In hydroponics, after using the nutrient solution, water is again discarded for fresh water with nutrient solution.
- In aquaponics, aquaculture fish produces waste which in turn becomes the nutrient solution of hydroponic plants which is cycled repeatedly.
- From an aquaculture point of view, hydroponics becomes an additional filter where the waste is absorbed.
- From a hydroponics point of view, aquaculture is the nutrient solution producer for growing the plants.

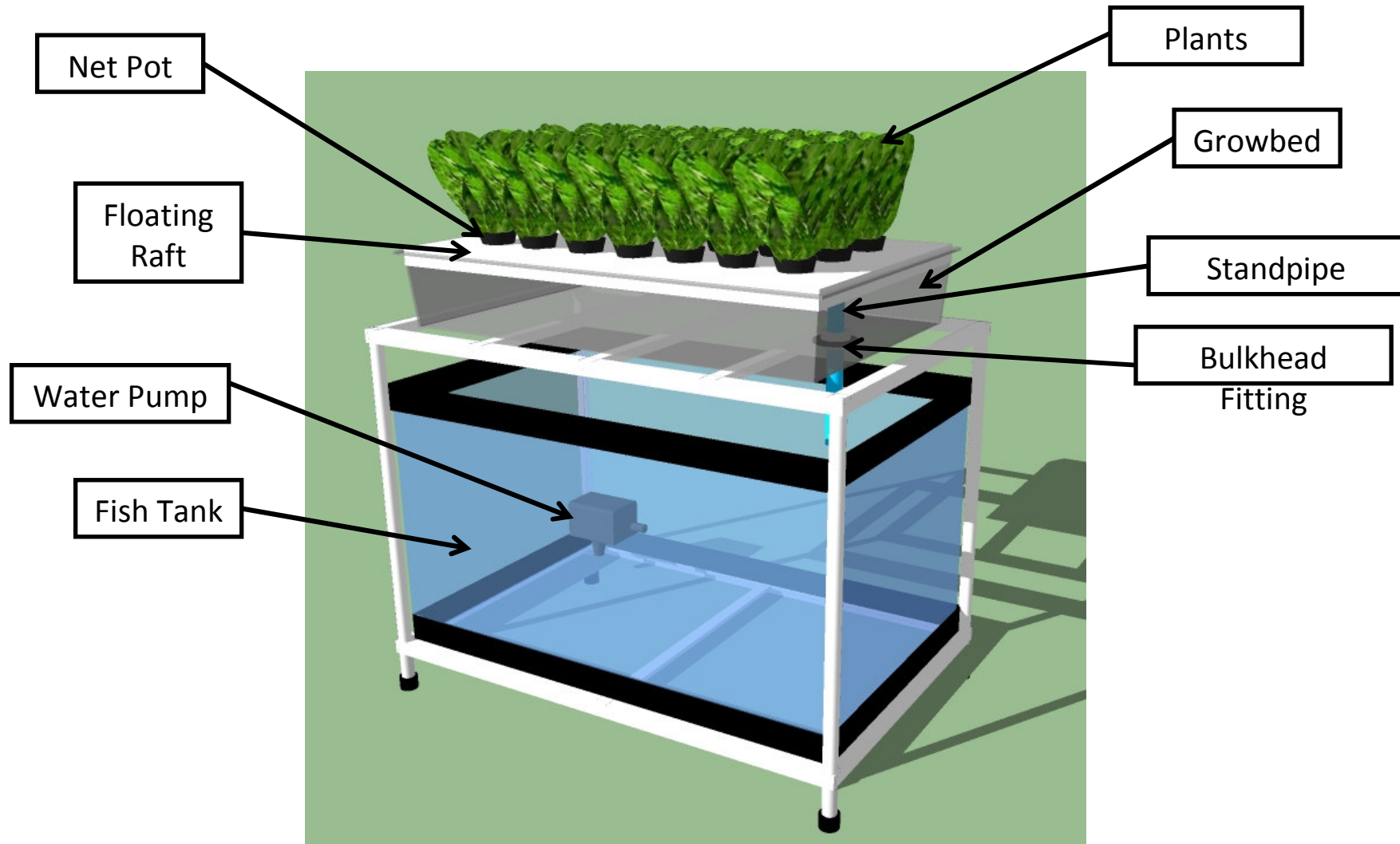


## What are the Advantages of Aquaponics?

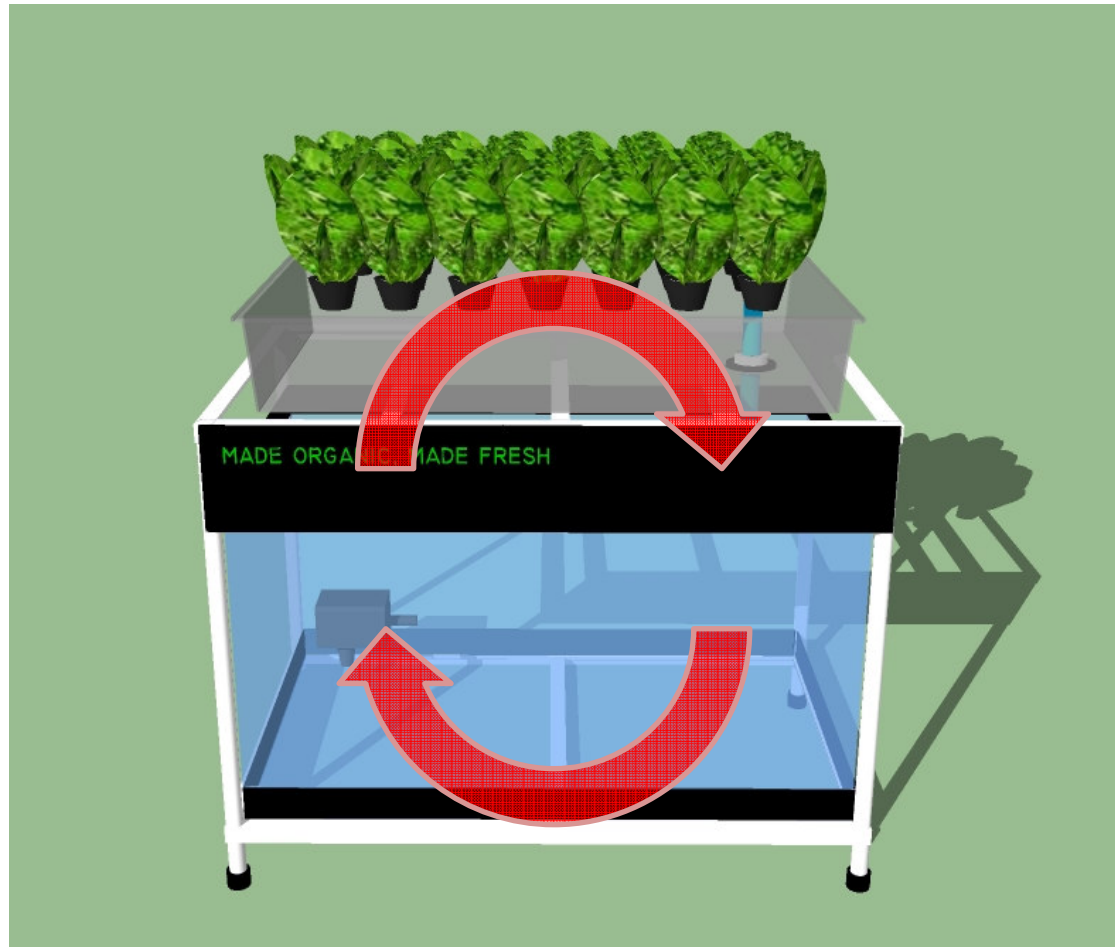
What are the Advantages of Aquaponics?

- 1.Constant source of nutrients for growing plants
- 2.No need to water your plants - it is already immersed in water consistently
- 3.On deepwater culture for aquaponics, root zone temperature is cooler, therefore results in better plant growth
- 4.Saves 80% of the water. 20% is lost in evaporation.
- 5.Applicable for urban farming where land is limited.

## Parts of an Aquaponics System



## Water Circulation



Water from the growbeds drain to the fish tank, and fish tank water is then pumped back to the growbed.



## Parts of an Aquaponics System

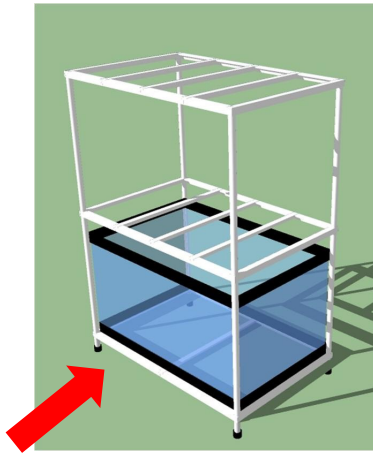
### Parts of an Aquaponics System

- Fish tank - this is where the fish will be placed. Aquarium or any container that have no leaks.
- Growbed - there are many types of growbed - in this set-up, we will be using floating raft type. Plastic trays can be used as growbed and can be sourced from a local hardware.
- Pump - will be responsible for mixing water from the fish tank to the growbed. Water pump capacity will depend on the size of fish tank and growbed. Pump flow rate should be enough to mix the water in the fish tank and growbed. Also, pump should be able to bring the water to the higher container (either fish tank or growbed).
- Filter - will remove the solids in the system.
- Stand pipe - to control the level of water from the growbed.
- Floating raft - Styrofoam with holes to carry the net pots
- Net Pot - small pots where the plants are placed
- Bulk head fitting – allows PVC pipes to be connected to the hole of the growbed.



## How to make your own aquaponics

1. Place fishtank at lower level than the growbed.



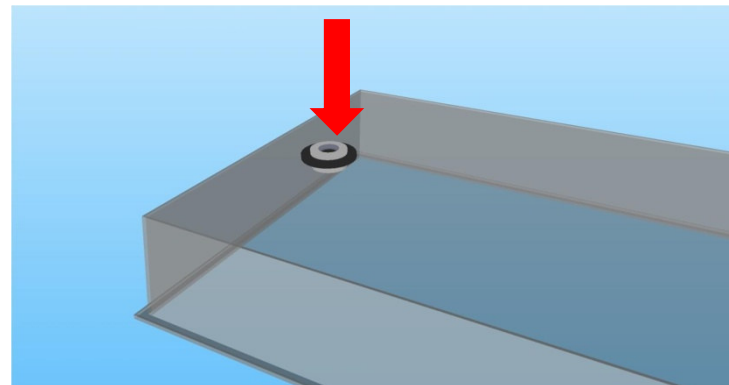
2. Drill a hole in the growbed to fit the bulk head fitting.



3. Apply sealant on the bulk head fitting to prevent leaks.



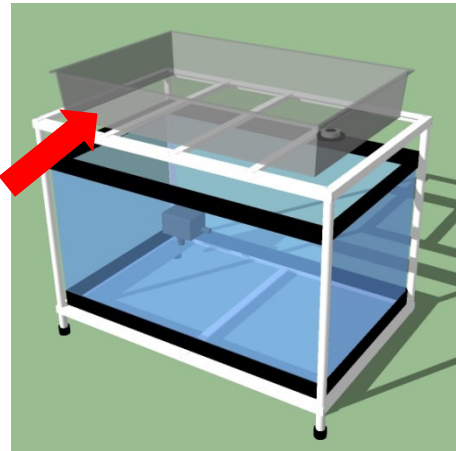
4. Install bulk head fitting to growbed.





## How to make your own aquaponics

5. Place growbed on top of the stand.



7. Install male adaptor.



6. Install teflon to all male adaptors

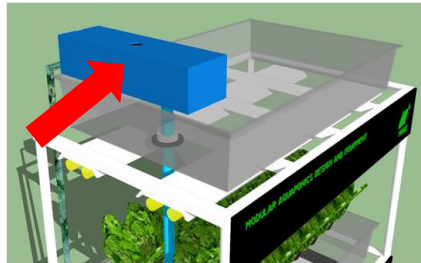


8. Measure stand pipe. Height of stand pipe with male adaptor and bulk head fitting should be lower than the height of the growbed. Install stand pipe to male adaptor.



## How to make your own aquaponics

9. Install Filter and Filter media



10. Install pump at the fish tank. Place hose from pump all the way to the filter



11. Cut styro to fit the growbed. Make a series of holes on the styro to fit the net pots. Also, place a hole on top of the stand pipe where the water will overflow.



12. Fill fish tank, and growbed with water. Make sure water no longer has chlorine - you may apply anti-chlorine or let water standby overnight.

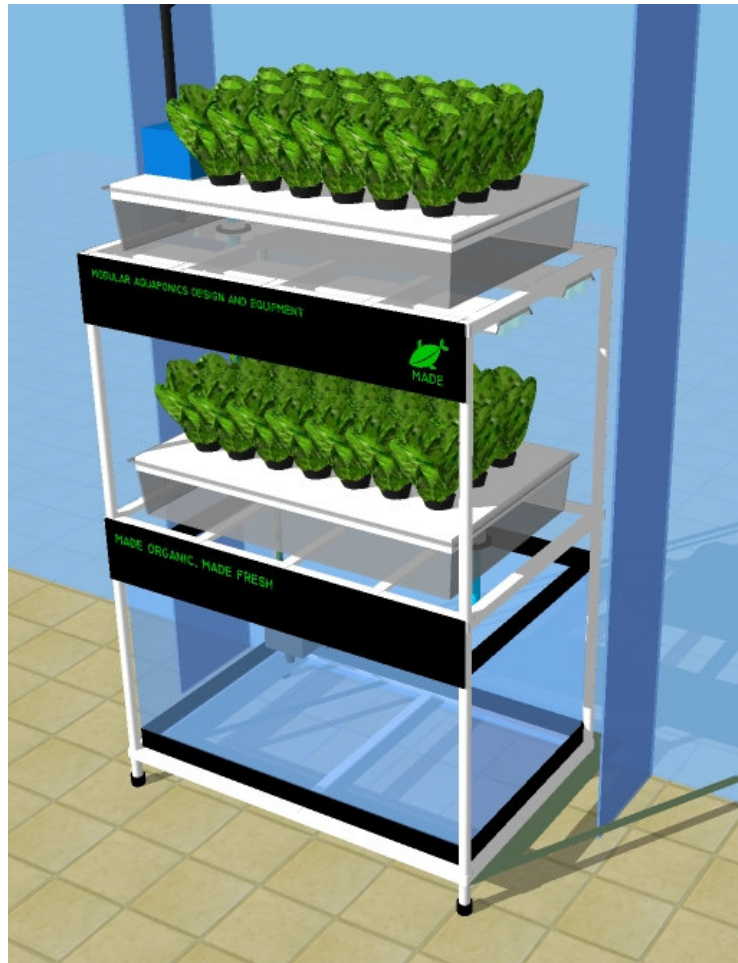
13. Turn on pump to cycle the water.

14. Place fish and plants to the aquaponics system

15. Now you have your aquaponics system running.



## Aquarium Aquaponics System





## Bill of Materials

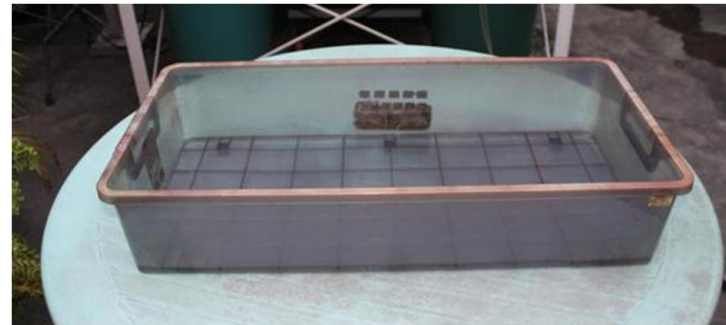
1. Aquarium – 35 gallons



2. Custom made aquarium stand



3. Plastic Trays – 2pcs – will serve as growbed



4. Aquarium pump with 2 meters head capacity



## Bill of Materials (continued)

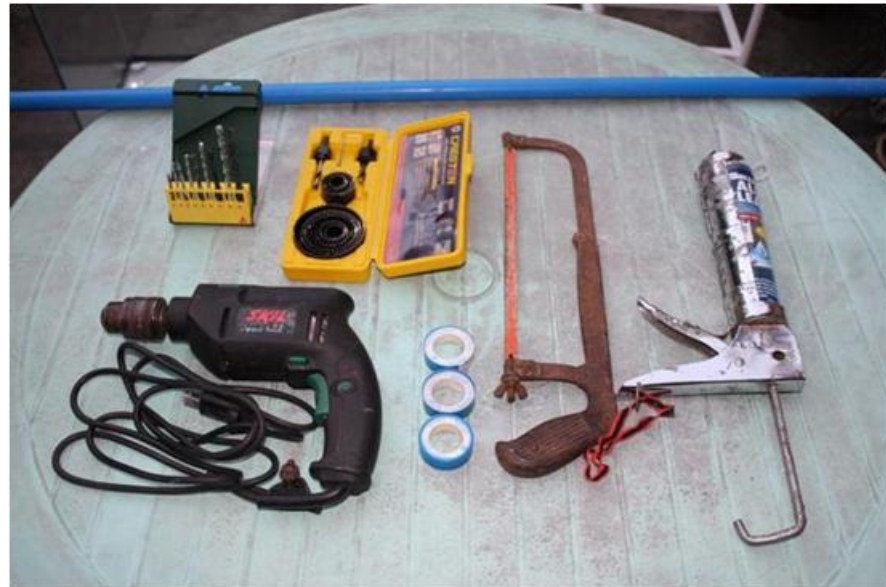
5. Hose – ½ inch



6. Fittings: 4pcs male adaptor 1 inch  
2pcs elbow 1 inch  
2 pcs bulk head fitting 1inch



7. PVC 1 inch diameter  
8. Drill, hole saw, hacksaw, teflon tape, and silicone



## Bill of Materials (continued)

### 9. Filter housing and filter media



### 10. Styro



### 11. Net pots with media (can be hydroton, pumice, or vermiculite)



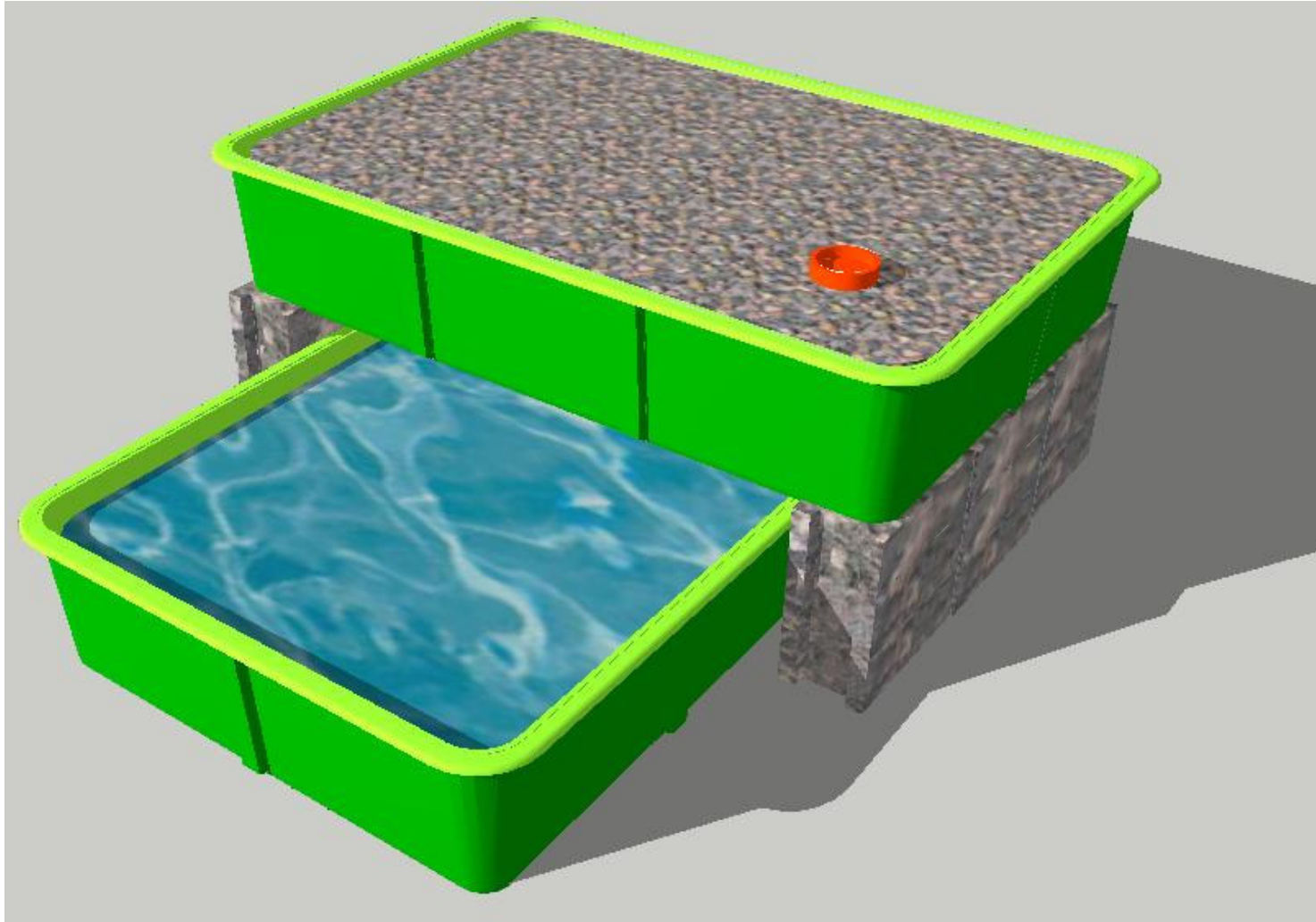




# MADE BASIC SYSTEMS

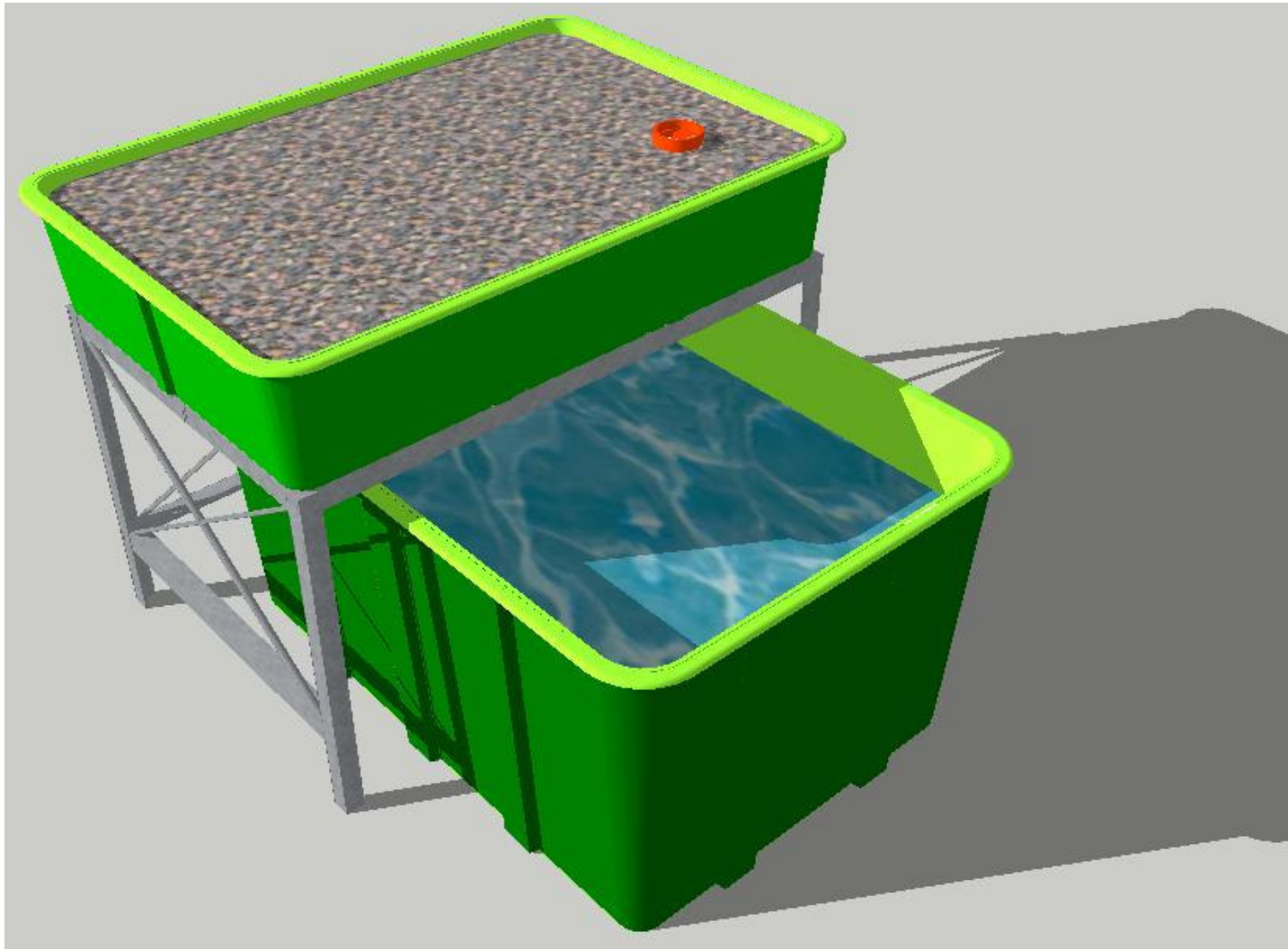


## MADE Starter Kit





## MADE Home Kit

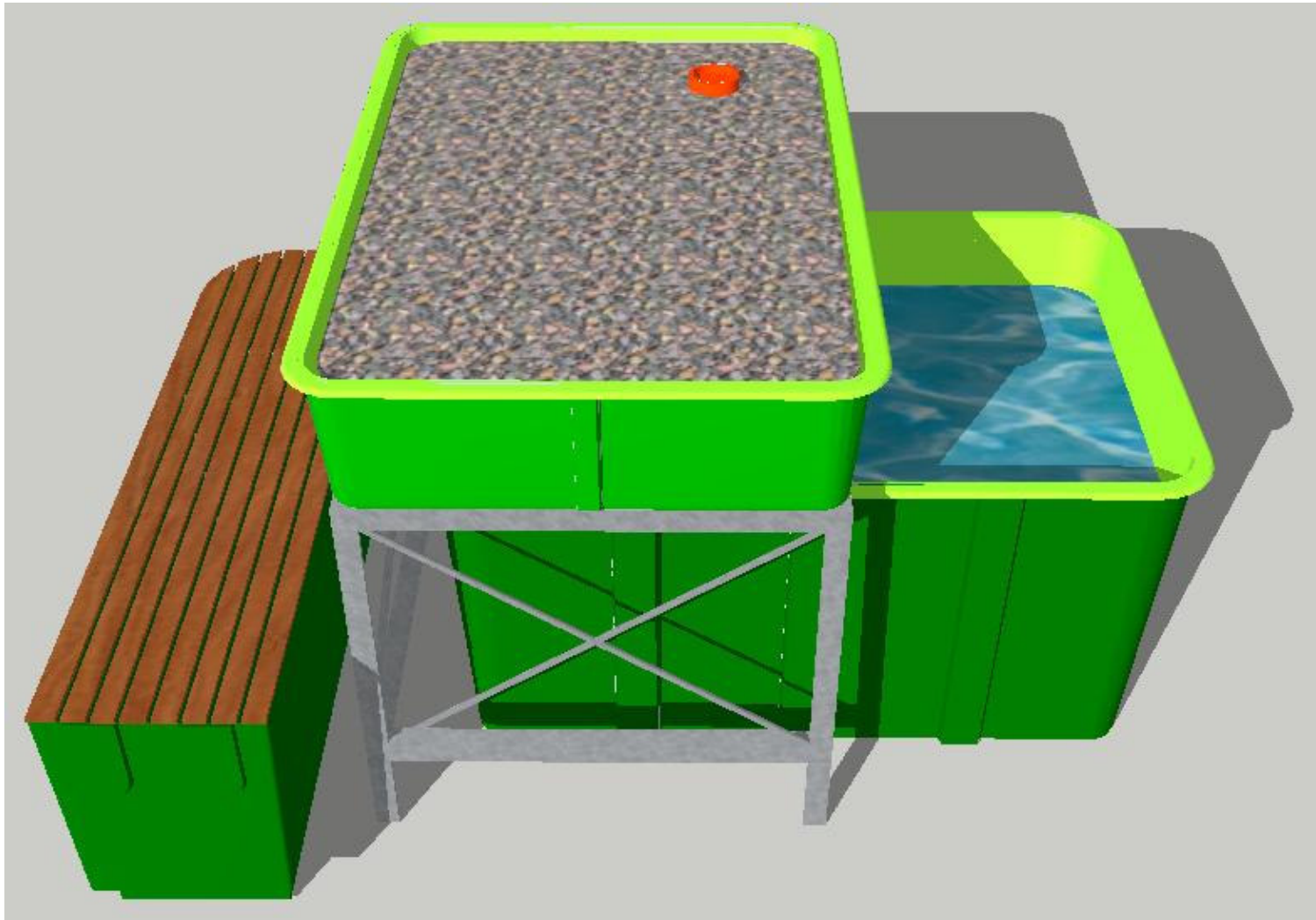




# MADE GROWING SYSTEMS

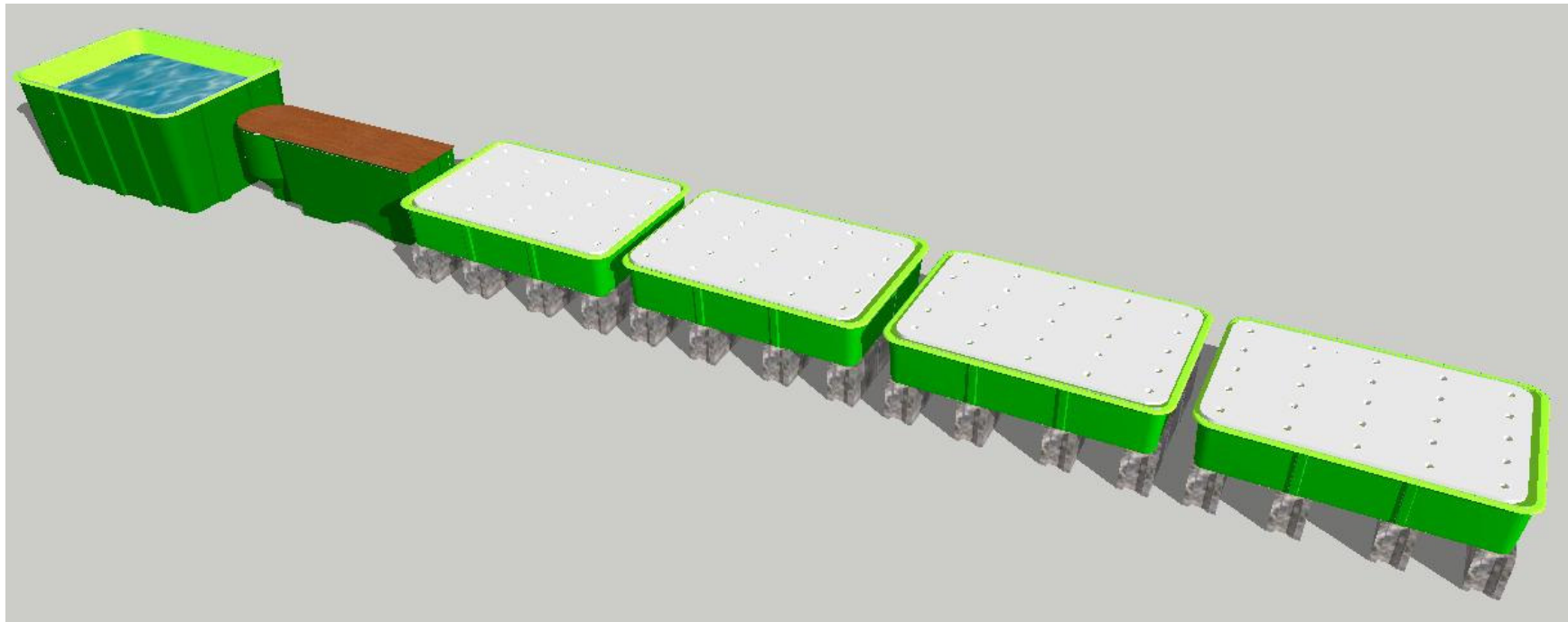


## MADE Home Kit PLUS





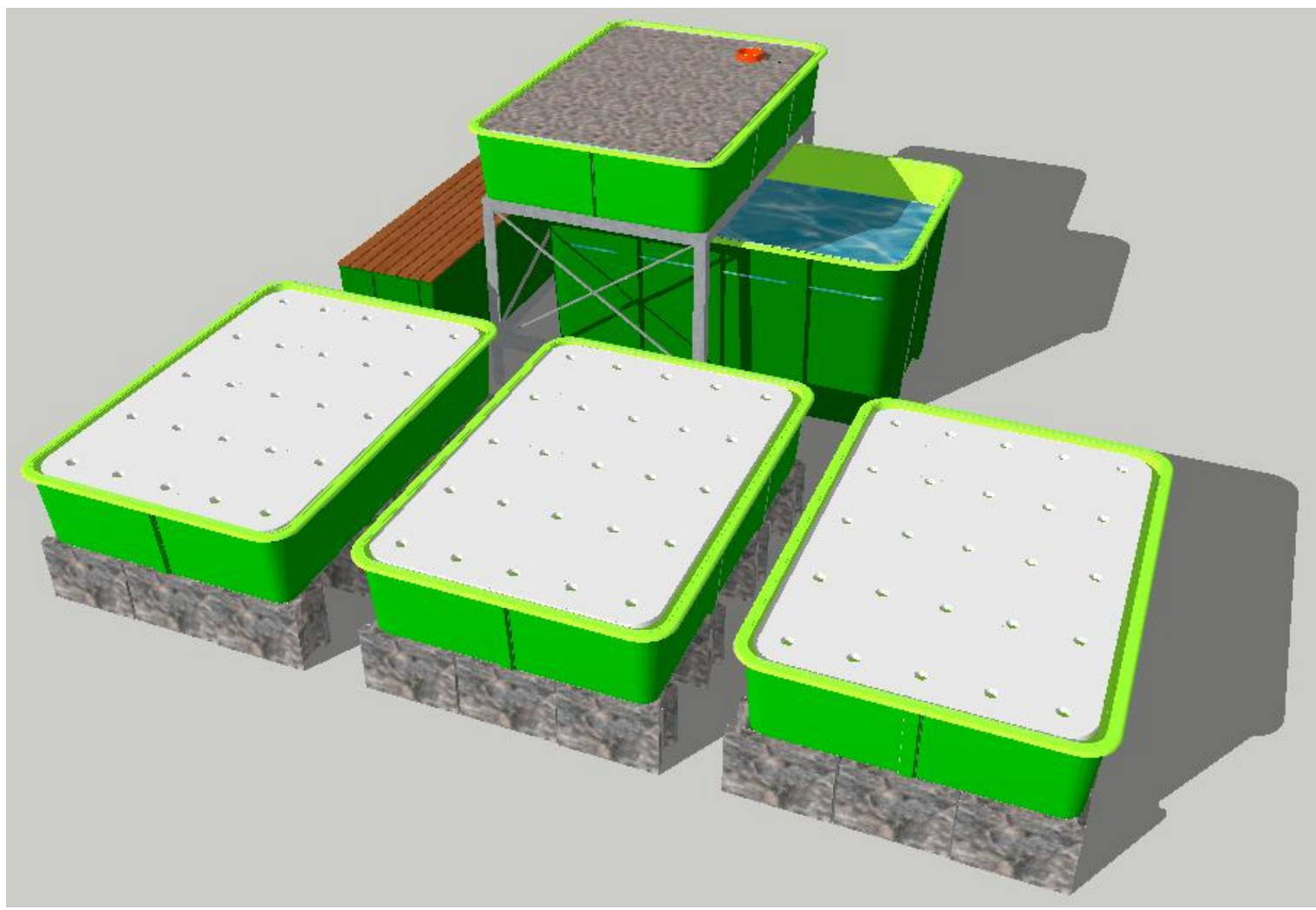
## MADE Floating Raft System







# MADE Integrated System





# OUR GROWING SYSTEMS



## MADE Cascade System

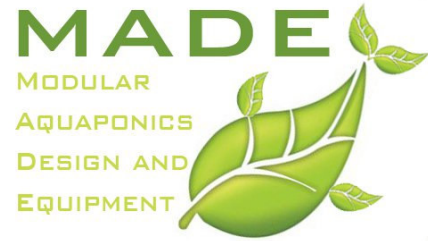






## Elevated Modular Aquaponics Design (EMAD)

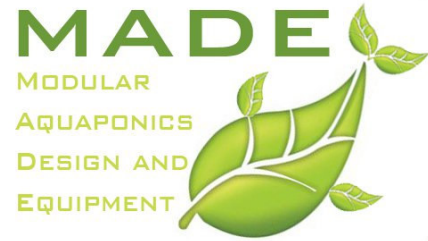




## MADE Lateral Integrated System (LIS)







## MADE Ground Elevated Operating Recirculation Growing Eco System (GEORGE S)







GROW YOUR OWN FISH AND VEGETABLES  
RIGHT ON YOUR OWN BACKYARD!

MADE FRESH,  
MADE HEALTHY!



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