



THE OHIO STATE UNIVERSITY

COLLEGE OF FOOD, AGRICULTURAL,
AND ENVIRONMENTAL SCIENCES

Barrelponics

Construction/Workflow



Barrelponics





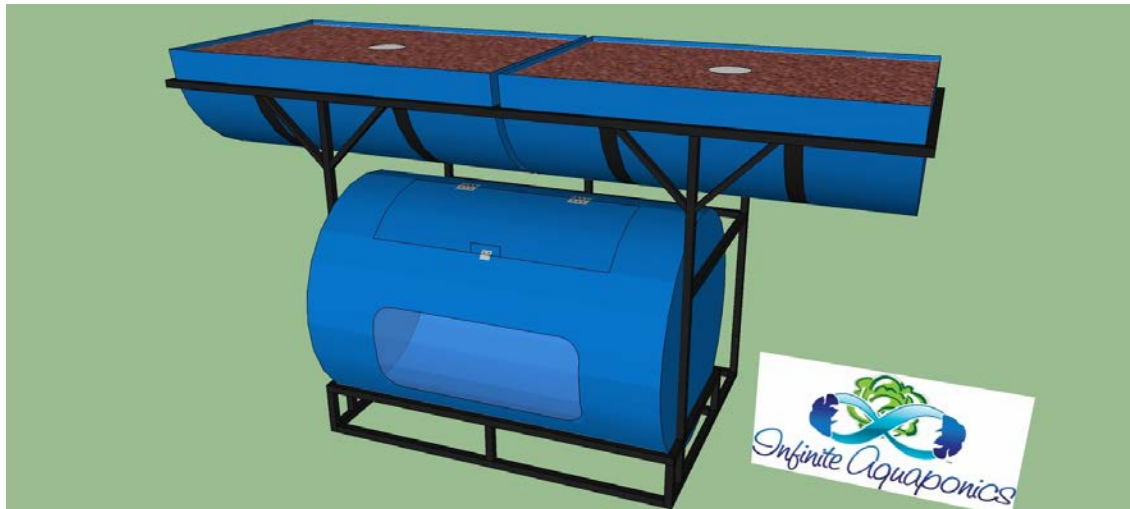
System Startup Checklist

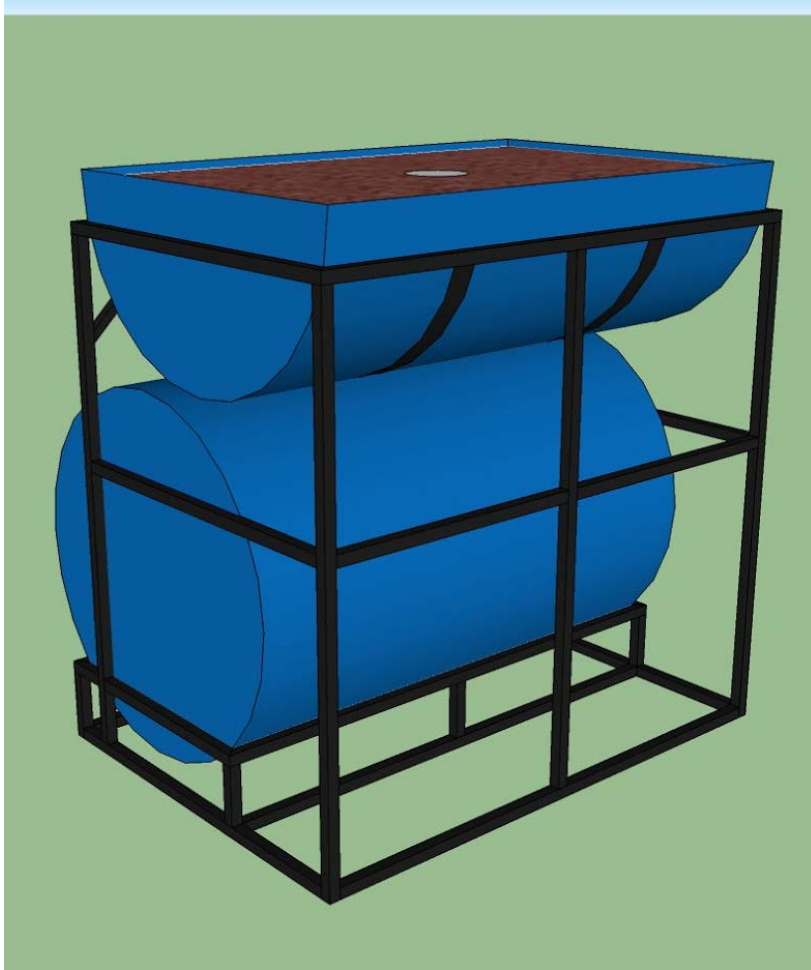
1. Decide on type and size of system to build
2. Draw designs, research where to get parts, plan
3. Buy and assemble components
4. Start plants from seed or find source for seedlings
5. Fill system with water and circulate (at least a week)
6. Add plants to system and watch them grow
7. Monitor water quality, partial water changes as needed
8. Maintain system



Barrel Designs







DIY Barrel system

- 1 barrel for fish on bottom
- 1/2 barrel for plants on top



Supplies

- 2 Barrels
- air pump with stone for fish
- water pump w/ hose to reach top of barrel
- 1 inch bulkhead fitting 2- 1 inch threaded pvc female to screw into bulkhead
- 2 =1 inch elbows
- approximately 12 inches of 1 inch pvc pipe
- approximately 1 foot of 4 inch pvc to go around siphon to keep media out of siphon
- media for fill of half barrel
- stand to hold barrel halves(stand needs to have 4 legs with a shelf or a lip to hold top half of barrel) legs need to be tall enough for access to fish



1. Cut 1 barrel in
half for grow bed



2. Cut rectangular
hole in the 2nd
barrel for fish



Rinse barrels out!



3. Build stand to hold barrels
 - 2 by 4's
 - wheels



4. Drill a hole in top half barrel for bell siphon
 - 1 exit hole for water to drain back down into fish tank





5. Create your bell siphon

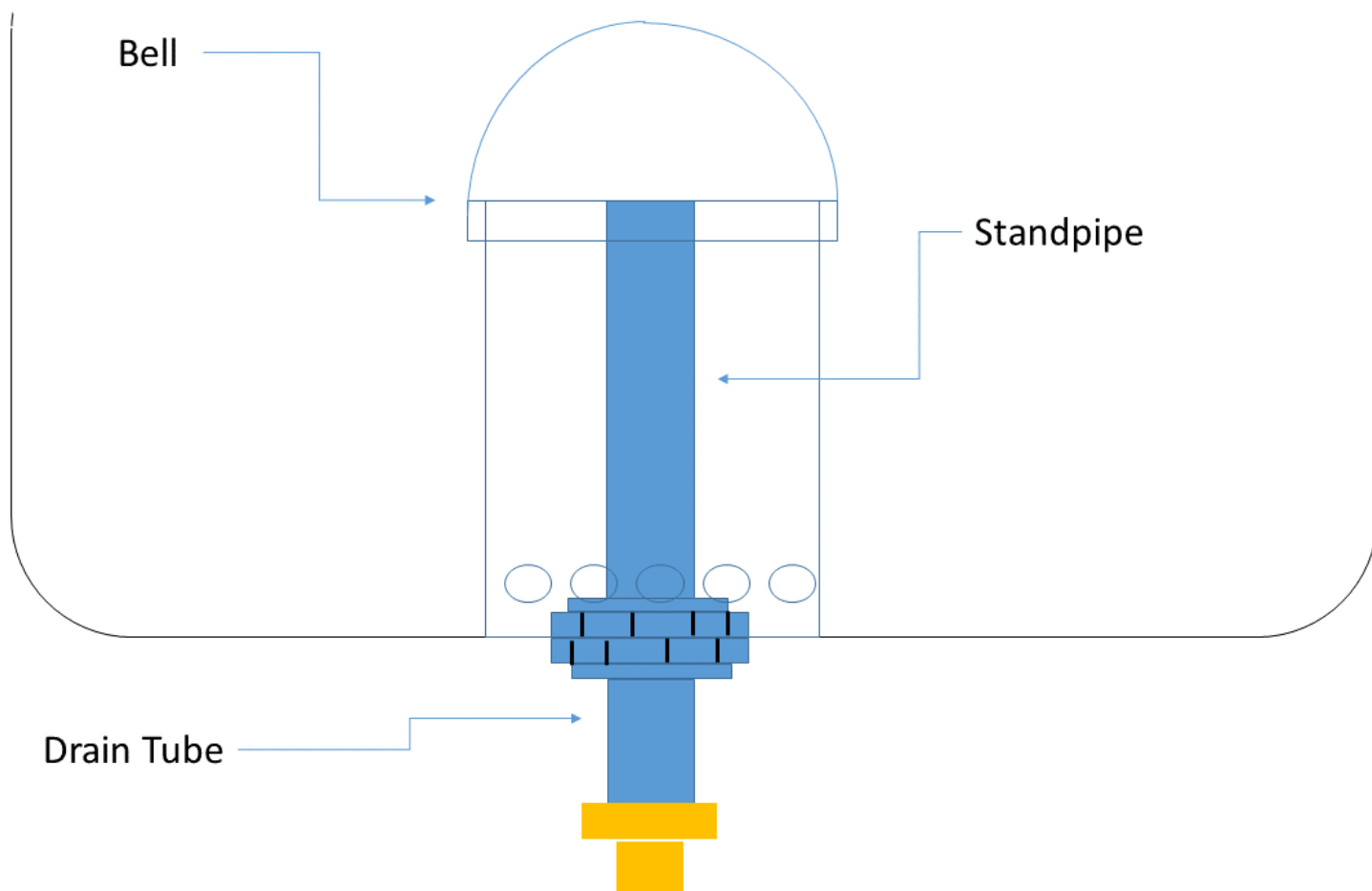


6. Connect pvc pipe to bottom of drain to reach fish tank below it





Bell Siphon





7. Fill bottom fish tank with water and insert aquarium pump with hose leading to top barrel



8. Wait for the tank to siphon a few times before continuing. Rinse media before adding to top barrel





9. Allow the system to run 1 week to allow bacteria to become established



10. Add fish and plants to the system

Total cost: \$150-\$200





Media System Calculations

- Ideal Grow bed volume to fish tank volume ratio
typically 2:1
 - Can go up to 3:1 or as low as 1:1
- Ideal grow bed depth is 12"
- How do you calculate the volume?
 - Determine cubic feet of the grow beds and fish tank (Length x width x height)
 - Convert to Gallons by multiplying cubic feet x 7.48
 - 1 cubic foot = 7.48 Gallons





General Fish Feeding

On average, fish eat about 1.5% of their body weight daily.

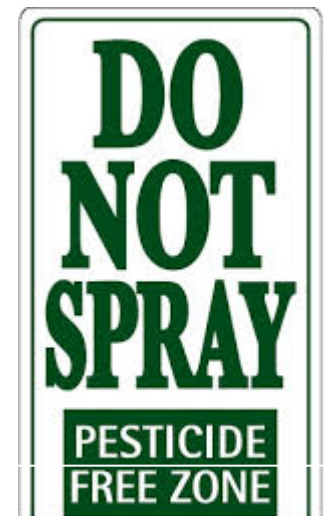
- If you have 75 lbs of fish in system, multiply 75lbs X
1.5% = 1.125lbs of fish feed daily
- If needed, convert lbs to grams (1lb = 454 grams)
- 1.125 lbs = 510 grams
- Don't just rely on the math. Observe your fish eating to help determine the proper amount of feed





Tips and Tricks

- Always wash your gravel media before putting in the system – otherwise you will get very cloudy dirty water
- Test the pH of the gravel media you want to use
- Use vitamin C and an air pump to bubble out chlorine and chloramine from tap water
- Use worms (red wigglers) in media beds to breakdown solids and reduce anaerobic zones
- Never use cleaning products, pesticides, algaecides, fertilizers or like substances in fish tanks or grow beds





Tips and Tricks

- If you get aphides on your plants – spray with diluted vinegar and water solution?
- Avoid direct sunlight on fish tanks, cover the top to avoid algae and make fish happy
- Never change more than 1/3 of water at a time. More than that will destroy the good bacteria in the system
- Cover outdoor plants during a frost, and shade from the scorching summer sun
- Make sure you have backup power available for pumps and aerators





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SYLVIA BERNSTEIN

AQUAPONIC GARDENING

A STEP-BY-STEP GUIDE to RAISING VEGETABLES and FISH TOGETHER



ANY QUESTIONS?

