



Make Your Own Aquaponic System!



LEARN ABOUT AQUAPONICS BY
DIVING IN HEAD-ON!

This do-it-yourself style walkthrough will talk about how you can start constructing your own aquaponic system, things to think about, and recommended equipment to get you started!

<http://strangeraquaponics.weebly.com>

Step 1... Plan Everything!

We mean it—plan out everything!

You're going to need to choose a tank size, the type of plants you want to grow, the aquatic species you plan to use, your pump type, your gravel type, and even what you put inside the tank! Unlike a normal aquatic tank, you won't need a filter or anything fancy beyond a pump; the plants naturally take up the costs of those other types of equipment! It is important to do research on what living species you include inside your tank system. For example, a beta fish is a decent

choice for a very small aquaponic system. However, you can only have one beta in each system because of the traits of the species. Think carefully about your species in retrospect to all other aspects!

Always try to aim to balance the fish waste to the plants.

What that means is: don't put too many fish with not enough plants, or vice versa. You can save yourself the trouble just by not planning it that way. The imbalance of one over the other will always result in harming one side of the system. However, do not expect your plan to be perfect! Aquaponics is a science, and all sciences leave a margin for error. If your balance was perfect but your tank still fails, try again! There is nothing more valuable than the learning experience you will get during this step!



Step 2... Gather Supplies!

You'll need certain supplies to get started.

1. **A fish tank**
2. **A water pump** (*The appropriate type depending on your tank size*)
3. **Water pump tubing** (*The appropriate type depending on your type of water pump*)
4. **Grow Bed**
5. **Grow Media**
6. **Aquarium/Pond Filter Floss (Optional)**
7. **Starter Bacteria (Optional)**

What is all this stuff and why do I need it?

To start an aquaponics system, you'll need most of this stuff to get started. Once you choose your tank size, whether it's 5 gallons or 350, you will need a water pump in order to create the critical water flow through your grow bed. Your water pump and tubing play that simple role—but be sure to get the appropriate type of pump and the tubing to go with it!

The grow bed is the tray or rack between the tank and fish and the plants. It can be created with a drilled-into plastic tray, a special type of cloth, or even a tray of individual compartments. What matters is that your grow bed is able to receive water flow from the tank to filter out the toxins in the waste that the fish produce without drowning the plants or going through the bed too quickly to filter it.

A grow media is essentially any type of particle intended for growing—even air can be considered a grow media! Typically, a type of large particle is used so that it is able to allow water to flow through it constantly without generating a large amount of buildup or harmful bacteria. Small particle medias are not typically appropriate for aquaponics, as they are more likely to get caught up in the stream of water, muddying up the water that the fish exist in. So avoid medias like soil, sand, and super fine gravel at all costs!

Filter floss is not a required item to have for your system; however, it is useful for catching large particles of fish waste, algae, and can be a feeding ground for composting worms—types of worms integrated into aquaponic systems in order to break down materials. If you have a larger tank and more heavy debris produced by the fish inside—as an example, goldfish are a type of fish that create excessive waste—it is a smart precaution to include filter loss to keep your tank a little bit cleaner.

The bacteria that aquaponic systems require in order to properly break down waste and turn it into useful material for the plants to consume requires the incubation of critical bacterias. However, this bacteria can take months and months to properly thrive. Because of this, it is always a good idea to consider getting starter bacteria when creating your system. It can help to ease the time it takes for these bacterias to fester.

Lastly, all plants need sunlight! However, if you live in a place with bad sun exposure, getting a UV light might be something you need to purchase without question. If not, then you're good to go to step 3!

Step 3... Construct your Grow Bed!



Your Growbed Comes First—Literally.

This is the first physical structure you will have to get working before all else. This includes your locational setup, your lights, your bed, your media, your plants, and your pump/tubing.

The most important thing to do when first getting your plants is to make sure they are all visibly making progress in growth. This is especially important when trying to grow certain crops from seeds: get them growing in a typical soil arrangement first—once they are clearly coming along in growth, it will be time to transport them to your official grow bed media.



Starting your Grow Bed...

Starting your grow bed first is an ideal step to take when getting further along in your aquaponic system. It's best to get it started because you can test to see if your pumps are working in your tank through the actual plant bed, as well as flushing out initial dirt that may have been on the grow media. Any debris will have time to sink to the bottom without affecting the fish, and you will be able to clean the tank as needed or learn if you need to choose a different grow medium. It's best to test it with your plants first because they aren't able to be shocked in the same way as fish are able to be!

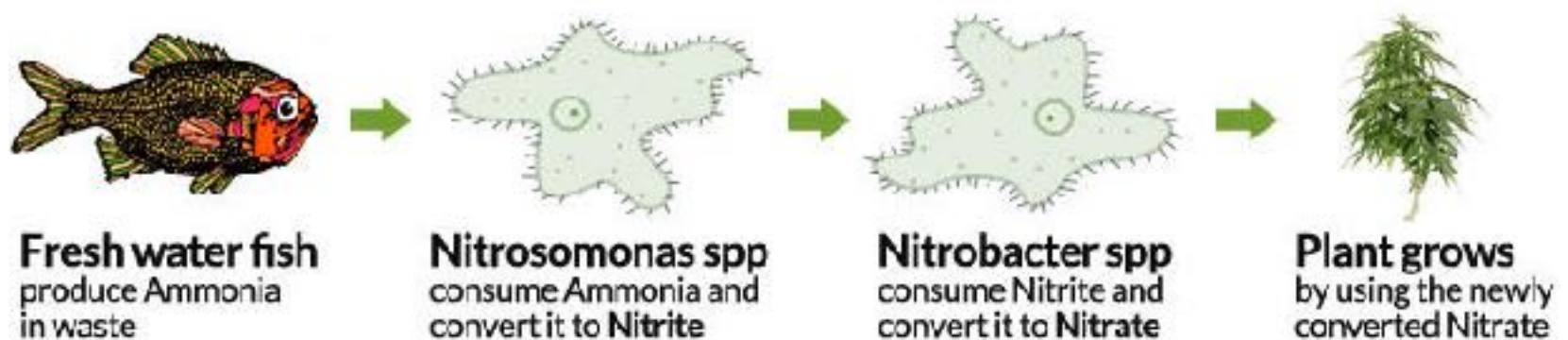
Step 4... Bacteria Matters!

Before You Think “Ew...”



Think about mother nature, and how mother nature naturally breaks things down to create new life! Aquaponics is no exception to the flow of nature—it is in fact a polished use of it. Bacteria lives inside us to break down materials, and our job when creating an aquaponic system is to make sure bacterias can thrive in a stable environment so they can allow our system to

The Benefits of Positive Bacteria:



- 1. Positive bacteria can help prevent bad bacterias from ever getting into the tank. Once one bacteria is settled, new bacterias are unable to take the fort.**
- 2. These bacterias are good with promoting surface health. They help break down organic material as well as aiding with tissue health.**
- 3. Good bacterias just can't leave bacterias alone—and it's to our benefit! Most good bacterias not only prevent bad bacterias from settling, but also are able to obliterate them completely.**
- 4. Good bacterias overall improve the nutrient uptake of the plants and their state of health. They are able to easily break down nutrients so that the plants can consume them, completing the process of cleaning the wastewater from the fish.**

Step 5... Ready! Set! Go!

Ready!

Once your tank is “ready”, and you have let your bacteria grow for at least a week and your plants start to be settled in the grow bed, you’re ready to “set”!

Set!

It’s time to “set” your tank! You will need to position your lights, start running your pump, make sure its timer is working properly, and test it multiple times to make sure that everything works the way it should. Position your bed so that water runs through it stably, as well as any other type of draining, and have it running for a little while to be sure that you are able to put your fish into a safe aquatic environment. At this point, your fish and your plants should be ready and accessible. Now, you’re ready to “go”!

Go!

Get this system running once and for all and put your new fish in the tank! Make sure you have an appropriate feeding system according to the species of fish you have chosen. Now that all the work is done, you’re able to relax, sit back, and watch the magic unfold! Your new, self-sustaining aquaponic requires nothing more than occasional sunlight, as well as occasional feeding (which in most cases, is nothing other than an enjoyable task!) Relax, and enjoy the experience as your new aquaponic tank provides you with the aesthetic of aquatic life and plant life side-by-side, and if you planted vegetables or herbs, prepare to have something sweet to snack on in no time!



Spread the Learning!

Aquaponics isn't just for kids, or just for big companies! Learning about aquaponics is for everyone!



Get Involved With Your Community.

Never be afraid of suggesting change! There are many ways to institute aquaponics in your local community. You can tell your neighbors about it, tell your science teacher, or even get involved in your local clubs and organizations!

Propose aquaponics to your neighborhood, plan a field day for kids to explore this topic, or create a system as a project for your local 4-H county club! No matter what you do,

For more information, please visit our website at: www.strangeraquaponics.weebly.com.

