

Here is a guide if you are interested in starting an aquaponics operation:

- Fish. Smyrna/Wingate decided on using tilapia because they are hardy, however, you can choose other variety. Take the extra step and buy from a local fish farm – Smyrna/Wingate bought some of their tilapia from Taylor Fish Farm in Cedar Grove, NC!
- Vegetable seedlings. Make sure to grow the produce that your community will want to eat! Smyrna/Wingate UMC conducted an informal survey to determine the produce their target population will want to purchase.
- Fish tank or container. You don't need something fancy to keep the fish alive and happy. Smyrna/Wingate UMC used an IBC 250-gallon container that was once a peanut oil container. Depending on the size of your aquaponics operation (and we suggest you start with one IBC container, you should be able to find something for free or for a reduced price!
- Aquarium gravel – can be found at most pet stores. The gravel will serve as a home to bacteria that converts ammonia (from the fish waste) to nitrite and ultimately to nitrate. Nitrate is what the plants use for nutrients!
- Aquaponics Bacteria start-up kit. You need to get Nitrobacter and Nitrosomonas bacteria to convert the Ammonia from the fish to nitrate for the plants.
- Water pump and tubing – this will allow the transport of water from the fish tank/container to the grow bed and back. Make sure you get the correct size pump to pump all the water (it depends on how large a system you choose).
- Grow bed and media– The grow bed can sit on top of the fish tank/container or in a separate location if you decide to build a plant bed. Grow beds can be made from styrofoam floating on water! Or you can use grow bed media is to hold the plant roots and retain moisture. Common examples of grow bed media are perlite, peat moss, and clay pebbles.
- Air pump – oxygen is necessary for fish and plants in just in water!

Extra materials:

- Waste tank – This is not required, but if you want to separate the fish and plants from fish solid waste, you can set up a filtration system that will allow you to do this.
- Water tank – Water loss can occur for a variety of reason from absorption, evapotranspiration by plants, to the removal of biomass (such as solid fish waste). Keeping an extra tank to source extra chlorine-free water can be beneficial!

Maintenance:

- . The fish need to be fed daily and the ammonia, nitrite, and nitrate levels need to be checked weekly at most.
- . The system needs to continuously flow and kept at a certain level of water in order to work effectively.