

WHY DO AQUAPONICS?

- You can grow local fish and vegetables indoors year-round.
- It is an efficient use of land and water.
- It's fun! You can observe three different mini-ecosystems in your home or classroom.
- It's educational! Learn about plants, fish, bacteria, and water quality.

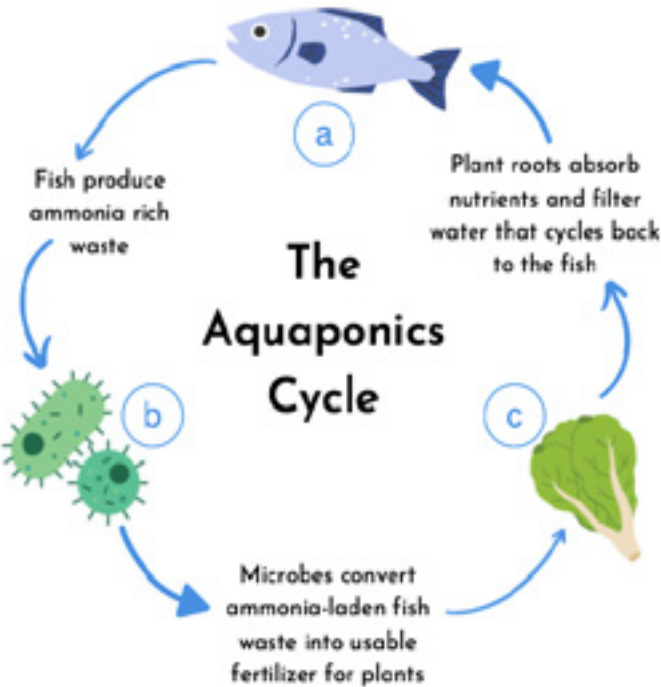


IS IT SAFE TO EAT?

Yes! For produce, cut off the roots, wash, and eat like any grocer's produce. Harvest and clean the fish the same way you would with a fish caught with hook and line. Restock from one of Vermont's many private fish hatcheries.

WHAT IS AQUAPONICS?

Aquaponics is a food production system that couples aquaculture (raising fish, crayfish, snails, shrimp, etc. in tanks) with hydroponics (growing plants in water). You build the system, feed fish, and provide light for plants to grow. The nutrient-rich water from the fish tanks feeds plants. You can eat both the produce and fish you grow year-round, even here in the Lake Champlain basin!



LEARN HOW TO BUILD YOUR OWN AQUAPONICS SYSTEM!



www.uvm.edu/seagrant/outreach/aquaculture



WHAT'S IN AN AQUAPONICS SYSTEM?

1. FISH TANK

The most obvious part of an aquaponics system! Choose the fish tank based on the final size and number of fish you want to grow. The tank can be made of glass or food grade plastic that has special drainage ports. The tank is where you feed the fish and introduce nutrients through fish food and fish waste.

2. CLARIFIER

In a clarifier, different filters strain out large and medium particles and fish waste. Particles settle in the clarifier and are removed later.

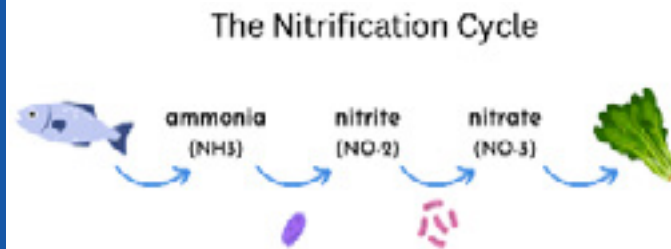
3. MINERALIZER

In the mineralizer, bacteria consume microparticles that escape the filters in the clarifier. Bacteria break these particles into even smaller pieces, releasing minerals that plants can absorb, like iron.

4. BIOFILTER

One of the most important and trickiest steps in aquaponics is converting the ammonia from fish poop to nitrate, a form of nitrogen that is bioavailable for plants. The biofilter houses this process.

Two different types of nitrifying bacteria that live in the biofilter are in charge of this conversion. One type of bacteria converts ammonia to nitrite and the other type of bacteria converts nitrite into nitrate, which plants can use.



5. SUMP

Water is stored in the sump before being pumped through the system again. Depending on your system, the sump can be the biofilter or it can be a different tank where the water goes when the power goes out. Usually it is the lowest point in the system.

6. PLANT BED

Plants grow in a plastic trough or tank, with or without artificial substrate. There are two main types of plant beds. 1. Nutrient Film Technique (NFT) systems use a film of moving water to support plants. 2. Deep Water Culture (DWC) uses a “bed” of water. Since the water is so nutrient dense, the plants don't need soil to grow.

7. GROW LIGHTS

Grow lights contain special bulbs that put out a spectrum of light that allow plants to grow indoors. Grow lights may look red, blue, white or yellow depending upon the plant part they are encouraging to grow. Grow lights allow plants to flourish even in northern winters.

8. UV FILTER AND OZONE GENERATOR

These advanced (optional) components purify the water after it leaves the plant beds. It is now ready to recirculate into the fish tank and start the cycle again.