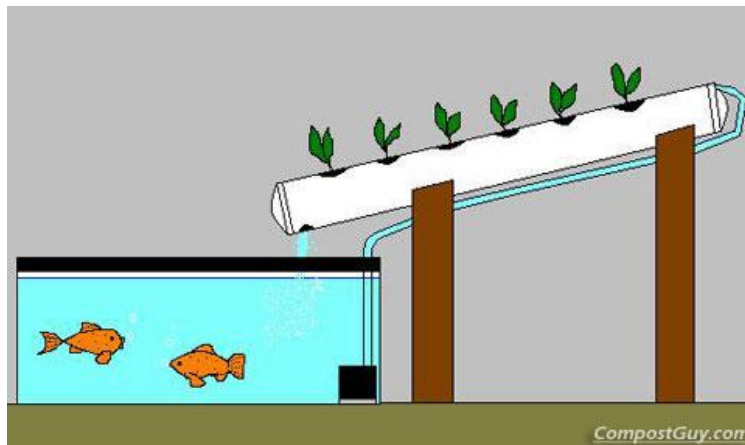


**“The Circle of Life”:
Bioponics**



<http://www.compostguy.com/images/aquarium-aquaponics.jpg>

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Ethiopia is what most people consider a third-world country, which simply means it's underdeveloped ("Ethiopia: General information," n.d.). As an underdeveloped country, Ethiopia has many problems, but the main concerns are starvation and food shortages. "More than 8 million people in Ethiopia are land locked into famine zones, and are heavily dependent on agriculture.... Nearly a third of the more than 65 million people living in Ethiopia live on less than \$1 per day" (Caldes, Caldes & Chusyd, n.d.). There must be something done about this problem. One part of the solution may be bioponics. Bioponics (which means life) combines hydroponics and aquaponics without expensive equipment, which is going to help grow more food because they go hand in hand. Although it is a generous gesture to donate food to Ethiopia and other third-world countries, it doesn't solve the problem. There is an old saying, "Give a man a fish, and he'll eat for a day. Teach a man to fish; he'll eat for life." The main idea is that if people give Ethiopia food, they'll eat for that day, but if people teach them how to grow food, they'll eat for life.

It's important to understand exactly what hydroponics and aquaponics are before learning about bioponics. Hydroponics is growing plants without the use of soil. Hydroponics sounds like a very complicated process and sometimes is, but it doesn't have to be. Hydroponics can be incredibly easy and as simple as growing any other plant. It can be as elementary as growing a plant in a hand-watered bucket or pot, using a variety of "inert growing mediums." Hydroponics can even be done in your own home. "The average home hydroponic system usually consists of a few basic parts: a growing tray, a reservoir, a submersible pump to water the plants, a simple timer and an air pump and air stone to oxygenate the nutrient solution" ("How complicated is hydroponic gardening?," 2008). Like for

growing all other plants, light is a necessity. Hydroponics sounds nice because it's easy, has cheap installation, is not a lot of work, and has low upkeep. There is a major down side, though; hydroponics requires hydro-soluble fertilizers, and this is where aquaponics plays a part.

Aquaponics is also a simple process. It's the process of using plants and animals in a "recalculating" environment (Diver, 2006). Tilapia is a popular fish for aquaculture because it is a disease-resistant, warm-water fish native to Africa and the Middle East, and they "tolerate low oxygen and poor water conditions that would kill most fish" (Yarrow, 1997). In aquaponics, the nutrients from the fish manure fertilize the hydroponic plants. Aquaponics is better for the fish because the plant roots and "rhizobacteria" found in the water take away the nutrients from the fish. The nutrient material such as fish waste, algae, or decomposing food, usually creates unsafe toxic levels. In this case, it does the opposite and is used as fertilizer to the hydroponic plants (Diver, 2006).

Bioponics is the process of using the techniques from hydroponics and aquaponics, but instead of using nutrient solutions, the natural nutrients in fish effluent (waste) is used instead. Bioponics is the process of using fish manure as food for the hydroponic plants, and the best part about it there is no need for complicated technology and expensive machines. Plants used the nutrients produced by fish water, and the plants clean the water for the fish (Yarrow, 1997). Hydroponics and aquaponics work hand in hand to make one big system. Bioponic techniques will most likely be used all over the world to increase the production of food (Diver, 2006).

Ethiopia, as a third-world country, has many problems. The main concern is starvation and food shortages. This problem might be at least partially solved with hydroponics and

aquaponics combined, which is called bioponics. People may suggest using hydroponics or aquaponics but not both. By using both, people can get better results. The entire process is amazing, from growing food in water without soil to using fish waste to fertilize the plants. Giving Ethiopia food only solves the problem for a moment, but if they use bioponics to grow food, they could possibly have food forever. This problem can't be ignored because people are starving to death, and something has to be done about it. There is no need for people to go hungry when they can be fed with natural resources. Something must be done quickly because time is not waiting, and every day that we wait, another person starves. Bioponics is a safe and cost-efficient way to feed Ethiopia and other underdeveloped countries by using the circle of life.

References

Caldes, D., Caldes R., & Chusyd, D. (n.d.). Ethiopia: Starvation looms again. *plaza.ufl.edu*.

Retrieved from <http://plaza.ufl.edu/rc916/>

Diver, S. (2006). Aquaponics: Integration of hydroponics with aquaculture. *National*

Sustainable Agricultural Information Service. Retrieved from

<http://attra.ncat.org/attra-pub/aquaponic.html>

Ethiopia: General information (n.d.). *Food and Agricultural Organization of the United*

Nations. Retrieved from

<http://www.fao.org/countryprofiles/index.asp?lang=en&iso3=ETH>

How complicated is hydroponic gardening? (2008). *Simply Hydroponics and Organics*.

Retrieved from <http://www.simplyhydro.com/whatis.htm#answer05>

Rakocy, J., Masser M., & Losordo T. (2006). Aquaponics. *Reference.com*. Retrieved from

<http://www.reference.com/browse/Aquaponics>

Yarrow, D. (1997). Bioponics: Revolution growing food. *Carbon-Negative Network*.

Retrieved from <http://www.carbon-negative.us/soil/bioponics.htm>

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