

Nano Farm Fish Hatchery

Kaoma, Zambia, Africa

Spring 2017

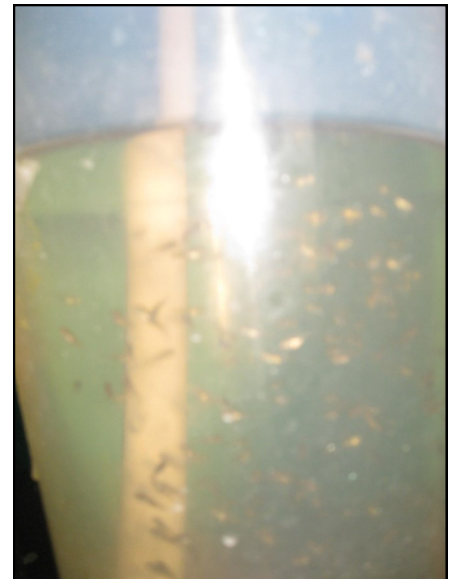
In January of 2017, we completed the construction of a fish hatchery. The building is divided into two rooms. One is an office for record keeping and instruction of students who come to learn about raising fish. There is also a futon in this room in case there is a need for the worker to remain over night to control the flow and the temperature of the water. The other room is where the fish eggs are incubated and hatched.



We are raising male tilapia. One of our ponds contains about 150 adult male and female fish. These will be kept as breeders. After the eggs are laid in a nest, the female tilapia incubates them by taking them in her mouth where they ordinarily remain for 14 days before hatching. However, our fish are checked every four days to see if they are carrying fertilized eggs. This is determined by forcing the fish to open her mouth. The eggs are ready to remove from the mother if they are a dark orange color, like the yoke of an egg. The eggs are placed in a plastic jar where water is in constant motion to replicate the mother's mouth.

We use solar power with an inverter that switches the current to electricity if there is insufficient sun to produce solar energy. This power controls the temperature and the circulation of water. The temperature of the water is monitored, remaining between 22 and 30 degrees C. There is a long tank of water below the jars. Water flows from this tank to a pipe above the jars and then into each of the jars. When there are eggs and/or fry in the jars, a valve is opened allowing more water to enter the jar. This keeps the water circulating, replicating the mother's mouth.

In four days, the eggs hatch and the fry (baby fish) feed on yoke attached to the underside of their bodies. When the yoke is totally consumed, they swim to an opening where a rubber tube is attached. Swimming down through the tube they enter the basin below from which they are removed and placed in a holding tank.





Because we want to have all male fish, as they can grow larger, the fish are fed a hormone for twenty-one days. This causes a sex reversal.

We are also making our own fish feed, which is much more nutritious and also much less expensive.

The water for the hatchery is pumped from the fishponds into a reservoir so there will always be an adequate supply of water for the hatchery. Using solar energy, the water is pumped from the reservoir to a nearby water tank and from there to a tank near the hatchery on the opposite side of the ponds.

Our next project will be to assist some local people to open their own fishponds. They must have access to water from a stream, river or spring. Mr. Musonda, fishery officer, will provide education for digging the pond and care of the fish. Using money from the Redmond Loan Fund, we will provide piping, if necessary, fish, feed and instruction on how to protect their ponds from theft. The fish farmer should be able to raise sufficient fish to feed their family and to sell. They will then repay the Loan Fund for the assistance they received.

Outside the hatchery are five concrete holding ponds for additional batches of fry. Once they are large enough, they are placed in the larger ponds. We harvest some of the fish when they are about five inches long. Many of the poor like small fish so each member of the family can have one on their plate. We will allow other fish to grow larger to use as breeders or to sell to those who prefer the larger fish. With this new system, we anticipate a booming market for our fish.

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