

>> fastfacts: tilapia fish farming at kesho leo

- >> **At Kesho Leo we have tilapia, a freshwater fish species that is hardy and easy to farm in relatively small ponds. This makes it a perfect choice for farming families in our area. Tilapia are omnivorous, but the species we are farming (*Oreochromis nyoticus*, Nile tilapia) feeds primarily on phytoplankton and algae.**

In order for plankton and algae to grow well in our fish ponds, we need only to provide high nutrient levels in the water – which we are doing by regularly adding farmyard manure. The ponds also need to be in full sun to allow the algae and plankton to photosynthesize and grow. Apart from this, our tilapia require no additional food, so they are an extremely cheap and easy source of protein for families with little income.

our ponds

Our ponds are approximately 10m wide and 15m long with a deep end of 1.5m and a shallow end around 50cm. Tilapia don't require deep water, in fact they prefer the shallows and need warmish water to breed. Also, bigger is not necessarily better when it comes to the size of the ponds. Several small to medium sized ponds will be far easier to maintain and harvest from than a really large one. The bottom of the pond should be sloped between the deep and shallow ends. Our two ponds were dug entirely by hand.

To prepare the ponds, we covered the bottom and sides of each with a layer of manure about 20cm deep. This not only helps to seal the bottom of the ponds, but also provides the first nutrient boost when the ponds are filled with water. We installed an inlet pipe and an overflow to ensure that we could control water levels during all seasons. These were covered in fibre mesh to prevent our lil' fish from escaping.





our ponds (continued...)

In one corner of each pond there is a net or fence to hold future applications of manure. This allows nutrients to disperse into the water while solids stay in one place for easy removal when a new batch is added.

Tilapia can be stocked at a rate of two per square metre of surface area, but we decided to start with 200 fingerlings per pond. After four months we had our first harvest, taking 60 fish and cooking them for all our workers and mamas as a celebration. We are harvesting small numbers of fish regularly, which will maintain numbers and ensure that the ponds don't become overcrowded (in overcrowded ponds, tilapia rarely grow to table-size).

Alternatively, it is possible to manage ponds by doing a complete harvest every five or six months. Keeping fingerlings aside to put back, the ponds should be completely emptied and allowed to dry out before starting again. This way it is possible to sell excess fish for profit, and start the cycle again.

the benefits of small scale fish farming:

- > Low set-up cost, no need for expensive equipment or machinery
- > Very low ongoing costs, providing there is enough manure to keep water fertilised. Tilapia are opportunistic feeders, so it is also possible to add table scraps, garden waste or mill sweepings to keep them happy and growing (keep in mind that you will be eating the fish – so while they will eat a wide variety of foods, it's important not to use the pond as a dumping ground!)
- > Minimal maintenance aside from regularly adding manure
- > Tilapia are an excellent source of protein and omega-3 fatty acids
- > Fish ponds make good use of manure from farm animals – converting it into protein via the ponds
- > Ponds can be used as water storage for irrigating a vegetable garden during the dry season (we use a simple manual pump with mesh covering the pump inlet pipe)
- > Nutrient rich water is an excellent liquid fertiliser to use on fruit trees
- > Overflow from the fish ponds can be utilised in the farm to grow other food such as sugar cane, bananas, etc.
- > Fish ponds and ducks can be paired together: the ducks aerate the ponds as they swim and add fertility through their droppings, while the margins of the pond create foraging areas for the ducks. They can feed on frogs, tadpoles, insects, and aquatic plants, getting up to 50% of all their food. One pond has the potential to provide eggs, meat and fish at very little cost. (Stay tuned, as we are in the process of setting up a system like this at Kesho Leo!)

