

The Tomatofish

In times of a rapid growing world population combined with an increasing request for high quality food in developing countries it becomes urged to find new ways to produce our food. The current production of food affects our climate and leads to shortage of resources like drinking water and the loss of biodiversity as soil fertility. Smart combined production cycles where the used substances are being recirculated are the future. A great example for this is the "Tomatofish" project. It combines fish and vegetable farming to conserve resources. The tilapia fish is an African fish and likes it the most in a pool with water temperature of 27°C. The tilapia and tomatoes are grown in one greenhouse. Both cycles are combined; the system is sustainable and generates compared to the conventional way of farming as good as no emissions. The fundamental principle is to reuse the ammonium produced by the metabolism of the fish. In high concentration ammonium is toxic for plants and fish, but with the help of bacteria it can be broken down to nitrate, which is a perfect fertilizer for plants. The plants absorb the nitrate-rich water through their roots and evaporate pure water via their leaves. This water vapor then condenses and the water can be fed back in the fish farm cycle. In this way water and fertilizer can be saved and the used water can be recycled. The benefit is obvious: The system can be used profitably in areas where there is little water, too. Moreover, certain types of fish like tilapia can largely be raised using vegetarian fish food unlike for example salmon, which is a carnivore. In conventional aquaculture fish are often fed with fishmeal pellets. The small fishes, from which the fishmeal is made of, are then no longer available for predators such as bigger fishes or birds. The sustainability in so many different fields is what makes this project so special.