

Mwitoko Fish Farm Project Empowers Fish Farmers in Vihiga and its Environs for Quality Fish and Sustainable and Profitable Aquaculture Businesses

County:	Vihiga		
Sector/s:	Agriculture	Sub-sector/Theme:	Aquaculture
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Authors	Jane Kimbwarata, KM Consultant, CoG Maarifa Centre Zipporah Muthama, CoG Legal Department		
Resource Persons	Wilson Munala, County Director of Fisheries, Vihiga County Macrae Mbalanya Olumula, Fisheries Officer, Mwitoko Fish Hatchery and Aquaculture Training Centre, Vihiga County		

Introduction (Context and Challenge):

Farmers in Vihiga had no source of certified fish fingerlings. They would get the fingerlings from distant hatcheries outside the County as well as from other uncertified sources. The Mwitoko Fish Farm project was started during the Economic Stimulus Program between 2009 and 2011 with only 10 earthen ponds at the time, to provide certified fingerlings to farmers in Vihiga.

The lack of a good source of quality fingerlings locally forced fish farmers to source them from distant areas such as the Dominion farm in Siaya. Some farmers were sharing poor quality fingerlings from their low performing ponds, leading to losses. Residents were also not getting quality fish locally, thus affecting food security and nutrition.

Implementation of the practice (Solution Path):

To solve the problem of quality and certified fingerlings, the County Government of Vihiga started the Mwitoko Fish Farm Project at Wemilabi Ward in Luanda Sub-county, Vihiga County and named it Mwitoko Hatchery and Aquaculture Training Centre, whose main mandate is to produce Nile tilapia and the African catfish fingerlings for farmers within and outside Vihiga County.

The project was implemented by the County Department of Agriculture with funds from the County Government of Vihiga. The farm was designed by Mr. Wilson Munala who is the current Director of Fisheries in Vihiga County.

Following a need to expand the fish farm to a modern aquaculture facility for better fingerlings and services, the facility was expanded between 2017 and 2019 under the second Vihiga County Integrated Development Plan (CIDP) guided by the Mwitoko Fish Farm five-year Development plan of 2017-2022. It was officially launched on 1st July 2019. This increased the capacity of the fish farm from 10 to 31 ponds which are used for the production of African catfish and tilapia fingerlings.

During this phase, several activities were undertaken, including:

- i. Re-designing of the water intake system, supply lines and drainage for an efficient and effective flow of the water through the farm.
- ii. Construction of more ponds to increase the capacity from 10 to 31 with 24 of the ponds being lined with the recommended PVC liners.
- iii. Stocking of the ponds with fish for multiplication and fingerling production.
- iv. Initiation of a Fish Farming Productivity Program (FFPP) in the County.
- v. Construction of sedimentation and water filtration ponds to clean the water at the exit point from the farm conforming to NEMA requirements. All the water exiting from the farm must go through these ponds for mechanical and biological filtration before being released back into the stream.
- vi. Construction of an indoor hatchery with increased capacity and facilities to handle a high volume of fingerlings during incubation and/or processing of the fingerlings for sale.

- vii. Construction of a high-capacity water reservoir tank for the hatchery.
- viii. Construction of a farm store and workshop.
- ix. Introduction of bamboo and other water-friendly trees on the farm as part of environmental protection, conservation and management. There is a riparian section of the farm on the upper part of the water intake through which the water flows from the source before reaching the weir.
- x. Improvement of the security of the farm through fencing with chain link mesh wire and installation of solar and electricity flood lights.
- xi. Landscaping and setting up a parking area for vehicles.

The farm has two types of ponds which are used for different stages in the production of fingerlings: 7 earthen ponds and 24 PVC-lined ponds.

In addition, the project established a standard weir (controlling the water that goes to the farm and a modern hatchery which currently handles a high capacity of fingerlings (about 50,000–100,000 fingerlings per month).

Artificial propagation of catfish and sex reversal (from female to male) of tilapia is done at the facility. Males are preferred as they feed less, and grow faster and bigger, hence ideal for commercial purposes.

Currently, apart from selling subsidized fingerlings, the farm offers training services, extension services, research and demonstrations and attachment/internship opportunities for students. The facility also serves as a link between the innovators (researchers and universities) and the end-users (farmers and the value-chain players) of the innovations/technologies. Some of these institutions include Maseno University, Moi University, Masinde Muliro University of Science and Technology (MMUST), Kaimosi Friends University College (KAFUCO), Bukura Agricultural College, AHITI, and Kisii University, among others. The farm further works with other key players within the aquaculture sector.

The farm is engaged in mentorship for school students to nurture aquaculture champions and also assists schools to establish aquaculture clubs. This is done through visits to the schools and school visits to the farm for practical demonstrations.

Although the farm operates with a skeleton staff, the technical staff is highly skilled in technical operations and works closely with other staff within the Directorate of Fisheries and the Department of Agriculture in Vihiga County and beyond.

The farm ensures sustainable production as solar power complements the main electricity in lighting the hatchery and the farm and the water naturally flows by gravity through the farm. This has helped to reduce operational costs at the farm.

Resource implications

Establishment of a fish farm such as the Mwitokho Fish Farm is a worthwhile venture. The Mwitokho Fish Farm project cost close to KSh 40 million (infrastructure and equipment). According to the Director of Fisheries, Counties wishing to replicate this initiative can invest KSh 25–50 million. With proper funding, such a project can take at least 2 years to complete. It may take more time depending on cash flow and other factors.

Sustainability

To sustain the farm, the County Government has plans to increase fingerling production and diversify services.

Sustainability plans include:

- Increasing fingerlings production from the current levels to about 1.2 million per year.
- Establishing an aquaculture training facility for farmers and students.
- Construction of an administration block, hostels to house trainees, staff houses, and conference facilities to handle the increasing demand for training and technical operations at the farm.

- Establishment of a library at the farm to serve the staff, County Government officers, trainees and the community.
- Introduction of a section to serve as a demonstration site for technologies such as aquaponics and increase the capacity for nursing from the fry¹ stage to the fingerling² stage.
- Offering other services such as demonstration of agricultural technologies, partnering with other organizations in research and development and on-farm trials.

Results of the practice (*outputs and outcomes*)

- Farmers now get quality and certified fingerlings at subsidized prices which has resulted in increased production and productivity.
- Better quality fingerlings sourced from the farm has contributed to better food security and improvement of the economy of the local communities. Currently, the fish farm supplies the fingerlings to five Counties, namely Vihiga, Kakamega, Siaya, Kisumu and Busia.
- There is an increasing number of farmers undertaking aquaculture as a business with high production capacity as a result of the Mwitoko Fish Farm.
- Creation of employment for members of the community who are engaged at the farm to perform various activities.
- The establishment of the farm in the area led to electricity being brought closer to the communities neighbouring the farm which in turn resulted in improved security within the area.
- The establishment of the fish farm at Mwitoko led to the opening up of the area with an improved and well-maintained road network.

Key activities undertaken that led to positive or negative results

- Sourcing of brood stock from accredited farms has resulted in the production of better-performing fingerlings for improved fish productivity and profitability.

¹ Fry: The first development stage of fish, after hatching. Has Less defined features and depends on the yolk during the first few days.

² Fingerling: The second stage in the development of fish after hatching. It has well defined features and larger in size.

- The farm has established a close working relationship with the farmers who are the major clients and the surrounding community for improved services.
- The employment of highly skilled technical staff at the farm has led to efficiency and assurance of quality for the fingerlings produced.
- There is a growing demand for Nile tilapia sex-reversed (monosex) fingerlings by farmers across the region because of their better performance compared to the mixed-sex variety.
- The uptake of catfish farming is low, although the number of farmers engaging in the production of catfish has begun to rise.

Lessons learnt:

What worked well

- Mwitoko Fish Hatchery and Aquaculture Training Centre is the largest County Government-owned facility in Kenya.
- The farm is very keen on the quality of fingerlings produced and only sources brood stock from government-certified facilities/suppliers such as Sagana Aquaculture Centre from where the current brood stock in use was sourced.
- Working with other hatcheries, development partners, research institutions as well as both government and non-governmental organizations has led to the creation of synergies in the improvement of food security through the aquaculture sector.

What did not work and why

- Insufficient human resource — currently there are 3 officers only — 2 technical and 1 support staff trained to carry out some of the tasks although plans are underway for the engagement of more staff by the County Government of Vihiga.
- Lack of transport (vans and motorbikes) to deliver the products to farmers.
- Lack of transport for staff who work at odd hours due to the nature of the job.
- Predators such as the Marabou Stock and Kingfishers.
- Change in weather, especially during the cold and rainy seasons, affects the production of fingerlings, leading to losses and/or reduced production.

- Heavy rains with hail stones often damage the PVC-lined ponds, necessitating frequent repairs.

Recommendations (Conclusion)

- It is important to establish a healthy working relationship between different actors and sectors of the economy as well as government institutions as they are all linked in the efforts towards achieving food security, improved nutrition and improvement of the economy at both community and national levels.

Further reading:

A list of references and source documents that give additional information on the best practice for those who may be interested in knowing how the results benefited the population can be provided.

1. <https://twitter.com/GovernorWKO>
2. **Vihiga county integrated development plan 2017-2022**
3. **Mwitoko fish farm five-year development plan: 2017-2022**



Arial view of Mwitoko Fish Farm



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Sharing Kenya's Devolution Solutions



Ground view of Mwitoko Fish Farm



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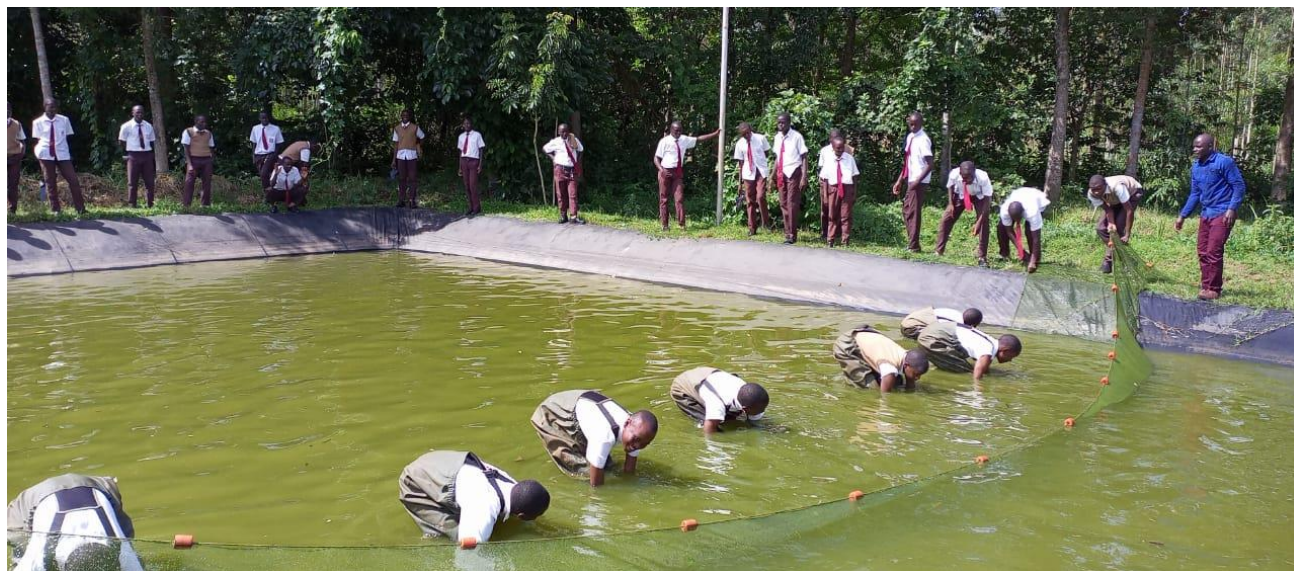
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Mwitokho Fish Farm employees showcasing 5kg catfish harvested from the farm



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Students taking part in a harvesting exercise as part of the school learning visit