New tilapia hatchery to boost fish production in Papua New Guinea

A shortage of fingerlings has been one of the major constraints limiting the growth of fish farming at Yonki in Papua New Guinea's Eastern Highlands. As a result, many farmers resort to the collection of wild fingerlings for stocking their farms. Unfortunately, these wild fish may have poor genetic quality and many farmers highlight that fish growth is slow. The Papua New Guinea National Fisheries Authority (NFA) and the Pacific Community (SPC), through the Sustainable Pacific Aquaculture Development project (PacAqua), have assisted ASK Sanctuary, an aquaculture enterprise at Yonki Dam, to develop a tilapia incubator hatchery.

Due to the high demand of fingerlings from cage and pond farmers, ASK Sanctuary has taken the initiative to meet these supply shortfalls. It is estimated that over 300,000 fingerlings are required to stock existing and new farms in the area. Mr Guna Yogomul, ASK Sanctuary General Manager, states that "In order to produce more fish, stock our own farm, and consistently supply fish to the market, ASK Sanctuary decided to invest in the incubator hatchery. We realised that in order for fish farming to grow in Yonki Dam, our hatchery will play a critical development role." The hatchery has a current capacity to produce around 240,000 fingerlings a year. Mr Yogomul intends to build more broodstock ponds to increase his fish egg production capacity. He also plans to start producing male-only fish as these fish grow faster and more uniformly. After testing the new system, a successful trial batch of 27,000 fry was produced and stocked into nursery *hapa* in September, followed by around 80,000 fry in early October 2019. Larger batches can now be produced with increased egg collection and handling of fry.

Some challenges faced by the enterprise include theft of brooder fish, limited on-site electricity production capacity of current solar system and batteries, and access to more broodstock to increase production and cash-flow limitations. In addition, breeding and growing tilapia outside the fish's optimum temperature also poses additional technical challenges. Optimal water temperature to grow tilapia ranges from 29°C to 31°C. The water temperature at the hatchery usually varies between 19°C and 23°C, thus slowing down egg development. A basic solar heat loop and additional insulation have been installed into the hatchery water system to raise the average temperature and improve its stability.

NFA and SPC have also assisted with the development of a tilapia farmer cluster at Yonki Dam. Farmers are able to purchase feed and cages from NFA, and NFA and SPC collaborate on identification and means to overcome other common constraints faced by the farmers. Under the PacAqua project, farmers registered under the Yonki cluster will also have access to nursery *hapa*s so that they can acquire fingerlings and rear them in the dam to a larger size suitable to stocking their cages. This will allow experienced farmers to have better control of their stocking and production cycles. It is envisioned that some farmers may also specialise in nursery rearing of fingerlings to supply cage farmers in future.

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Guna Yogomul (right) and Johua Noiney, of NFA, observe fish eggs held in the incubator hatchery. (image: Avinash Singh, SPC)