

Tablet-based data collection – a new vision for Vanuatu’s aquaculture sector

The Vanuatu Fisheries Department (VFD) considers information and communication technology, and data collection as the way forward in strengthening aquaculture development in Vanuatu. A recent two-day workshop was organised by Lucy Joy from VFD’s National Data Unit and aquaculture team to select a provider for tablet-based aquaculture data collection.

Vanuatu continues to struggle to find efficient ways of capturing coastal fisheries and aquaculture data, and to interpret them for fisheries management purposes. The philosophy of ‘quality data, good management’ is the reason why Vanuatu sees the need for improving its data collection. For many years now, Vanuatu has used paper forms for recording data and, most of the time, when the data forms reach VFD to be analysed, the management advice is no longer relevant. In other cases, the forms never reach the office and the data are lost.

In 2015, the Vanuatu Government made its first foray into electronic reporting. VFD, with the assistance of the Pacific Community (SPC) and some external donor partners, decided to implement the use of the SPC-produced Tails mobile app to record coastal fisheries production data. After this successful transition to electronic reporting, Vanuatu decided to further push for a tablet-based system to collect aquaculture data.

Vanuatu aquaculture sector

Aquaculture in Vanuatu is new and less developed than in some other Pacific Island countries, such as Fiji, French Polynesia, New Caledonia and Papua New Guinea. There are seven freshwater and marine commodities cultured in Vanuatu for the purposes of food security, sustainable livelihood, wild stock enhancement and resource management programmes, and entrepreneurial activities. The commodities include introduced freshwater prawn species (*Macrobrachium rosenbergii*), GIFT tilapia (*Oreochromis niloticus*), red tilapia (*Oreochromis* sp.), giant clams (*Tridacna* spp.), green snail (*Turbo marmoratus*), trochus (*Tectus niloticus*), and marine shrimp (*Litopenaeus stylirostri*).

Apart from marine shrimp culture by a large-scale operator, all aquaculture activities are operated at a small-scale, community-based level. This is being promoted and supported by VFD as an alternative food source, which helps support coastal resource management by decreasing fishing pressure on nearshore reefs.

Pacific Islanders rely heavily on marine products as a source of animal protein, and given the rapid population growth rate in the region, it is expected that to maintain the current level of protein intake per capita, an additional 115,000 tonnes of fish will be required in 2030 (Bell et al. 2011).

According to Gillett (2016), in the Pacific Islands region, inshore fisheries production (subsistence, commercial and freshwater) accounts for 15% of total marine and freshwater production in volume, with offshore fisheries accounting for 81% (the vast majority of which is exported to markets outside the region) and aquaculture production accounting for only 4%. While reserving a larger share of offshore production for domestic markets seems to be a logical solution to partially close the expected marine products gap, the development of the aquaculture sector should definitely have a role to play in the equation.

In Vanuatu, about 1,627 households and 200 farms are engaged in freshwater aquaculture, either for subsistence or semi-commercial purposes. The combined total annual production from these activities is estimated to be 10 tonnes, with an estimated value of VUV 6.2 million (USD 56,000). However, the absence of an established data collection system that could provide a more accurate picture at the farm level remains one of the key challenges faced by fisheries managers. Such a system would be very useful for prioritising aquaculture commodities that are of importance to farmers, taking into account the sustainability of markets, the cost of operations, the risks induced and the potential economic benefits. VFD has been looking for solutions to address this lack of aquaculture data issue.

Choosing the proper data collection system

Lucy Joy, Senior Data Officer at VFD, drove the process of selecting and assessing an appropriate solution for aquaculture data collection, and identifying potential vendors via a consultative workshop held in Port Vila with various aquaculture stakeholders. Lucy partnered with SPC aquaculture staff who provided scientific advice on the technology required, specific aquaculture expertise, and vendors’ assessment. Lucy recently spent one year with SPC’s Oceanic Fisheries Programme – Data Management Section as a Pacific Islander Junior Professional, which gave her the opportunity to gain a wealth of knowledge about database management. She developed skills in the area of tuna and other coastal fisheries data collection, management and dissemination, which were useful in the vendor assessment.

Mobile devices have become successful and widely used data collection tools. Following the success of the Tails



Vanuatu Fisheries Department officers Lucy Joy (left) and Lency Dick (middle) rolling out the Aquanetix system to the Onesua Presbyterian College fish farm, and providing training to the farm manager and college principal, Graham Kalmar.

app in Vanuatu, it was decided to adopt a cloud-based fish and shrimp farm software named Aquanetix because of its simplicity and user-friendliness. Aquanetix was designed to provide useful analytical information to the aquaculture industry and help improve farm productivity and profitability. It is efficient in that it assists farm managers in reducing production costs by improving their daily management operations (e.g. by calculating the exact amount of feed needed so that fish are not overfed or underfed). The system operates a friendly interface on a mobile app where some operations can be automatically performed by the app when the data are entered, and where it is possible to customise reporting. The system also provides quick insights for farm administrators through a web dashboard.

With this new tool, hatcheries and farms will have access to timely and updated information, a prerequisite to the proper management of their operations.

The rollout

VFD, with SPC's assistance, has provided digital tablets, with the Aquanetix app already installed, to its first farms operating at a semi-commercial scale, and will monitor and assess the results with a wider deployment planned at a later stage.

The Aquanetix system rollout targeted two pilot tilapia fish farms on the island of Efate: one is operated by the Onesua Presbyterian College located at the north end of Efate, and has two ponds with a carrying capacity of 1,500 juvenile fish (fry) each; the other one is the Vanuatu Fisheries Department hatchery and grow-out farm, situated outside of Port Vila, which consists of two ponds and a holding capacity of over 4,000 juvenile fish in total. The system was rolled out to the farms after a series of online training sessions organised by the Aquanetix system trainers for VFD aquaculture officers. Officers were trained in how to use both the mobile app and the webtool system. The trained officers then rolled out the tool to the two farms, and trained the farmers and feeders in charge of the fish farms in how to use the app for their daily operations. As an incentive to support the rollout, mobile credit top-ups are provided to the farmers on a monthly basis to support the cost of daily uploading data into the system. This will continue until the fish are ready to be harvested and sold.

VFD will continue to support the farms and assess the results collected from the initial rollouts with the aim of widening the deployment of the app to more farms in the coming months.

References

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For more information:

Sompert Gereva
Manager for Research and Aquaculture, VFD
sgereva@vanuatu.gov.vu

Lucy Joy
Senior Data Officer, VFD
ljoy@vanuatu.gov.vu