

Gender analysis of the aquaculture sector in Fiji: Community-based tilapia farms in Viti Levu

Prepared by the Pacific Community,
Women in Fisheries Network – Fiji and
the Ministry of Fisheries, Fiji.

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Introduction

It is widely recognised that development and governance processes will not be effective or sustainable until women and men participate in and benefit from such processes on a basis of both formal and substantive equality. Despite this, women continue to be marginalised and under-represented in all spheres of development – whether at community level or at policy-making level in all development sectors.

Society today is dependent on using all human resources efficiently to ensure political and development initiatives are successful. To do this, the experiences of both men and women are needed, taking into consideration the shared responsibilities and the need to acknowledge and address the power imbalances in any society. Gender mainstreaming aims to achieve this.

Definition of gender mainstreaming

...the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality.

(ECOSOC 1997).

Gender equality is a development goal for all SPC programmes and therefore is a component under the community aquaculture project¹ administered by SPC with support from the Australian Centre for International Agricultural Research (ACIAR). Gender mainstreaming is an approach utilised by SPC to achieve this goal. While the main thrust of the project is improved benefits to communities from aquaculture, it is appropriate to examine equity issues relating to gender. One of the project's goals is to ascertain the impacts that community aquaculture can have on household income, nutrition, and the status of women and children in Fiji, Samoa, Vanuatu and Kiribati.²

In efforts to bridge the gender divide and ensure that women are benefitting equitably from SPC-managed projects, this report was commissioned by SPC's FAME Division as part of the implementation of the ACIAR community-based aquaculture project for Fiji. Information gleaned from this study will be added to existing knowledge and understanding of how aquaculture is empowering the women in Fiji. This report will also inform and strengthen similar assessments that will be undertaken in other project countries, i.e. Samoa, Kiribati and Vanuatu, as well as the overall aquaculture programmes and projects in the Pacific to ensure equitable benefits for men and women.

Fish and fishing are fundamental elements of life in the Pacific; they contribute substantially to subsistence, market-based economies and cultures. In a region blessed with abundant marine resources and a long tradition of relying on fish for food, but with limited opportunities to earn an income, especially for women, it is important to understand how the fishery sector is contributing to women and men's subsistence and livelihoods.

Women play a pivotal role in coastal fisheries but formal studies relating to Pacific island fisheries and aquaculture sector are still lacking. It is imperative to understand and recognise the role women play in the fisheries sector, whether it be as fish farmers in community development inland fishing, coastal fishing or deep-sea fisheries, or as government fisheries officials, or as observers or seafarers on fishing boats.

The report directly supports the goals and strategies highlighted in the Fiji National Gender Policy, which sets out a number of objectives that, when achieved, will promote gender equality in Fiji. These include the removal of all forms of gender inequality and gender discrimination in Fiji and the promotion of active and visible gender mainstreaming in all sectors of government.

Methodology

This report uses a gender and development framework to analyse the gender perspectives in aquaculture farming in Viti Levu, Fiji. The gender analysis was conducted among community-based tilapia farmers in Viti Levu and took into consideration the gender roles in aquaculture farming, decision-making patterns, access and control over resources, and access to training opportunities. A further gender analysis of the farm types (modalities) was undertaken as gender dimensions across the modalities became apparent when the findings were analysed.

¹ Project FIS 2012-076 Improving Community-based aquaculture in Fiji, Kiribati, Samoa and Vanuatu

² Similar studies will be undertaken in Samoa, Vanuatu and Kiribati.

The fieldwork was undertaken in December 2016 over a period of ten working days. Interviews were held with individuals and groups across a number of farm modalities. Twelve interviews were conducted:

- committee run farm (male) – one interview;
- committee run farm (female) – two interviews;
- female headed households – two interviews;
- single male headed household – two interviews;
- family run or husband/wife team farms – four interviews; and
- one cluster group interview.

Interviews with men and women were conducted separately. Similarly, the interview with the male committee-run farm was held separately to the women. In this instance, two women were present at the meeting site to assist with food preparation. The interviewers took the opportunity to meet with them separately.

In addition to interviews with farmers, discussions were held with two Ministry of Fisheries staff and one member of the SPC Fisheries, Aquaculture and Marine Ecosystems (FAME) Division team. The findings of the field work were further discussed, validated and summarised in a one day workshop on 27 March 2017.

Gender analysis examines gender roles and relationships between men and women within and across interpersonal spheres, households and communities, and at provincial and national levels. It also considers the public and private spheres of people's lived experiences (Care 2012), and requires careful examination of these experiences, recognising the variables, such as socio-economic background, status in society and class. The analysis must also consider moving variables, such as the immediate context in which the analysis is undertaken. In the case of this study, Fiji had experienced the most devastating cyclone in history nine months prior to the field work and many communities were still in recovery mode.

The fieldwork for this study was only conducted on 12 tilapia farms in Viti Levu. As such, the data presented should not be used to make broad generalisations about the gender perspectives in the aquaculture sector in Fiji. However, this work can be looked at alongside other studies or analyses around women's role, participation, and access and control over resources in the aquaculture sector.

Gender analysis framework³



³ See Annex 2 for a sample guide of questions asked in the fieldwork.

Limitations

This report has its limitations. The exercise depended on the national government selection of farms; the farms chosen were known to the Ministry of Fisheries staff because they either received some form of technical assistance in the past from the Government of Fiji or the Pacific Community. Further, only 12 farms were visited around Viti Levu, a very small number compared to the number of active aquaculture farms on record. Currently there are approximately 500 tilapia farms in Fiji, with 303 in the Central Division, 129 in Western Division, 54 in the Northern Division and 18 in the Eastern Division. Secondly, this was a rapid appraisal to better understand the gender issues in the aquaculture industry in Fiji. The analysis was undertaken as a snapshot in time and feedback presents insights of the respondents' views and feelings at the time of the interview.

Gender and aquaculture in the Pacific

Aquaculture and inland fishery is relatively new in the Pacific. Gender research and studies looking into the gendered relations between men and women and how fish farming affects women is even more scarce. Research undertaken in coastal fisheries and the tuna fisheries supply chain in Solomon Islands, report that women are heavily involved in the value chain process; they constitute most of the workforce in the processing sector and make up half the community coastal fisheries supply chain. Further, Solomon Island women undertake well over half the subsistence catching and, increasingly, they fish to generate income through market activities.⁴ Despite this, their roles are under-acknowledged.

There is limited research undertaken in the Pacific region on inland and aquaculture fishery. Studies conducted in Solomon Islands, however, reveal that shrimps, milkfish, beche-de-mer, hard and soft corals, tilapia and seaweed are some of the aquaculture products (Gillet 2009).

Fiji has a long history of aquaculture development initiatives. The main commodities that are currently flourishing in Fiji are seaweed, pearls, marine shrimp, milkfish, giant clams, cultured coral and live rock, tilapia, carp, and giant river prawn. Most of the seaweed farming has been concentrated around the Lau Group. For pearls, farms are concentrated around Savusavu and Taveuni on the southern coast of Vanua Levu and around Rakiraki on the north coast of Viti Levu. Milkfish farming is undertaken by the community of Vitawa in the Western Division, based on wild seed collection and culturing fish in earthen ponds. Giant clams are produced from the government hatchery in Makogai for restocking purposes, as well as the aquarium trade industry. Tilapia and prawns are farmed by more than 300 farmers, mainly in the Central and Western Division. Production is largely underpinned by the freshwater hatchery in Naduruloulou, where the hatchery role includes supply of seeds to the farmers and maintaining a broodstock for seed production. Given the increasing demand for seed, the Ministry of Fisheries established a new multi-species hatchery in Caboni in Ra in the Western Division in 2014. The ministry has the following key hatchery infrastructure that supports aquaculture development in Fiji and to a certain extent the Pacific as well: (i) Naduruloulou Research Station, which supplies broodstock and seeds to farmers for freshwater species; (ii) Galoa hatchery, which focuses on marine species such as shrimps and sea cucumber; (iii) Caboni multi-species hatchery in Ra, which is concentrating on freshwater seed production, currently focusing on tilapia; and (iv) Makogai hatchery, which focuses on giant clam seed production for restocking.

⁴ See: Barclay, Payne and Mauli, 2015. *Gender, fisher, trader, processor: Towards gender equitable fisheries management and development in the Solomon Islands*.

In Fiji, this industry is facing a number of challenges. Interviews with Fiji Ministry of Fisheries staff reveal that land issues is one of the barriers to Fiji citizens accessing government technical assistance in setting up an aquaculture project. Under the Fiji Government tilapia schemes, assistance of the Ministry of Fisheries to start up a tilapia farm can only be sought if a number of criteria are met. A request letter must be sent to the ministry, along with proof of land ownership via freehold land or agriculture lease. If the land is owned by a *mataqali*, at least 75% of the members of the land-owning *mataqali* must sign the letter. This in itself does not guarantee government assistance because the final approval is given only when Fisheries staff survey the land to ensure that soil pH and salinity of water are adequate for tilapia farming.⁵ Moreover, assistance of the Ministry of Fisheries is usually conditional on information about pond structuring, such as size, depth and location of the pond; the provision of fry; sampling; and support in harvesting the first lot of fish.⁶

In contrast, the aquaculture industry in Asia is thriving if published research is anything to go by. Research undertaken on seaweed production and marketing in the Philippines reveals family-based aquaculture farming, although men appear to take the lead in all stages of the supply chain. Whilst men do most of the site preparation, care, maintenance and harvesting, both women and men share the tasks of procuring planting materials and planting. Women, however, share the load of negotiating prices and are more likely to receive the family's money.⁷ In India, a ten-state study discovered varying participation of women in freshwater carp aquaculture. In some states in the north and south, women's participation was very low but in the east and northeast women were very active in pond fertilisation, nursery rearing, feeding and harvesting.⁸ In Nepal, carp aquaculture is the main aquaculture industry but, interestingly, it does not supply household food because families prefer small indigenous fish species. A common feature of the gender and aquaculture research undertaken in Asia is the large-scale sectoral industries.

This Fiji study is about community-based aquaculture (tilapia) that is largely small scale, given the infancy stage of aquaculture in Fiji.

The study findings and discussion

Gender roles and relations

"Gender relations often refers to the hierarchical relations of power between women and men that tend to disadvantage women. Analyses of gender relations differ in emphases from those which take 'gender role' as a starting point. They give more prominence to the connectedness of men's and women's lives, and to the imbalances of power embedded in male-female relations. They also emphasize the interaction of gender relations with other hierarchical social relations such as class, caste, ethnicity and race..."

Oxfam 2000

5 Interview with Makelesi Danford, Farm Development Manager, Naduruloulou Research Station. Government of Fiji. March 31 2017.

6 Ibid

7 Williams, M. 2012. *Shining a light on gender in aquaculture and fisheries: Report on the 3rd Global Symposium on Gender and Aquaculture and Fisheries*. In SPC Women in Fisheries Information Bulletin #22 – July 2012.

8 Ibid

Informants responding to questions on work that women and men undertake in tilapia farms indicate that women appear to do very specific tasks. However, the tasks undertaken, the frequency of undertaking these tasks, and the process for determining who undertakes these tasks varies across the **farm modalities**.

According to respondents in **committee run farms (male led)**, women play a big role in feeding, selling and harvesting of fish but men play a dominant role. However, for one of the male-led committee run farms, the roles of men and women are determined by the season for cane-cutting. From December to May, men play a major role in tilapia farming because this is off-season for cane-cutters. The location of the male-led committee farm was in Rakiraki, which was directly hit by Cyclone Winston. At the time of the interview, many homes were still only partially built and many villagers were still living in tents or parts of their homes under a tent.

Globally, post-disaster needs assessments have revealed that women often take on a ‘triple duty’ of reproductive work, community work and productive work in the informal economy, whilst men increase their focus on waged work outside the home (World Bank 2000) or rebuilding their homes and communities. Almost nine months after the devastation of Cyclone Winston in Fiji, these trends were observed in several interviews conducted in the Rakiraki and Monasavu areas of Viti Levu, including the farm run by the male committee.

Respondents in female-headed households indicated that the feeding, cleaning and harvesting of fish was largely undertaken by themselves or a person hired to help out in specific tasks, such as harvesting, or a family member who was asked to pitch in whenever the need arose. The roles in tilapia farming in the two female-headed households differed because of the level of resources, including financial, to dedicate to tilapia farming. One of the two respondents was able to hire farm helpers to assist with the various tasks while the other did most of the work herself. However, decisions relating to the farm and other agricultural farming conducted by the two respondents in this category were made by them – even though other family members resided in the household.

Similarly, for **husband and wife managed farms**, the role of feeding and cleaning rested with the women, whereas men took the lead in pond maintenance and harvesting of fish. Across all farmers interviewed, the digging of the pond is a task undertaken usually by a male member or group of people (for example a youth group) and generally with the help and/or inspection of the Ministry of Fisheries staff. Similarly, the Fisheries staff often support the harvesting of fish.

Interestingly, all male farmers interviewed, except those in the case of the two female-headed household farms, appear to be the ‘face of the aquaculture project’ meaning, it is the men who liaise with the extension/fisheries officers on the phone and meet them face-to-face when farm visits are undertaken. Interviews with Ministry of Fisheries staff confirmed this: ‘When we speak to farmers, we usually identify farms by the husband or the male member of the committee, unless the farm is run by a woman. We know the women in the committee, and we know that farmers’ wives are involved and do work in the fish pond, too, but usually we liaise with the men because he is the one who calls us or comes to our workshops’ (Rokuro 2017, personal communication).

It is clear from interviews that gender relations and power dynamics between men and women farmers affect the roles and responsibilities of male and female farmers, their visibility in farming projects and, ultimately, the level of empowerment gained from farming. Even on farms managed by a **women’s committee**,⁹ many decisions were made by a male member of the community and overall administration and advice were often provided by a male member of the community.

9 The two women’s committee led farms in Namosi

However, a number of respondents from **women's committee-led farms** and **husband and wife teams** revealed that the tilapia projects gave them (the women) a sense of self-worth and empowerment. For example, in the case of the two women's committee-led farms in Namosi, the women were excited to stress that they had been requested by village leaders to attend the *bose va koro*¹⁰ (village meetings) to respond to queries from other interested families in the village on tilapia farming who wanted their assistance and advice on breeding the fish. In the Namosi province in particular, this is an achievement for the women, as the province is patrilineal and official *mataqali* and *tikina* meetings are often the domain of men. In the case of the two villages in Namosi that were visited, Saliadrau and Nasigatoka, women do not attend the monthly *bose va koro* unless specifically invited.

An interesting observation was made in one of the farms regarding the changing gender roles of girls. Girls are increasingly undertaking roles that boys and men traditionally carry out, such as washing and drying kava and pounding it. According to feedback from respondents, villages were still recovering from Cyclone Winston and many of the men were still focused on either re-building community halls, churches and homes or working in plantations that were often several hours' walk from the village. For this reason, women and girls were taking on additional roles, especially ones that might bring an income, such as kava sales.

Based on the interviews conducted overall, aquaculture, in particular tilapia farming, has a very gendered division of labour. Women often do the fish feeding, which needs to be done twice a day. This can be laborious if the pond is far from the house. Women also clean the pond and help with harvesting but both these tasks are often shared between men and women, depending on availability, as they are not undertaken frequently.¹¹ However, men do the heavier work, such as digging the pond, which is a one-off task that can take a few days, depending on the type of soil and whether they have an excavator or additional help. In all interviews, except those on farms led by a single female farmer, the men were the face of the farm. This meant, they were the official contact for any technical assistance provided by the Government of Fiji or SPC, and they attended the trainings.

The process of harvesting is quite interesting; all the farmers interviewed said that harvesting is often assisted by the Ministry of Fisheries for either a partial or full harvest. However, in some places – like Nausori Koro – women often get into the pond to catch the fish with a net whenever customers come to the village to buy.

"The household comprises the heart of private life. Within households, access to decision-making and resources can be variable, although all members are affected by these decisions and practices. In many places, for example, issues of sexual relations, family planning and household spending are under the control of the male household head. Patterns of decision-making may vary by place, caste and ethnicity. Within a given group, decision-making will vary from household to household. To ensure effective programming, it is critical to understand how decisions are made within a household and how these processes have evolved over time. It is also important to understand how programs might affect household decision-making processes in ways that pave the way toward more equitable relationships or reinforce gender inequalities at the household level..."

(Care 2012)

¹⁰ Bose-va-koro meetings are usually made up of an entire village (men and women). The timing of such meetings differ across the provinces of Fiji but they are often held monthly.

¹¹ Cleaning and harvesting conducted at least every 6 months

Decision-making in aquaculture – community-based tilapia farming

Decision-making patterns vary across the different farming modalities. Respondents in **female-headed households** confirmed that women make the overall decisions relating to the household, farming (including aquaculture, vegetable and crop gardens), as well as decisions regarding spending money. All three women in the female-headed households attended their village monthly *bose va koro* meetings and at least one of the three women interviewed owned four vehicles. When asked how the decision to purchase the vehicles came about, she responded that business was good and the vehicles were needed to support the work on the farms and she had the cash to buy her vehicles.

Husband and wife teams agreed that decisions on day-to-day pond management were made jointly. One husband and wife team stressed that decisions were based on shared goals, such as the tertiary education of their only son, and farm improvement. One of the husband and wife teams confirmed that decisions on what to save and spend were discussed jointly but the wife controlled the income made from all the farming activities by keeping a thorough record of expenditure and income, so she had the final say when a decision had to be made.

The wife in one of the three **husband and wife teams** stressed that the fish farming project gave her a sense of empowerment. Initially, her decision-making within the household involved household management, education of her children (e.g. ensuring they had bus-fare and school lunches every day) and attending school meetings. However, the introduction of their fish farming business meant she had to move outside her comfort zone. At the start of the business, she insisted her husband go with her to all meetings with the Ministry of Fisheries officials. However, as her husband is a temporary labour migrant in the security forces, he is often away for long periods in any given year. This situation forced her to liaise directly with fisheries officials and learn about tilapia farming, from pond construction to feeding and managing the stock to harvesting. This new sense of empowerment opened up to bigger spheres of decision making. In the absence of her husband and the increased decision-making powers, this respondent was invited to a number of *bose va koro* (village meetings) to provide advice on tilapia farming for the rest of the community.

Respondents within the lone **male committee-run farm** had different patterns of decision-making. It was evident that the committee made the majority of the decisions relating to the aquaculture project (tilapia) and other farming activities such as dalo and other rootcrops. The spouses of the committee members supported the fish farm by feeding the fish and occasionally cleaning the pond but the men in the committee mostly undertook farm labour. However, it was also evident that patterns of decision-making changed because of the impact of TC Winston and the post-recovery period. This farm, based in Ra, was one such location in Fiji that was still in the recovery phase, with many villagers still living in tents.

According to the committee members, although they made decisions, their spouses also had a say in how the fish farm was run. For example, the women involved in the tilapia project put in place a rule regarding the minimum number of fish an individual could buy. This rule was made because it was mostly the women getting into the pond to catch the fish for buyers and this meant the women would get wet and have to change their clothes several times a day. Unlike other farm modalities interviewed, this particular farm practised partial harvest.¹² The decision for a partial harvest was made by the committee. This scenario is a good display of interpersonal power by a group of women, who would not have made such a decision on their own. Interpersonal power is power gained through association (women) and created through the solidarity and support given to one another, and by using their collective voice to negotiate services, spaces and market access.¹³

¹² The farmer may only harvest or catch some of the fish in the pond to sell when requested, using a seine net or a cast net.

¹³ <http://pqdl.care.org/sii/SIILibrary/Women%27s%20Empowerment%20Overview%20Brief%202009.pdf>

Observations around the village also revealed that the most common structure still requiring to be built were kitchens. There were makeshift kitchens sporadically situated in the village, with most families communally cooking and eating together, often in the village hall. Although the committee stated that the whole village was still waiting for building supplies and materials to rebuild their homes several months after the cyclone, it is not uncommon globally that recovery efforts reflect traditional gender stereotypes that largely prioritise the needs and contributions of men.¹⁴ So kitchens, which are stereotypically the domain of women, are left either as the last structure to be built or not given priority when it comes to recovery after natural disasters.

The decision-making experiences of the two **women-led committees** were quite different, even though they are situated in the same province. According to the respondent of the first farm, the husband of one of the committee members made most of the day-to-day decisions, including when they should harvest. The husband also represented the interest of the women in the community in his role as the women's representative. His spouse (a committee member) in her role as treasurer of the committee, banked the income and kept the records of expenditure.

The experiences of the second farm were quite different. The women's group, with help from their spouses, set up small businesses to supplement and complement household income earned from root crop and vegetable farming. The small businesses included the tilapia pond, a canteen that sells basic household items and a small poultry farm that supplies both chickens and eggs to the community and neighboring villages. According to the respondents, only two women from the fifteen-member group worked on the tilapia pond but the other women helped out in the other activities, as well as with the harvesting of the tilapia when the time came. According to the respondents, their spouses were supportive but decisions were made by the whole group, even though only a handful of women were active in running the various projects. The project was set up on the needs of the women and the recognition that not everyone would be able to dedicate equal amounts of time to the various activities.

The two farms are located in Namosi Province, are patriarchal in nature and women are not privy to community decision-making structures such as the monthly *bose va koro* meetings. However, according to the respondents from the second women-led committee farm, they had received invitations to participate in the monthly meetings a few times since the start of their business venture to provide advice and information to the *bose va koro* on their business projects. This, they said, gave them a sense of empowerment and importance in the village and in their own families. This experience reinforces the importance of supporting women's economic empowerment, particularly in rural communities, where gender stereotypes and norms often marginalise women. But whilst it is good to note the sense of empowerment the women gained, it is also important to reflect on whether they would still have been invited to these meetings if they had nothing to showcase?

The group of individual women farmers (a cluster) also noted greater empowerment and wider decision-making opportunities since going into tilapia farming. According to feedback from the cluster, the chance to work together as a collective and agree on how income from fish sales should be spent was not only empowering but gave the women a feeling of importance in the village. This was also partly due to the fact that fish was such a rare food in their remote highland village that, during harvest period, news of fish sales would spread very quickly throughout the other villages.

These findings on decision-making are discussed in regional and global literature on decision-making. According to O'Neil and Domingo (2015), strategies to support women's decision-making are often narrowly focused on either institutions, structures or capabilities in isolation. However, it is the relationships between these structures and how they interact that shape women's actual influence in decision-making processes. These variations also explain how women's experiences in decision-making can be so remarkably different – as

¹⁴ http://www.in.undp.org/content/dam/india/docs/guidance_note_on_recovery_gender.pdf

there are variations within and across communities and countries and between men and women within and across class, ethnicities, religion, age and sexuality.

Access and control over resources – community-based tilapia farming

“Ownership and control over productive resources have important implications on how individuals or groups can pursue their aspirations and protect themselves from shocks. With so many development projects aimed at strengthening community livelihoods and increasing resilience among others, it is important to understand who and how gender roles and relations can influence control over productive assets – in terms of household assets, farming assets including the land and financial capital. (Oxfam 2012).

In all of the farms, except the two Indo-Fijian farms, land was the primary factor that affected decisions on extension of the farm (i.e. building more ponds), the location of the tilapia ponds, and whether fisheries projects got approval. As mentioned earlier, assistance can be sought from the Fiji Government through the Ministry of Fisheries to start up a tilapia farm if a number of criteria are met. A request letter must be sent to the Ministry of Fisheries, along with proof of land ownership via freehold land, agriculture lease or, if *mataqali*-owned, at least 75% of the members of the land-owning *mataqali* having signed the letter.

The table below shows the land-ownership of the farms visited.

	Farm	Farm Type	Ownership
1	Rewasau women’s cluster	Women’s cluster and individual ponds	Native land – <i>Mataqali</i> leased
2	Taunabe Farm	Family-run (by male head)	Native land – <i>Mataqali</i> leased
3	Naiduki Farm	Husband/Wife	Native land – <i>Mataqali</i> leased
4	Nausori Koro	Male committee-run farm	Native land – Leased from <i>Mataqali</i> (though they are not original inhabitants of the land.) ¹⁴
5	Tailevu Farm	Single female-headed household	Freehold land
6	Nasigatoka	Women’s Committee	Native land (given to the women’s committee by the landowner)
7	Saliadrau	Women’s committee	Native land – <i>Mataqali</i> leased
8	Adivuki Farm	Female-headed household	Native land – <i>Mataqali</i> leased
9	Drugucava Farm	Single male-headed household	Native land – <i>Mataqali</i> leased
10	Singh Farm	Husband/wife farm	Freehold
11	Prasad Farm	Husband/wife farm	Freehold

Based on feedback from interviews conducted, land leased from the *mataqali* is not an issue if the *mataqali*

¹⁵ The people living in Nausori Koro are not originally from there. They are from another village altogether and moved to Nausori Koro due to constant flooding of their village.

is relatively small (for example, a group of siblings within a *mataqali*) or if there is a lot of *mataqali* land. For instance, the Adivuki Farm in Rakiraki is on land owned by a *mataqali* that comprises Laisani Adivuki (the female-headed household farm owner) and her brother. Despite the land being under native lease, the size and nature of her *mataqali* make-up has enabled her to expand her farm over the years to include not only tilapia but rootcrops, a variety of vegetables to sell, and a bee farm.

In comparison, the other single female-headed household-run farm has faced issues regarding male siblings wanting to take over the farm and the family home situated on the farm, even though it is on freehold land (under the parents' name).

Access to and control over land is a pertinent issue for i-taukei women. Whilst one might argue that communal land ownership in Fiji disadvantages women because of traditional land inheritance practices, access to freehold land (under parents or other family) does not necessarily mean women are better off, unless they own the land outright. Based on feedback from the interviews, there are many variables to accessing and controlling land in a communal setting. This depends on the size of a family *mataqali*, the size of the *mataqali* land that is available to be shared amongst each family member, and whether the person/their family or *mataqali* is living on their own *mataqali* land. For farmers wanting to venture into tilapia farming, this variable extends to seeking the approval from the *mataqali*.

For iTaukei women, the ownership of native land is even more precarious. As illustrated in **Box 1**, iTaukei women have access to their *mataqali* land based on their birthright as members of their *mataqali*, but the control of land is limited, due to customary laws governing land tenure. This control is even more limited if the woman marries a man from another *mataqali*. In this case, her children have *vasu* rights (rights inherited through the mother) to the land but very little if any control over it. They do have rights over their father's *mataqali* land (Jalal 1998).

Resources under this area of inquiry did not relate only to land. Resources (and the access to and control over them) include water; farming equipment such as nets and scales; fish fry; agricultural crops such as dalo, tavioka, yaqona and vegetables; income; motor vehicles; and technology, such as mobile phones, laptop computers or tablets. Under this area of inquiry, the respondents' access to information and training opportunities was also discussed.

Feedback from the two women's committee-run farms in Namosi reveal that women do not have access to any equipment such as a harvest net or scales. These resources are usually borrowed from the Ministry of Fisheries when it is time to harvest. This practice was found to be a common trend across the farm modalities. Reasons given include the price of the harvest nets, but staff from the Ministry of Fisheries said that aquaculture is still a relatively new sector and the practice that is encouraged by the Fiji Government is 'cluster' sharing of common resources.



Box 1: Native land and iTaukei woman¹⁶

The Constitution and *Native Land Act* define ownership of native land primarily in terms of patrilineal descent. Women did, however, upon the introduction of statutory law, become registered owners of native land based on their birthright as members of their *mataqali*, a landowning unit consisting of members of a clan. Although the legislation is apparently gender-neutral and not discriminatory, because it purports to make women and men equal within *mataqali*, women effectively have little control over land, as land rights are determined according to customary law.

The legislation provides that land is held mainly by the *mataqali*. Under this system women cannot pass on their rights to land. When a woman from one *mataqali* marries a man from another *mataqali*, her children have only *vasu* rights (rights inherited through the mother) to her land. Her children do not have legal rights to land that she owns communally with other members of the *mataqali*. However, they do have rights over their father's land in his *mataqali*. A child may therefore sell the lease of his father's land, but may not sell the lease of his mother's land.

Men therefore have full control and management over the land; women can use it but not control it. Under custom, women never have rights to home sites. This right belongs to their fathers or brothers. Women generally did not and do not give evidence as expert witnesses on customary law concerning land claims of native owned lands. The Native Lands Act and the Native Lands and Fisheries Commission determine rights to land by using customs and traditions largely defined by men.

16 Jalal, Imrana P. 1998. *Law for Pacific Women. A Legal Rights Handbook*. Fiji Women's Rights Movement. Suva.

Cluster groups in the aquaculture sector (particularly tilapia) have been formed for a number of reasons such as creating a network to reduce the problem of low production, inadequate supply of products and overall procurement of products. For example, a group of small farmers might club together to place a single large order for fish feed or hatchery fingerlings, in order to obtain price discounts or meet requirements for minimum orders. In addition, the cluster should they wish might coordinate their harvest dates to provide continuous supply of fish, meet minimum quantities needed for purchase by fish processors as well as just sharing information and farming resources amongst each other.

A review of past workshops carried out for cluster groups over the last two years by the Fiji Government and/or SPC revealed that a low representation of women attending the workshops. According to a respondent from a male-led committee farm, the FAO ran a workshop for the Rakiraki cluster which was attended by 7 women and 28 men from that area. Unsurprisingly, the majority of the men involved in tilapia farming have had some access to education and training on tilapia pond management or broodstock management compared to a very small number of women. However, the women in the husband and wife farm teams confirmed that they had some access to information and training, as well as on-site advice whenever the fisheries officers visited their farms.

An analysis of feedback from group-managed farms (either male-led committee or family-run farms run by a male head) shows some of the barriers women might face in accessing services, training and other opportunities. In relation to tilapia farming, despite the role women play in tilapia farming, men are the ‘face of tilapia farming’ and contact between service providers (the government and other development partners such as SPC) is automatically with the men, unless it is a female-headed household-run farm or a women’s committee-run farm. Unsurprisingly it is the men who usually travel to town or to fisheries offices in their respective townships to seek advice or to attend workshops. Women do have the opportunity to attend workshops if they are held on-site but still the numbers of women are very low.

Collectively, iTaukei women who live in villages mobilise around issues for example, learning and awareness of income generating skills, health checks in the village by medical personnel or civic education from various NGOs. Mobilisation is usually through church groups or community networks such as the *soqosoqo vakamarama* (village women’s group). As a collective, women have had access to training and information-sharing opportunities on health issues such as NCDs and HIV and AIDS. Women’s groups in villages are often requested to undertake other tasks, such as cooking for a village function or a workshop in the village. However, the gender norms about women’s roles are so entrenched that the idea that women might also benefit from tilapia training is often missed.

Interestingly, one of the male respondents who spoke on behalf of a women-led committee farm informed the research team that ‘there was difficulty imparting knowledge from male to female farmers’. When prompted for more information, he said that he had been the original pond owner some years ago and decided to ‘gift’ it to the women’s committee to enable them to earn a supplementary income. However, over the years, he felt that the women often disregarded his advice regarding the tilapia farm and preferred to do things their way, which often resulted in a smaller harvest of tilapia.

Although it is difficult to ascertain the real reason for not taking on board the advice of a more experienced tilapia farmer, some aspects of gender relations can be drawn from this scenario. According to O’Neil and Domingo (2015), women’s political power depends on their collective capabilities. Women organising something with other women is critical to their questioning of men’s dominance and to the solidarity needed to challenge it: in this case, the women’s committee challenging the influence of the former owner of the tilapia pond. On the other hand, one could also question the support and commitment of the women in going into tilapia farming. Inequalities between women should not be overlooked, and the rationale and push for going

into tilapia farming need to be analysed carefully. Whilst it is unrealistic to expect the Ministry of Fisheries staff to fully consider all the gender dimensions and power relations within communities that might affect the overall success and benefits of tilapia farming, it is necessary to at least recognise power dynamics within iTaukei communities. Measures could be put in place to ensure group-managed farms include a representation of the group of women in decision making structures.

Conclusion

This paper has attempted to contribute to the research into gendered perspectives in Fiji's aquaculture industry through an analysis of a small sample of community-based tilapia farms. Although a relatively new industry, aquaculture farming appears to be quite popular, especially for inland communities, and is often an agricultural activity farmers consider among other agricultural livelihoods. Although interviews conducted represent a very small sample of active aquaculture farms in Viti Levu, the significant role women play in aquaculture farming and the multiple and evolving gender roles of women are apparent. The following conclusions can be drawn, with respect to the gender issues in Fiji's aquaculture activities.



Strategic recommendations

- The Ministry of Fisheries with SPC to support capacity development in gender analysis within programme/project planning and management.
- The Ministry of Fisheries with SPC to strengthen capacity for data collection and gender analysis of data with respect to community aquaculture initiatives across Fiji.
- The Fiji Government and SPC to further develop the idea of ‘clusters’, identify entry points for the involvement of women, and put in place measures to ensure women’s participation and representation.
- The Ministry of Fisheries to integrate a gender impact analysis section into existing templates used by the Ministry of Fisheries. Provision of simple guidelines and short training sessions on the use of this section to be conducted across all the fisheries stations in Fiji, followed by sample audits on the quality of inputs received in the first year of implementation, and the findings used to guide the second round of training.
- The Ministry of Fisheries to explore protection measures for aquaculture assets in pre-cyclone preparations, as well as inclusion of aquaculture and the role of women in the sector in post-disaster recovery plans.

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Annex 1

Individual case studies

1. Nausori Koro tilapia farm

Interviewees:

Jone Nawaikalou (Committee Member)

Waisake Raulala (Committee Member)

Type: Male-led committee-run farm

Introduction

Nausori Koro sits in the middle of cane fields in the Nalawa District in Ra. The village has 52 households and was badly damaged during Cyclone Winston. The villagers are still living under makeshift houses with materials badly twisted and damaged during the cyclone. Some families are still in tents issued for temporary shelter after the cyclone. The tents have been exposed to hot sun, have thinned out and cannot hold off water during heavy rain.

Villagers of Nausori Koro are still waiting to receive housing rehabilitation materials from government, ten months after Cyclone Winston. The village sits beside a river, making it vulnerable to flooding. Transport to the main road and to town is often limited during heavy rain and flooding.

Land is an issue. The people who live in Nausori Koro are not originally from there. They are from neighboring villages of Navitilevu, Barotu, Burenitu. They moved to Nausori Koro for for a number of reasons by mainly to be closer to the main road and formed a settlement. This means they live and work on a piece of land that belongs to another *mataqali*, so any effort for improvement or extension is limited.

The fish farming project

The project started as a church community project in 2009. In 2013, the committee hired a digger and started the first pond. The project started as a way to earn income to pay the Methodist *talatala* (Minister).

Even though the project was set up by four committee members, Jone and Waisake are the most active, meaning, they manage the project as well as make the majority of the decisions. Their work is supported by their spouses and other women in the village as they help with the maintenance of the farm, including cleaning, feeding and harvesting of fish, is performed by their spouses and other women in the village. The supplementary income from the fish farm is used to finance their church obligations and commitments. These include, the annual Methodist church fundraising (*vakamisinari*), and church meetings for all three christian denominations in the village. Harvested fish also provide instant meals for unexpected visitors who come to the village for various purposes.

Decision-making

Nausori Koro has a *turaga ni koro* and women attend the monthly *bose va koro* and are encouraged to speak.¹⁷ The *soqosoqo vakamarama* does not function, although a branch of this network exists in the village, but the religious denominations – Methodist, Assemblies of God, Pentecost and Seventh Day Adventist – organise women's groups.

All decisions relating to the fish farm project are made by the committee. Decisions on how to utilise cash income and the sharing of any left-over fish is made by the committee. According to the committee the money has been used to support and finance church obligations. This in turn has taken off the burden from individual families involved in the project to contribute to church obligations and concentrate on rebuilding their lives after TC Winston. No women are part of this committee, although they appear to do a bulk of the work. The men are the main signatories to the bank accounts as they are the only ones with bank accounts.

One key decision that was made by the women was the agreement that those wanting to purchase fish had to place a minimum order and fish was sold only at a certain time in the day. This ensured that the women, who were the ones going into the pond to catch the fish, could manage their day better and did not have to go into the pond for just one or two fish.

Access and control of resources

The farmers (women) are now breeding their own fry, following regular visits and on-site training provided by the Ministry of Fisheries staff. The farmers are part of a cluster and breeding their own fry enables them to give fish to other farmers. According to the committee, the ability to do this gives them a feeling of pride and being able to give back to the community. The idea to breed fry was the committee's idea, but the women do most of the work.

The village and the fish farms sit on land belonging to another *mataqali*. Therefore, efforts to extended development beyond the village boundary is limited, so the fish farmers do everything possible to improve the yield of fish in the existing three ponds. They seek to improve their yield by regularly checking in with the staff at the Naduruloulou Research Station (NRS) and getting regular visits by technical staff of the Pacific Community. Despite regular support and advice from both agencies, the women are often left out of consultations/meetings that take place at the farm or in a workshop setting. According to the committee members, they usually meet with technical staff from NRS and SPC or communicate with them on the phone if they need advice or additional resources, especially during harvest period.

Although the village is off the main road and difficult to access, it is still relatively close to Waimecia, a small urban centre in the district where travellers and villagers from around the district stop to do their shopping and selling. However, all trips relating to the fish farm are made by the committee members.

Technical knowledge and access to training

Approximately 35 villagers from Nausori Koro have had access to training and technical advice provided by SPC and the Lautoka Fisheries Office. Seven of the 35 participants are women. Training and technical support offered by the two agencies include farm development, supervision of stock, feed, and harvesting. The villagers of Nausori Koro are fortunate to reside close to the main road and the Waimecia station, which is a small central meeting point and a pick-up and drop-off point where farmers come to sell their produce.

¹⁷ This information was provided by the two interviewees and confirmed in an informal discussion with several women during the lunch.

Impact of Cyclone Winston

The villagers, particularly the children, are still traumatised several months after the devastation of Cyclone Winston. The villagers have made efforts to rebuild after the cyclone rather than wait for relief efforts. When the research team met with Jone and Waisea in December 2016, there was news of a strong wind warning. When the team informed Jone and Waisea of this warning, a number of women and a few children were sitting within hearing distance, and the team could see that the children were terrified. According to the committee much of village life has not returned to normal because many villagers are still living in makeshift tents or part of their home is under a tent. The women in the village share everything, from cooking utensils to food, to ensure no family is left out.

2. Rewasau tilapia farms, Monasavu

Type: Single farms led by women

Introduction

Rewasau is in the interior of Monasavu. The village itself is quite inaccessible as the roads are steep and buses are unable to reach the village. Like many other villages across Fiji, the people of Rewasau are resilient. They work hard and despite accessibility issues, are able to get their produce to Tavua market to sell.

In 2014, the Ministry of Fisheries conducted fish farming training for the people of Monasavu. The women interviewed are listed below.

1. Sylvia Nabola, 48 years old. She and her husband run their own tilapia farm, although she is the one that manages it.
2. Lavenia Vulawai, 64, manages her own tilapia farm. All her children have married and some have left the village.
3. Mere Sinukula, 34. She and her husband run their own tilapia farm, although she is the primary manager.
4. Marama Pai, 49, mother of seven. Manages her own farm.

Rewasau Village fell in the direct path of Cyclone Winston in February 2016. The devastating impact of the cyclone left the village without its community hall, many homes and the village church.

Decision-making

Tilapia farmers of Rewasau have overall management of the farms. They decided to use part of the first harvest as their tithe to the church, and the rest was shared among families in Rewasau. The second harvest was used to feed the workers (mostly youth) who helped rebuild homes and the church after Cyclone Winston. There are several ponds belonging to the Rewasau tilapia farmers, built at different times. The farmers have used the village youth many times to dig the ponds. Quite often, the youth are repaid by fish or other food. The farmers also seek the support of their spouses to dig the ponds or to purchase feed from Tavua when the vehicle makes a trip into town. The women said that they manage the feeding of the fish, cleaning of the pond and the harvesting of fish.

Access and control of resources

There are four vehicles in the village that villagers use to get their produce to the market, and for travelling to Tavua or Nausori to collect supplies. According to the women, none of them knows how to drive, so men have complete control over the vehicles. Owning a vehicle is a luxury and driving a vehicle is seen as a prized skill and a man's job. The Rewasau tilapia farmers have some access to the vehicles but this comes with negotiation with the vehicle owners and depends on availability. The Rewasau tilapia farmers were excited at the idea that they, too, could learn to drive and this might be a possibility in the future.

All the women interviewed agreed that they had access to resources such as fish feed, land, water, food and livestock. Sylvia, Marama and Mere also felt that they had equal control over these resources because decisions were made with their spouses. For example, decisions about when and for what purpose their livestock would be killed would be made together and many times depended on village functions and commitments.

Access to and control of water is an issue. It is ironic, given that Rewasau is at the foot of the largest dam in Fiji. However, due to the way Rewasau village is set up, half of the village does not have piped water. There is a water source underground but the Water Authority of Fiji technicians have not installed the piping. Over the years, Rewasau village has expanded and family numbers have increased. The part of Rewasau without piped water is the extended part of the village. For these villagers, access to water from the other half of the village is easy, as water is given freely, but they have no control over the resource. This is an issue for the Tilapia farmers, as the fish pond was dug in the part of the village with no piped water.

Access to skills, knowledge (including traditional knowledge), technology and training

All the farmers interviewed have some knowledge of underground water in the village and know where pipes can be laid to access this water. According to them, this is their home and this knowledge has been passed down by their elders.

The farmers also have knowledge of fish species in the Monasavu dam and know when the best times to fish are and the best spots. Often, a trip to the Monasavu dam to fish or to gather dalo or yaqona is an overnight task because of the distance. Although mostly men undertake these overnight tasks, the women stated that they had made these trips more than once.

The tasks of young women in the village has also evolved over the years. Young women in the village are now often asked to wash and dry the yaqona plant and prepare it for pounding and packing. The young girls know how long to dry the yaqona plants and how finely to pound the yaqona. They gained this knowledge from their elders and male relatives.



Young woman washing yaqona



Young woman pounding kava

3. Taunabe tilapia farm, Taunabe Settlement, Nadarivatu

Type: Male-led group farm

Introduction

Taunabe settlement is made up of one *mataqali*. The farm is managed by Marika, his twin brother Moape Ramasei and a group of relatives – their sister and three other women. There are four houses in the settlement. In 2013, Marika and his twin brother their wives and children moved from Lewa village onto their *mataqali* land, now known as Taunabe Settlement. The settlement sits in a valley in Nadarivatu.

It was Marika's idea to start the farm, after he retired as a driver for Government. He obtained the first lot of fish fry's from the Ba hatchery.



Taunabe settlement from the road with a view of the fish pond.

Decision-making

All the decisions regarding the settlement are made by Marika and his twin brother – the two oldest male members of the *mataqali*. The decision to start the fish farm was initiated by Marika, who was formerly a driver for the Ministry of Works. Marika and his brother decide on crops to be sold and consumed and what can be given as part of their traditional obligations to the wider clan.

Access and control of resources

At the time of the interview, the fish farm had approximately 2,500 fish and was about two months away from harvest. The fish farmers do not have access to a net and have to borrow a scale from a nearby farm to weigh their fish when it is harvesting time. According to Marika, he liaises with a nearby farmer for a scale and net when it is time to harvest. They do not have a fence around the fish pond which measures 25m x 20m and is located right next to their family homes. This poses a problem of safety, as the women are continuously having to worry about the small children. Marika has a 4-wheel drive truck which is used to make runs to Tavua for supplies and for selling rootcrops. However, he does not possess a rural service license, which would allow him to pick up and drop kids to school as well as take passengers into town for a fee. According to Marika, trying to obtain a rural service license is time-consuming, going to various government offices, trying to get information, so he is unable to carry paying passengers, thereby losing out on further income. He is the sole driver of the vehicle.

Marika's sister, Marica has the main responsibility for feeding the fish and cleaning the pond. The other women help out when needed. In addition to the fish farm, Marika's sister and the other women in the *mataqali* grow vegetables such as cucumbers, tomatoes, cabbage and pineapples, depending on the season. Marika owns a brushcutter and does some of the heavier work up the hill, such as clearing bushes and planting dalo and cassava. Only Marika or the other men in the village use the brushcutter. According to Marika's daughter-in-law, feeding the fish can be done in twenty minutes, but cleaning the pond and harvesting the fish require more people due to the size of the pond.

Access to skills, knowledge (including traditional knowledge), technology and training

Marika and his brother have undergone pond management and water management training, as well as basic book-keeping. Although the women farmers have not undergone specific training for the tilapia farm, one of the older women in the settlement is the village nurse or community health worker¹⁸.

There are plans to dig another pond as well as move into poultry farming. The farmers feed the fish three times a day. At 7 a.m. and 4 p.m., the fish are pellet fed whilst the mid-day feed is a mixture of *bele* leaves, tavioka and coconut. Marika acquired this knowledge from the Ministry of Fisheries officers.

The women have had no training from the Ministry of Fisheries officers nor SPC.

4. Singh tilapia farm

Dharam and Maya Singh, Togalavusa – Nadi.

Type: Husband and wife run farm

Introduction

Husband and wife team Dharam and Maya Singh are sugar-cane farmers. They also engage in other forms of farming to supplement their income. These include goat, chicken and duck farming and fish farming. In addition to livestock, Maya grows a variety of vegetables such as okra, bindi and long beans. They started their tilapia farm in 2012.

Maya and Dharam decided to test fish farming in 2012 after hearing about it from their friends. They later received training from the Ministry of Fisheries on how to manage their fish and ponds. Since then, they have been harvesting fish every year, which provides them with a supplementary income. They do not intend to expand their fish farming business as there are only two of them at home. Dharam and Maya started their fish farm with the help of a government scheme which allows farmers to pay a third of the total start-up cost, with the remaining two thirds paid by government.

Decision-making

Although Dharam is the 'face of the farm' in that he discusses farming issues with the Ministry of Fisheries staff, both he and Maya appear to make a lot of decisions jointly and taking into account their other responsibilities. Maya grows vegetables, tends to the livestock and manages the household, whilst Dharam tends to the heavier work with the livestock and is a cane farmer.

¹⁸ Community health workers are chosen from within a village and their names submitted to the Ministry of Health for training on bandaging, cleaning of cuts, recognising the signs and symptoms of fever in children, assessing patients before further treatment in hospital or the medical centre and administering oral rehydration salts. They are not paid by government.

According to Maya, Dharam is a member of a cane gang, and quite often he joins his gang for a few bowls of kava. Maya says this is an opportunity for them to discuss issues related to their sugar cane farms but Dharam does not indulge in too much kava because their days are so busy. Maya herself has been invited by women in the community for tea during the day but has always declined invitations because she is too busy.

According to Maya, she feeds the fish daily, but Dharam is responsible for cleaning the pond whenever this is required. She enjoys the task of feeding the fish because it does not take long and it gives her an opportunity to check on the growth of the fish. However, Maya says that quite often she has to walk out to the farm if she hears children playing nearby during the day. Both Maya and Dharam worry that the neighbourhood children might fall into the pond, as they do not have a fence.

Access and control of resources

Maya and Dharam own and live on their freehold property. They also own many livestock – chickens, ducks and goats – and a vehicle. The main aim of their livestock (including the fish) and their sugar-cane farm is to make money. Hence the decision to sell and make money is simple. The only issue is knowing when the livestock is big enough to sell. According to Maya, both she and Dharam have had years of practice in farming and know when their livestock is ready to be sold. However, when it comes to harvesting tilapia, both she and Dharam often referred to Ministry of Fisheries officers for advice when they first started out.

According to Maya and Dharam, Maya controls the income made from all their livestock, including the sales of fish. Dharam says that Maya controls the money because she is stricter about what the money should be spent on. However, they both agree that they plan how their money should be spent and this has worked out well for them. According to Maya, this decision is made a little more easy because they have a common goal: investment in education for their only son. Second to that is the re-investment in their farm to earn them more money. Everything else is secondary.

Access to skills, knowledge (including traditional knowledge), technology and training

Dharam has had no formal training in fisheries but regular advice provided by the Ministry of Fisheries (MOF) officers has enabled him to learn more about fish stock, pond management and harvesting of fish. Maya has had no formal training in fisheries either but whenever fisheries officers come to her home, she is always with Dharam and hears whatever advice they are giving Dharam. Maya feeds the fish every day and helps Dharam when it is time to harvest. As they depend on using the MOF net, they also get assistance from MOF officers when it is time to harvest. According to Maya, the tilapia farm has broadened her view of income generation.

According to Maya the tilapia farm has enabled her to think more strategically about time management, as the fish need to be fed at certain times and she has to factor this into her other farming work and housework. The extra income gained from the tilapia has also enabled Maya and Dharam to pay for tertiary education for their only son, who they hope will eventually get a scholarship at the University of the South Pacific.

5. Saliadrau women's group tilapia farm, Namosi

Interviewees in separate interviews:

Mariana Lagilevu

Iosefo Lagilevu

Type: Women's group

Introduction

Saliadrau Women's Group is made up of a group of approximately 20 women in Namosi who manage a tilapia farm. The secretary/treasurer, Ms Mariana, was interviewed. Mariana is from Rewa. She has 7th form education and is the kindergarden teacher in the village. She is married to Iosefo Lagilevu, the *turaga ni koro* of Saliadrau Village and the women's representative in *tikina* and Namosi Province meetings.

The idea to start a fish farm was proposed by Iosefo Lagilevu's father in 2012, when he offered his old fish ponds to the women's group to embark on a tilapia farm project.

Decision-making

According to Mariana, the women speak freely at village meetings but during *mataqali* meetings, they speak only when and if requested.

Mariana admitted that, although she would like to have women represent their own interests in such meetings, she is confident that her husband, the *turaga ni koro*, is able to represent them. He knows about their projects and needs as he supervises the overall administration of the project.

Access and control of resources

Although the tilapia farm project is operated and managed by the Saliadrau Women's Group, the *turaga ni koro* manages the maintenance of the pond: the cleaning, weeding and harvesting the fish. Mariana makes all financial decisions relating to the farm in her role as treasurer and, according to her, because of her higher education background compared to other women in the village. For example, it was Mariana's idea that money earned in this next harvest be used for building proper drains for the village. In 2016, she also proposed the idea of donating FJD 700 towards the village kindergarden. She also is the secretary and keeps records of harvest, meetings and other matters relative to women's projects.

Access to skills, knowledge (including traditional knowledge), technology and training

The *turaga ni koro* also helps the women's group in communications needs, like calling the MOF officer in Navua and keeping in touch with government officials regarding development in the rural areas, in particular the rehabilitation materials after Cyclone Winston. The women in the group have had no formal training in pond management and harvesting of fish. As a result of this and the fact that they have had very limited assistance from government agencies, the pond lacks the proper construction to allow for drainage of excess water during the rainy season. The women lack knowledge of different types of feed, the proper feeding schedule and proper pond management, which has resulted in poor stock. However, the women continue to feed the fish. Another issue with the tilapia farm is the distance from the village and access to the farm.

Despite the lack of knowledge and access to training in tilapia farming, the *turaga ni koro* was a fish farmer from 1986–1990 and the original owner of the fish pond. During that period of farming, Iosefo had constant support from Ministry of Agriculture officials and had access to training from government officials. Upon reflection, Iosefo said that the support provided to farmers now was very limited compared to the 1980s when he was farming.

Despite his knowledge of tilapia farming, the *turaga ni koro* has found it difficult to impart his knowledge to the women's group. According to him, the women do not take his advice and prefer to manage the pond on their own and learn from their mistakes, which has been to the detriment of the tilapia and the project¹⁹.

Other impacts of tilapia farming

According to Mariana, sharing the responsibilities of tilapia farming has improved communication between herself and her husband as they have to communicate and manage their time well. Previously, she felt that the support was one-way (from wife to husband) but with the farm, they have learnt to support each other in how decisions are made.

According to Mariana, the tilapia farm has also kept the other women in the group busy, as they feed the fish and all issues relating to the pond are discussed at length by the women, even though Mariana and her spouse make most of the decisions in the end. As a group, there is a lot of discussion amongst themselves and they support each other in personal and household problems. As a group, they have been able to pass on knowledge about weaving mats, collecting herbs and making herbal medicine, cooking and sewing.

Mariana states that tilapia farming has changed community views about women as there appears to be more interaction and interest from men in the farm and they quite often approach the women in the group for information. The farm also provides an important source of protein for the village in lean times.

The women in Saliadrau do quite heavy chores as part of their everyday lives. In addition to household chores and running the household, they chop firewood, plant taro and weed the plantation, as well as plant other food

6. Nasigatoka Women's Club tilapia farm, Namosi

Interviewed separately:

Ro Ela Koroimarama, fish farmer

Vosita Ravusali, women's group leader

Type: Women's group

Introduction

Nasigatoka Village is a small community with only fifteen houses situated in the heart of Namosi Province. The women's group, with help from their husbands, set up small businesses to supplement and complement household income earned from the sale of root crops and vegetables. One such small business is a fish (tilapia) pond, another is a canteen that sells basic household items, and another is a small poultry farm that supplies both chicken and eggs to the community and neighbouring villages. The women's group is made up of 14 women from Nasigatoka village. However, only two members work daily on fish farm activities such as feeding, cleaning and maintenance of the ponds. The other 12 women contribute when it is time to harvest or a big clean up is required.

¹⁹ Efforts to better understand this situation from the perspective of the women's group was not possible during this mission as only Mariana and her husband (the *Turaga ni Koro*) was available for the interview during the team's visit.

Nasigatoka is a remote village, accessible by carrier from the Nabukavesi junction road and by bus from the Nabukaluka Road in the lower Naitasiri side. When the women need to go to the nearest town, they usually request a ride on other local transport available or from visitors to the area. Transport costs to sell and buy from urban centres are usually very high for small farmers and communities, so forward planning is critical to ensure money and time are not wasted.

Decision-making

According to the respondents, the village projects, including the fish farm, have not only contributed to the existing knowledge of the members of the women's club but has also given them confidence and a boost in self-esteem as they now feel they actively contribute to decision-making in the village and wider Namosi community. The women acknowledge that in their everyday lives as mothers, daughters and sisters they make decisions for their family, but to be asked to speak in village meetings is very important to them.

Namosi Province is patriarchal and, like the experience of women in Saliadrau Village, women do not speak at village meetings unless for a specific purpose. However, the respondents feel that their spouses have been instrumental in the support given to the Women's Club's various projects.

Despite only two members actively managing the farm by cleaning and feeding the fish, all members of the women's group participate in the decision-making and how harvest income should be used or invested.

Access and control of resources

Having small income-generating businesses in this remote village is both necessary and challenging for women. The distance and limited transport can only allow for a trip once a week to the Navua, Lami and Suva markets to sell farm produce. The weekly trips provide opportunities to replenish supplies for the community, including feed for fish and poultry. During rainy weather they often run out of feed as they are not able to get to town to buy it. This adversely affects their fish and poultry projects, often resulting in loss.

At the time of the interview, the Nasigatoka Women's Club had had two harvests of tilapia. In August 2015 their total income was FJD100 after a first harvest portion was given to the village chief and village elders. The second harvest in 2016 generated FJD 800 in income and this money was used to buy more feed and reinvested in other projects, such as the village canteen and poultry project. The Women's Club does not have a bank account because, according to Vosita, they have not been able to make any savings from their various projects.

The fish pond is on *mataqali* land, which all members of the Women's Club are part of. However, the village elders (all men) were approached for their agreement to the fish farm project. The village elders also chose the site for the pond.

Through word of mouth and advice from the Navua MOF officer, the Women's Group hired a bulldozer (with government assistance) to dig their first pond. The spouses of the members of the Women's Club also helped in building a small dam to ensure a consistent water supply to the pond.

Members of the Women's Club take turns to manage the fish ponds but lately only two women have been actively involved. However, the women engage the help of the youth in the village to do some of the lighter work, such as weeding and feeding the fish when required.

The farmers do not own any nets or other materials required for maintenance of the farm. Besides advice given by the MOF officers and their assistance in building the pond, the only other assistance has been the supply of fry's from the Ministry of Fisheries. All other equipment is borrowed.

None of the Women's Club members nor their spouses own a vehicle, so the purchasing of fish feed is undertaken after much negotiation with the very few families that do own vehicles. Despite this apparent lack of resources, the two members of the Women's Club felt that the fish was an enormous resource and one they felt very proud about, especially at harvest time. Nasigatoka is far from town and, despite its close proximity to the river, fish is a scarcity and much sought after, so it gives the women much pride to be asked to provide fish whenever there are guests in the village or when there is a function.

In Nasigatoka, women do not speak in village meetings unless asked. However, since the establishment of the fish farm, the women have been approached many times by the elders to speak and provide advice on queries relating to the fish farm project. This also appears to give the women a sense of pride and importance in the village, as it acknowledges their contribution and expertise.

Access to skills, knowledge (including traditional knowledge), technology and training

None of the members of the women's group have had any training and have relied on knowledge and experiences shared by neighbouring villagers involved in fish farming. Since the group of women were already involved in other project ventures, they decided as a group to go into tilapia farming and approached the village elders together. The women have, however, been trained in poultry farming and a few members have also had access to awareness training in HIV and AIDS education run by local non-governmental organisations.

According to the women, part of the problem with accessing training and other skill-building opportunities offered by the Ministry of Fisheries is the remoteness of Nasigatoka and the difficulty in accessing a telephone. For this reason, many of the decisions made on the tilapia farm are 'hit and miss' and learning by doing, which is also problematic because everyone has their own ideas for how to make the tilapia farm more productive. The women believe that if they had had better access to training, their harvests would have been much better and at least they would all understand the correct way of feeding, maintaining and harvesting the fish.

7. Cattle and Tilapia Farm

Single female cattle and tilapia farmer, Tailevu

Type: Single female farmer

Introduction

The informant is a well respected cattle farmer in Tailevu. She lives with her 90-year-old mother. She is a member of the workwomen in Dairy Group, which was formed in November 2015. The informant has been involved in fish farming for more than ten years and decided to get into the business when she saw tilapia sold in tanks in the market in Nausori in 2000. The informant initially tried prawn farming before deciding on tilapia, but prawn farming proved too risky with a high mortality rate. The informant sees herself primarily as a cattle farmer who is constantly seeking other opportunities to earn money – hence going into tilapia farming.

Decision-making

All decisions about the household and the farm are made by the informant. She is the main decision-maker and the primary farmer on her land. She hires help only when she needs additional hands on the farm.

The informant's story was interesting. Despite her farming the land and making all decisions relating to her mother, the household and her farm, the ownership of the farm itself proved to be an ongoing problematic issue for the informant. She has three brothers, two older than herself, who work in Suva, and one younger brother. They would all like to take over the farm from the informant, despite the fact that they themselves are not farmers. The informant is concerned that, as soon as her mum dies, they will exert control over the farm and force her out. The informant is not married and has no children. The farm is *mataqali* land that she and her brothers equally have rights to.

Despite the looming issue over the land, the informant starts her day at 4:30 a.m. like all other cattle farmers. She is part of a dairy co-operative and therefore milk is sold at the fixed price of FJD 2.32 per litre to Rewa Dairy. The informant barely makes money from milking her cows but it is her main source of income as she also sells cows to other farmers.

When the informant went into fish farming, her goal was to generate cash to enable her to buy calves. She achieved this and over the last five or six years of selling fish has been able to purchase four calves. Some fish are given as her contribution towards traditional obligations in the village.

Access and control of resources

The informant has access to a number of resources on her piece of *mataqali* land. She has access to a water source (underground spring water), her livestock, the fish pond and her home on the property. She does not have access to farming equipment for her fish farm and every harvest she borrows equipment from the NRS. At the time of the interview, the informant did not have any fish in the pond but was planning to revive the tilapia pond in 2018.

The informant does not have complete control over her resources, even though she has bought all of her livestock and has invested her life in the farm. This is due to the fact that her brothers also have a stake in the farm as it is on *mataqali* land and, at the time of the interview, were actively trying to take control over the farm. The informant feels it is only a matter of time until they do, as she is not married and her 90 year old mother still lives on the property with her.

Access to skills, knowledge (including traditional knowledge), technology and training

Everything the informant knows about dairy farming was learnt in her childhood from her father. Her life as a dairy farmer has allowed her access to information through her role and involvement with the Women in Dairy group, as well as the friendships she has built over the years with other dairy farmers. The knowledge the informant has gained on fish farming has been through site visits by Fisheries officials who have imparted expertise on what types of fish feed can be used, timing of fish feeds, pond maintenance and harvesting techniques.

8. Adivuki Farm

Laisani Adivuki, Barotu, Ra

Code: Single female farmer

Ms Laisani Adivuki is a single mother of two boys, one is 23 and the younger brother is 11. In an effort to make a living for herself and her children, she decided to lease 120 acres of land from her *mataqali* for mixed farming, such as growing bhindi, long beans, eggplants, dalo and cassava. In addition, she has a tilapia farm. Laisani's farm is situated beside the King's Road opposite Barotu Village. There are only two members in Laisani's *mataqali* – she and her brother.

Decision-making

All of Ra was badly hit by Cyclone Winston and many villages at the time of the interview were still slowly rebuilding their lives. Apart from farming, Laisani involves herself with the church (SDA). She supports women in her village and the wider community to improve the living standards of their families through vegetable farming. Laisani does this by paying women and some men to work in her large vegetable farm. In addition to this, Laisani set up a small vegetable market beside the King's Road and women from the area come to sell their produce to passing motorists and nearby communities. According to Laisani, this gives women a sense of empowerment as they are able to earn their own money. The roadside market is also an opportunity for the women to get together and to talk about issues they are facing in their families and communities. In particular, at the time of the interview, Laisani said that the main topic at the roadside market was the rehabilitation work after TC Winston and picking up their lives again.

When Laisani embarked on tilapia farming, she was made fun of by people in her village and surrounding community. Often men would ask what she knew about tilapia farming, insisting that this was no job for a woman. Laisani felt that this was not just a way for them to put her down but said it as a typical reaction from men (and women) when a woman (in particular) is trying to venture into business. However, as a single mother, Laisani felt she had no one to answer to and could make big decisions quite easily. The decision to go into tilapia farming and other vegetable farming as well as dalo farming and bee-keeping was all her own. She commented that having access to prime *mataqali* land had been very advantageous. Laisani said that, as a farmer, her days are completely full: tending to the vegetables, managing the people she hires and feeding the fish. The fish feeding does not take long and she does this in between tasks in the morning and her younger son sometimes helps out by feeding the fish in the afternoon.

Laisani also decides whether money is spent, or re-invested. According to her, she has not been able to save any money from income made on the tilapia or from her root-crops and vegetables. This is because everything is reinvested to grow her business. However, because of these decisions, Laisani feels that the well-being and living standards of her children have improved. They are always busy helping out with the farm projects and they are quick to understand the concept of business, which for Laisani is to earn money and reinvest it back into the business and community with just a small portion to live on sustainably. Laisani feels this is important



Laisani reflects on her journey as a farmer. In the background is her farm on mataqali land which she has leased to farm vegetables, rootcrops and house her tilapia ponds. Beside her is her 11-year-old son.

for Fijians, because too often, when money is earned, the first instinct is to purchase materialistic items like nice phones or a TV, which does not help the business in any way.

Access and control of resources

Laisani leases 12 acres of *mataqali* land. Even though this land does not technically belong to her, this is her greatest resource because Laisani and her brother are the only members of the *mataqali* since their parents passed away. In turn, Laisani has sub-leased small portions of her land to Indo-Fijian farmers, as well as other farmers. The land is prime farm land, as it has a good access road and is not far from the main road.

Laisani is part of the Nalawa sector and therefore freely shares her knowledge and experience in tilapia farming with other farmers. She and other farmers also share equipment such as nets and scales during harvest period.

Laisani chooses not to provide anything for free to her relatives and extended family. Instead, and as a means to support her relatives, she provides employment for women and men in the community by hiring them as produce pickers for the market and pays them in cash. She also hires them to work on the farm and in return she pays them money or supports them by giving them some of the crops. By doing so, she has enabled people, including women, to learn farming skills and become subsistence farmers without having to rely on others.

Before TC Winston, Laisani was also managing the farming and supply of honey by farmers in the sector. Honey farms were destroyed during the cyclone and at the time of interview, farmers in the group had not been able to re-establish their honey farms.

Access to skills, knowledge (including traditional knowledge), technology and training

Initially, the information and knowledge Laisani acquired for fish farming was learnt from other fish farmers in the area. She later received aquaculture training from SPC and the Fiji Government. Laisani continues to share any knowledge she has with other tilapia farmers. She also learnt the importance of finding out about the quality of fry (and how to ensure good quality fry) as this affects the yield of the fish. She acquired this knowledge from SPC and the MOF officers. This knowledge has been particularly important, as it determined how much income she made from sales.

Laisani possesses knowledge of tilapia farming, bee-keeping, vegetable farming and dalo farming. Over the years, knowledge of farming practices has been gained through training via the Fiji Government and SPC and through her extensive networks with other farmers in Ra Province. She uses and shares all her knowledge and skills with other farmers, especially women, in her community.

9. Drugucava farm, Cautata Village, Rewa

Manoa Drugucava, Cautata Village, Rewa

Type: Single male farmer

Introduction

Manoa Drugucava started fish farming in 2008 when he was the *turaga ni koro* for Cautata Village. He started with one fish pond in 2008 and was able to dig another after the first harvest. He now has three ponds, which are situated on leased *tokatoka* land. For this interview, two of his three children were interviewed Manoa (Junior), 14 years old, and his sister Maraia, 21.

Decision-making

According to Manoa Junior and Maraia, all decisions are made by their father. When Manoa was the *turaga ni koro*, he was able to attend a few workshops held by the Ministry of Fisheries to support aquaculture farming. He makes all major decisions concerning the household, including how money is spent.

Access and control of resources

According to Manoa (Junior), the land is leased from the *tokatoka*. However, their main home is just outside the village and the fish farms are right outside their door. This gives the family a bit of privacy, with no loss of access to the ponds.

Much of the equipment, such as the net, a big tub to store the newly harvested fish and a scale, is borrowed from the Naduruloulou Station

Access to skills, knowledge (including traditional knowledge), technology and training

Manoa (Junior) contributes to the running of the tilapia ponds by feeding the fish, cleaning the pond and harvesting the fish. He also helps his father sell the fish in the market twice a year. When it is harvesting time, Manoa (Junior) encourages his father to hire extra hands to help out. Five of Manoa Junior's friends have helped out in the past and Manoa says it is not only a way for his friends to earn money but also to learn a little about tilapia farming. Everything Manoa Junior knows about fish farming he learnt from his father, who has had training by the MOF officers. However, Manoa feels it is best that he learns fish farming techniques from his father, because his father is the head of the household and these are his farms but also because he is still a student and his priority is his education.

10. Naiduki farm, Matalaca Village

Akanisi and Simone Naiduki

Type : Husband and wife farm

Introduction

Simone and Akanisi are a husband and wife team that got involved in tilapia farming as a means to earn extra income. The Naiduki fish farm is situated within the village boundaries of Matalaca Village in Tailevu North, about two kilometres from Korovou Town. The farm itself is about 100 metres from the doorstep of the Naiduki household. Due to the proximity of the farm to Korovou Town, the couple have easy access to government services, including advice and regular visits from the MOF officers in Naduruloulou Station, as well as easy access to transport and shopping centres.

Decision-making and empowerment

Although the farm is owned by Simone and Akanisi, a lot of the day-to-day decisions regarding the running of the farm and the household are made by Akanisi. Simone works in the private security forces and is quite often stationed overseas for security missions. At the time of the interview, Simone was overseas on peacekeeping duties.

According to Akanisi, the idea to start the farm was Simone's. He proposed the idea as a means of using their savings to start a business that could bring them rewards in the future. This idea was fully supported by Akanisi and she received her first aquaculture training in 2010 from MOF officers in Naduruloulou Research Station.

Akanisi feels that more people in their village are starting to look to her for advice and support, as their fish farm has been successful. According to Akanisi, she and Simone decided not to depend on government assistance after their home was destroyed by Cyclone Winston. Rather they used their savings and some of the money earned from the sale of tilapia to rebuild their home. The decision to use their own money for the rebuilding of their home was both hers and Simone's. However, Akanisi oversaw the rebuilding of their home and was in charge of purchasing materials and supervising the work. She says this opportunity gave her a sense of pride, as this was something her spouse usually managed.

When they first established the farm, Akanisi had to seek assistance from the Ministry of Agriculture, the district officer, other farmers and village elders. She was not confident to do this alone and had to ask her husband to accompany her to these meetings. She is now very confident and a well-known tilapia farmer in Tailevu. Akanisi says this gives her a sense of pride as government workers are very familiar with her farm and her work. According to Akanisi, she manages the pond by feeding the fish daily and often gets the help of her two sons to clean the pond. Akanisi and her two sons harvest the fish with the help of MOF officers from NRS.

Akanisi is a member of the village education committee, village women's committee and has been influential in other *mataqali* and wider village decisions. She attributes her participation in these village forums and the villagers taking her comments and suggestions seriously to the success of their tilapia farm.

Access and control of resources

Both Simone and Akanisi agreed to approach the village chief to use *mataqali* land for the tilapia farm. This was agreed by the chief and the couple was given a piece of land within the approved boundary for their farm.

Although the land belongs to the *mataqali*, Akanisi says that the village and wider *mataqali* do not have anything to do with the farm and are supportive of their business venture.

Both Simione and Akanisi agreed on how income from the harvest should be spent, but it is Akanisi who manages the spending along the guidelines agreed by herself and her husband. All income from the farm is split a number of ways. A portion is deposited into their joint savings account, Akanisi receives an allowance for managing the farm, as do her sons for helping out, and the rest of the money is spent on bills, the upkeep of their home and the purchase of farm tools for their tilapia farm.

Access to skills, knowledge (including traditional knowledge), technology and training

Akanisi has had only one training session on aquaculture in 2010 from MOF officers in the Naduruloulou Station. However, since then, all interaction with MOF officers has been on-site. Many of the visits by the NRS team have been due to the low quality of fry resulting in low yield, and poor water supply.

Other impacts of tilapia farming

According to Akanisi, tilapia farming has had an impact on the family in a number of ways. The whole experience of going into fish farming has given her confidence to speak to public servants and other technical people, she would not otherwise liaise with in her everyday life. Further, the fish farm venture has opened up and improved communication with her spouse Simione. According to Akanisi, there is a lot more to talk about and focus their energy on when he is overseas and even when he is home with them. Akanisi also feels that the farm has improved the education of children in the sense that it has taught them the importance of planning and responsibility as they are tasked with feeding the fish and occasionally cleaning the pond. The income from the harvest also means she can buy additional food and clothing for her children that they might not otherwise be able to afford, such as rugby boots and canvas shoes for their sporting activities.

Annex 2

Gender analysis of aquaculture in Fiji: Community-based tilapia farms in Viti Levu

Fieldwork

Sample guide of questions

What we want to know	How we obtain the information	
A. Work roles	Sample questions	Notes for the researcher
<ol style="list-style-type: none"> 1. The gendered division of labour in aquaculture projects, the household, and in other forms of livelihood activities. 2. How gendered roles have changed over the last 10 years, or changed as a result of the tilapia farming activity. 	<ul style="list-style-type: none"> • When did you start the tilapia farm? • What jobs do you often do for the tilapia farm? • Do you sometimes do other work that your husband/wife or another community member is usually responsible for? • Are there some jobs on the tilapia farm/in other agriculture work that you don't do at all? If so, explain. • How has the work you do in the home/community/village changed over the last 10 years/since the tilapia farm was established? • How have the changes to the work affected gender relations? • Do you think your role in the tilapia farm has improved the way people see you in the household/community? If so, how? 	<ul style="list-style-type: none"> • Find out about other agriculture farming work they do and what is involved in that work. • When you get a sense of their roles, find out how often they engage in the work and how long it takes. • Find out if they are discouraged or prohibited from doing any particular kinds of work. • Seek their thoughts on the changes, if any. • Ensure they understand what is meant by gender relations.

B. Decision making	Sample questions	Notes for the researcher
<ol style="list-style-type: none"> 1. Who makes the decisions in the home/community. 2. Who makes the decisions related to the tilapia farm. 3. How decision-making trends have changed over the last 10 years. 	<ul style="list-style-type: none"> • Can you tell us about how decisions are made in your home? For example, how do you decide how to spend money on small items such as groceries, and how do you decide whether and how to buy bigger things like farming equipment or a washing machine or a car? • Can you tell us about how decisions are made in the village/community? For example, how often does the bose va koro meet? Are there any other type of village meetings – faith-based or youth group meetings, or Soqosoqo vakamarama? Please identify them. Do you attend? Who else attends? Do women /women’s groups attend? What is typically discussed? • Who makes decisions related to the tilapia farm – e.g. who decides what to do with the money made from farming and/or how to utilise the tilapia/who to give it to? 	<ul style="list-style-type: none"> • Find out whether trends in decision making have changed over the years – e.g. Did women attend the bose va koro meetings ten years ago? • Try to compare trends in decision making between farms (tilapia vs rootcrop etc) and if there are different modalities in farming operations (i.e. tilapia could be committee-run and other rootcrop farming could be family-run).
C. Access to and control over resources (including access to training opportunities and knowledge)	Sample questions	Notes for the researcher
<ol style="list-style-type: none"> 1. Who has access to and control over resources and technology. 2. What are the local knowledge and skills of men and women in the farm system and in aquaculture. 3. How women and men respectively develop their capacity to do ‘better’ in the farm activities, in particular in aquaculture. – i.e. participation in training; access to information (brochure, radio programme, etc.). 4. What resources are needed to be successful in aquaculture. 5. Who uses those resources more and who most often makes decisions about those resources. 	<ul style="list-style-type: none"> • Have there been any changes in relation to access to resources over the years? • Can you tell us a little bit about the resources you have around you? Are you able to use these resources whenever you want to? What about your spouse/other members of the community/village? • Do you own the resources? Can you make decisions regarding the utilisation of these resources? 	<ul style="list-style-type: none"> • Explain access and control. Also explain what we mean by resources. (water source, car or truck, farming equipment like cast nets, scoop, fish feed, the tilapia itself, root crops vegetable garden, trees, livestock, land etc...) • Include questions about when they started doing aquaculture; what gave them the idea; what they like about it; and what they find difficult or disappointing about it.

D. Other issues and impact of the aquaculture project	Sample questions	Notes for the researcher
<ol style="list-style-type: none"> 1. What are the benefits of aquaculture – food security (how many times per day/week they eat the fish they produce). 2. How is the income generated from your farm (all types of farming) reinvested? (i.e. what % is put back into the farm? What % is used for household expenses and/or other expenses? Who makes decisions on how income is spent? 3. Impacts of natural disasters and how they affect aquaculture (and other agriculture farming). 4. How much of their time is dedicated to dealing with the effects of climate change – i.e. cyclones, drought, etc. 	<ul style="list-style-type: none"> • Can you talk to us about Cyclone Winston? How did this impact your family/community/village? • How often do you eat protein in a week? • Can you tell us a little bit about how your last two incomes from your farming work was used? 	<ul style="list-style-type: none"> • Be cautious/sensitive as some communities have been greatly impacted. • Assess what proportion of protein their intake represents – e.g. half protein intake/week? • These questions will likely be answered in the other parts of the interview, but steer back to this if not answered.

