

The PARDI logo consists of the word "PARDI" in white, bold, sans-serif capital letters on a dark brown rectangular background. To the right of the text is a stylized graphic of two curved lines, one yellow and one blue, suggesting a wave or a path.

**Australian Government**

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# **Tilapia and Inland Aquaculture Strategy**

**Summary of recommendations developed following the PARDI Fisheries  
Component meeting held in Suva 29<sup>th</sup> May 2012 where value chain analysis  
of the industries was presented**

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**Farmed Tilapia (*Oreochromis niloticus*)**

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## Background

Initial value chain analysis for Tilapia in Fiji and Samoa was begun in 2011 as part of ACIAR project PARDI 2010/002 “Value-adding and supply chain development for fisheries products in Fiji, Samoa, and Tonga”. Results of the analysis were presented and discussed at the PARDI Fisheries Component meeting held in Suva on 29<sup>th</sup> May 2012. The following assessments and recommendations are based on the analysis and subsequent discussion of the findings.

### Samoa: “the future of Tilapia farming”

In the short to medium term Samoa is unlikely to be able to generate the momentum to significantly expand the farming of Tilapia beyond current subsistence levels without foreign assistance. Any interventions in Samoa are also contingent on interest by MAFF to proceed to refresh their aquaculture investment strategy which essentially is hamstrung by a lack of vision, risk analysis, priority setting and funding. Development would require a concerted effort from Fisheries and Agriculture departments supported by other agencies in the country necessitating “a whole of government strategy”. Government support on its own would require a strong justification based on food security or other social capital benefits. Large commercial investment in this industry (supported by government) is possible but would require rigorous financial justifications to be developed and investors motivated by financial returns, encouraged to participate. It is unclear as to who in Samoa would have the capacity to undertake such a role.

Success in Tilapia farming will also require support from a small commercial feed industry (current operator Farmfresh) which is struggling to maintain viability because of scale, cost and supply of suitable protein ingredients. The development of feed for the pork and poultry industries goes hand in hand with fish farming and one cannot progress successfully without addressing all simultaneously. Fisheries, aquaculture section is under resourced and would require scaling up of hatchery facilities, operator skills and farm extension capabilities. In the interim some small scale investment within current budgets could be justified in supporting a lead farmer to expand operations so that the demonstrative benefits of a commercial venture could be captured and used to stimulate interest.

**RECOMMENDATION: There seems little value in pursuing additional investment from PARDI in Samoa preferring that remaining funding is re-directed on the market that has the highest chance of success (Fiji).**

## **Fiji: “Taking a lead role in freshwater aquaculture”**

The Pacific Island Communities would greatly benefit by example if one country could be facilitated to take a lead role in properly demonstrating the viability of commercial Tilapia farming. Fiji is in an excellent position to lead the way towards a sustainable industry and where lessons learned could then be applied across the region. Fiji has a large number of farms, reasonable hatchery and technical abilities, a commercial feed industry and a large consumer base that can be leveraged for future growth. Fiji is also well progressed with the farming of fresh water prawns (*Macrobrachium rosenbergii*) with one large farm delivering good commercial volumes at a profit. As some Tilapia farmers also farm prawns and there are advantages if both developments could be linked together and supported simultaneously.

To date development for Tilapia has been driven by government Fisheries Forestry Department (FFD) taking the lead role in supporting the research facility and promoting subsistence farming in rural areas. This has been supported by SPC aquaculture scientists and ACIAR over a long period of time and critical that this investment continues. This has created a lot of investment by the Fiji Government creating considerable awareness and social capital particularly in rural communities and villages. However, the industry is at the cross roads where despite considerable institutional support through FFD and stimulus grants only a small group of farmers out of (300) have moved to a semi commercial footing but a larger group have decided to opt out of regular farming commitments.

Whilst there have been many good initiatives to date the industry lacks leadership and a coherent strategy that can take some of the industry farmers to a commercial level. From a higher level there appears to be a gap in overall industry/regional priority setting and planning. This is not essentially the role of PARDI or ACIAR to undertake under this current project but there are a number of suggestions that could be redirected under the current “value adding PRA” (PARDI 2010/002) that could have positive impact. These are addressed under the following headings

### **1. Value adding component**

This initiative has involved the development of a range of whole smoked fish, fish dips and Surimi products which have been developed by a USP student Ms Janice Natasha (Master`s degree thesis) with oversight by Dr Jimaima Lako of USP. This work is scheduled for completion September 2012. This activity has included public consumer testing in Fiji and Samoa which has confirmed that Tilapia and value added products have potential and are worth exploring further.

**RECOMMENDATION: That further work on surimi and fish dips is set aside in favour of progressing towards a feasibility analysis of the commercial potential of the smoked variations.**

This could be explored further by working with an existing enterprise involved in seafood or smallgoods processing and distribution to evaluate current constraints to market development, product, food safety and quality assessment. Research would include identifying key consumer attributes required for a smoked product, finalisation of product and process formulation, cost pricing and consumer pricing. Additional work to determine market acceptance at retail and food service should be included. Food safety risks assessment and HACCP would also be integrated.

## **2. Food service sector analysis**

There has been considerable interest in the development of large size fish for retail and hotel restaurant trade but it has not been possible to test the acceptance of large size fish by markets due to a lack of supply. This includes understanding and integrating product efficacy with the impact of commercial feed regimes on product quality and cost from a buyer/consumer perspective.

**RECOMMENDATION: The economics and practicality of growing fish over 600-700 grams has not been performed and it is recommended that a trial batch of fish is contracted & grown (using commercial feed) at a suitable location and then used for product development research purposes.**

This stock will be used for product and market testing with retail and restaurant operators, value adding (filleting and smoking) promotion to farmers and public and to identify commercial feasibility. This program could be undertaken by USP students and supported by IMR under PARDI.

## **3. Expansion of live fish sales**

The creation of more retail selling sites to facilitate sales turnover for existing farmers is critical to developing consumer momentum and improving sales for farmers constrained by lack of market access.

**RECOMMENDATION: That a plan is developed (FFD/IMR/SPC) to be used to justify the progressive development of permanent sales outlets in Suva and Nadi municipal markets to operate on Saturday market days while continuing to maintaining the Nausori outlet. This plan would also lead to the expansion of distribution to second tier markets such Sigatoka Lautoka in the west and in Lambasa to support farmers in Vanua Levu in the north.**

Consumer pricing in Nadi (farms from west) and Suva (farms from central) can be increased to reflect addition freight and collection and sales support costs. This outlet expansion phase needs to be coordinated and supported by farmers who may need support in supplying live fish to meet market schedules.

#### **4. Collaborative lead farm cluster program**

A model that transitions (willing) semi commercial farmers to a commercial footing needs to be developed to take the industry to the next level. This cannot be done with individual farms as they are all too small in capacity and scale and farmer knowledge/expertise. This would require the formation of a farmer`s group, identification of lead farmers and a development plan /seed funding to create scale to justify the groups development.

**RECOMMENDATION: That the concept is “workshopped” with prospective farmers and (FFD/IMR/SPC) and a funding proposal led by the key stakeholders be developed. This proposal would require farmer contribution as well as provide resources for the development of the commercial cluster over a 4 year period.**

Consideration in planning needs to be given to what support levels are required to reinvigorate the non-commercial sector where a large number of subsistence farmers and community groups are highly dependent on government support. The funding window provided by ACIAR for a new 4 year \$million (AusAID) funded aquaculture project available from July 2012 should be investigated as soon as possible.

**RECOMMENDATION: A further recommendation is that lead demonstration farm (s) be developed under the cluster development strategy and these are used to proof farming techniques, education and promotion of the category to the wider community including other PIC**

#### **5. Integrating fresh water prawn farming**

There are considerable benefits in developing a fresh water prawn farming industry in Fiji as commercial farmers would benefit from investing in both farming enterprises. There is a considerable economic benefit in replacing imported prawns from Asia. Lead commercial development would have regional implications for development across all Pacific island countries.

**RECOMMENDATION: That a rapid chain analysis of the fresh water prawn farms is conducted with a view to determine the issues constraining development, testing market acceptance with a view to integrate development issues with Tilapia Farming.**

This can be funded out of existing PRA funds (IMR and Adelaide University) and completed by November 2012.

## **6. Naduruloulou Research Station (NRS)**

NRS role is critical to the future of the industry as genetics, fingerling supply and feed development programs need to be adequately resourced. This includes the carp and other fresh species, Tilapia and fresh water prawn as well as supporting other government hatcheries and research program in Fiji:

- to support existing government policies for subsistence and farm development in rural communities and refine role of government resources
- as interim support for the 4 year commercialising program where commercial farms will need to be weaned off government support and will be required to develop independent hatcheries

**RECOMMENDATION: That a review of the role of NRS is undertaken with a view to invigorating its national and regional role and ensuring management and operational outputs are lined up with the Prawn and Tilapia fresh water strategies.**

## **7. Managing the way forward (Inland Aquaculture)**

The importance of people, program and project management and implementation will be critical in driving these industries towards a sustainable future. Harnessing the contribution of the many stakeholders including government, fisheries department and farmers will be a significant challenge.

**RECOMMENDATION: That future funding proposals include establishing an industry development team (from stakeholder group) including a fulltime program development officer appointed to lead and drive the development of this industry.**

This 5 year role will include the development of an industry development plan to include both prawn and Tilapia Industries (subject to favourable outcomes from the prawn chain analysis as well as the role of supporting agencies such as ACIAR/SPC and other research institutions. The role will include introducing international best practise targets to future development and the promotion of the products and the industry.

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*NOTE: It was noted that there have been discussions about introducing Tilapia farming into Vanuatu. This may be possible but caution needs to be taken before any assistance is directed towards this path. (Capturing lessons learned from Samoa and Fiji and possibly the Solomon`s and PNG would be critical before any planning and investment is undertaken)*