SPC Regional Pearl Meeting, December 2005, Fiji

Ben Ponia[1]

The Tokatoka Resort in Nadi was the setting for the first regional pearl meeting. Considering the economic significance of this industry and the widespread interest of Pacific Island countries in developing their cultured pearl industry, a regional forum to discuss technical issues has been long overdue. Critical challenges for the sector were identified as seed supply — increasing hatchery capacity; farming — utilising technological advances, such as triploid oysters; pearl quality — improving seeding technician standards; and sales — strengthening marketing.

Background

Cultured pearls are among the most alluring products of the Pacific. Although the early days of the gold rush mentality are over, the Pacific Islands remain determined to develop local industries in spite of the challenges involved. This resolve has been evident through past and current efforts.

Pearls are rated as a priority commodity by the Pacific Community. The regional pearl meeting, organised by the Secretariat of the Pacific Community (SPC), was held at the Tokatoka Resort, Nadi, Fiji, from 31 November to 2 December 2005. The meeting's objectives were simple: to provide a technical round-table forum to benchmark the status of pearl production in the Pacific, share information of common interest, and explore areas for technical collaboration.

Meeting participants included representatives from governments, the private sector and academia. The meeting was chaired by Mr Maciu Lagibalavu, Director of Aquaculture, Fiji Ministry of Fisheries.

Status of pearl farming in the Pacific Islands

French Polynesia remains the powerhouse producer of pearls in the Pacific followed by the Cook Islands with relatively smaller production. Other countries including Fiji Islands, Marshall Islands, Federated States of Micronesia, Tonga, Papua New Guinea, Solomon Islands and Kiribati are in varying stages of commercialisation. In recent years, the average value of pearl exports from the Pacific has been around USD110 million per annum — a decline from a peak of about USD170 million in 2000 mainly caused by an oversupply of pearls and poor quality.

Whilst countries mainly target the cultivation of *Pinctada margaritifera* oyster for its black pearl, there is an opportunity to diversify the range of pearls coming out of the Pacific. For example, Solomon Islands and Papua New Guinea have naturally occurring stocks of *Pinctada maxima*, which produces a luminescent white pearl branded as the South Seas Pearl. A commercial operation in Milne Bay, Papua New Guinea, is presently farming *Pinctada*

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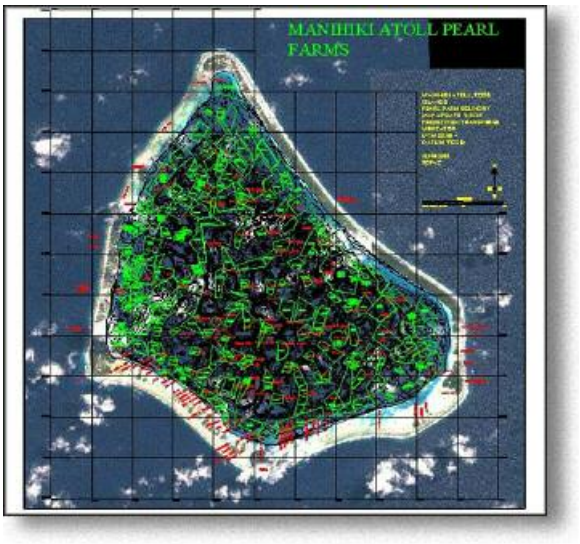

Pearl farm mapping at Manihiki Atoll in the Cook Islands

maxima. The winged oyster (*Pteria penguin*) is found in Fiji and Tonga and can be cultivated for a half pearl with purple undertones similar to those of abalone pearls.

There are diverse development strategies for emerging players in the region. Fiji Islands has made significant progress in commercial production and the 10-year government plan aims for a FJD40 million industry. The private sector is already marketing Fiji Pearls in an exclusive bracket. In Micronesia, the results of hatchery and farm trials are being adapted for small-scale opportunities suited to rural communities, as explained by Mr Masahiro Ito from the College of Micronesia. An example of the feasibility of this approach is provided by Nukuoro atoll where a small pearl farm is being successfully operated under the autonomous management of the local community.

Constraints and opportunities

In countries where natural stocks of oysters are low, the lack of seed supply is a bottleneck constraining the expansion of pearl farming. Given that the investment time for a pearl enterprise is at least in the order of 10–15 years, it is critical to secure a consistent source of oysters. Fortunately, the technology for breeding pearl oysters is fairly well developed and there are a number of operational hatcheries to learn from. The low-cost, low-technology pearl hatchery on Kiribati continues to sustain an unusually high rate of pearl spat settlement. However, government programmes also often underestimate the level of dedicated effort required to operate hatcheries efficiently and to create the investment climate necessary for commercialisation.

The Pacific region should be supportive of continued pearl research to ensure that it does not lose out on advances in technology that may offer significant benefits. For example, sterile oysters induced through triploidization divert their energy from reproduction into growth. This could significantly reduce the time (and cost) to incubate the pearl, ultimately increasing profitability. Establishing a genetic improvement programme could enable the selection of oysters that generate pearls of specific colour or size.

Environmental management becomes crucial as farming levels intensify. This lesson was learnt the hard way in the Cook Islands, which is still recovering from a severe oyster disease at Manihiki Atoll in 2000, due in part to overstocking. Management measures outlined by Mr Kori Raumea from the Cook Islands Ministry of Marine Resources involve (1) regular environmental monitoring, such as testing of water quality using automated probes deployed on a remote buoy, (2) a digital mapping system to allocate farm leases

Pearl farm being prepared in Micronesia

and analyse oyster density, and (3) new legislation and an Atoll Lagoon Management Plan to encourage best farming practices.

The pearl grafting operation ("pearl seeding") is perhaps the most important factor directly affecting pearl quality and it accounts for a significant proportion of production costs. Dr Maria Haws from the University of Hawaii provided some straightforward arguments that clearly show why a poorly skilled seeding technician can drastically reduce revenue to unprofitable levels. According to her analyses, if an "excellent performing" technician and a "poor performing" seeding technician are provided with a thousand oysters, the excellent technician will generate USD19,000 dollars revenue compared to just USD8,600 dollars from the poor technician (Table 1). Even with lower fees, a poor performing technician will still lead to unprofitable levels of revenue.

Clearly, if the Pacific wishes to improve the profitability of the pearl sector, then investing in programmes to raise the standard of pearl-seeding technicians will be essential.

Pearls are jewellery items and maintaining a marketing campaign is essential to entice buyers to these discretionary products. No segment of the industry understands this better than the private sector. Pearl farmers, Mr Temu Okotai from the Cook Islands and Mr Justin Hunter from Fiji shared their experiences of marketing in the business world. In addition, Mr Hunter outlined the integration of their Savusavu-based farm with the aspirations of the local qoliogli, so local communities can share in company profits. Mr Okotai raised the prospect of a Pacific brand for marketing pearls and challenged the region to work together for mutual benefit rather than to compete. The recent stabilising of pearl prices brings some optimism to the marketing environment, although the adage that "high quality pearls will always sell" remains true.

Dr Quentin Fong from the University of Alaska provided economic sensitivity analyses based on a Northern Pacific farm model showing that variation in marketing price is the factor that has the greatest impact on profitability and cost. A one per cent increase (or decrease) causes a five per cent increase (or decrease) in net profits. His findings validated the earlier presentations on the importance of marketing.

Recommendations for regional collaboration

The following recommendations were made by meeting delegates to synthesise current challenges in the pearl sector and formulate strategies to address them, with an emphasis on the need for regional collaboration.[1]

Policy, networking and information

1. The lack of clear policies in the pearl sector must be addressed.
   a. Existing policies should be revisited to amend or create clear policies where needed;
   b. All stakeholders must be involved in this process.

2. The lack of regulations and legislation — particularly in the area of water rights, leases and tenure for private sector individuals — must be addressed.
   a. Clear regulations and legislation should be put in place.

Table 1. Performance measure and profitability for varying levels of technician skills (seeding 1000 pearl oysters and charging a fee of USD 3.00 per oyster).

Parameter	Technician 1 "Excellent"	Technician 2 "Average"	Technician 3 "Poor"
Results at harvest			
Poor quality, unsaleable pearls (%)	20%	30%	40%
Revenue at harvest			
Revenue from pearls	US$ 19,000	US$ 13,300	US$ 8,600
Seeding costs as % of revenues	37%	53%	81%

1. These recommendations were presented to the SPC Heads of Fisheries Meeting, Noumea, 3–7 April 2006, and subsequently endorsed by country representatives.

3. Policies should incorporate the obligations of a grafting permit required by a seeding technician.
   a. Since many seeding technicians are foreigners, such a permit may need to be incorporated in foreign investment policies.

4. A regional association should be established as a commission for the pearl sector.
   a. Its formation could be endorsed through the Pacific Islands Forum Secretariat (PIFS) Heads of Government meeting;
   b. It should include the main producing countries. Assistance could be provided through regional organisations;
   c. The Pacific regional maritime association (PACMA) could serve as a prototype, with the Secretariat of the Pacific Community (SPC) as the secretariat;
   d. Regional meetings of the pearl sector are urgently needed.

5. The lack of information and resources to share information must be addressed.
   a. SPC and other regional bodies should be encouraged to address this shortfall;
   b. Newsletters, bulletins and websites, etc. should be utilised;
   c. A database may be required;
   d. If necessary, a regional coordinator post should be created and filled;
   e. A network for collaboration should be established.

Marketing

6. SPC should be tasked with gathering and disseminating marketing information to all of its regional member countries in a timely manner.
   a. Information sources such as national marketing reports and international newsletters could be utilised;
   b. *SPC Pearl Oyster Information Bulletin*, the aquaculture portal website, electronic flash message distribution services, etc. could be utilised as information clearing house mechanisms.

7. Countries should be encouraged to develop a national marketing strategy.

8. A regional marketing strategy should be developed.
   a. The regional marketing strategy should take note of the opportunities for, and constraints to, inter-regional "branding" of pearls.

9. A regional association should be formed consisting of national representation for the purpose of marketing (including intelligence, standards, etc.).
   a. PIFS and SPC should be tasked with the formation and administration of this association;
   b. The functions of this group could be carried out through the regional association suggested for policy directives in recommendation 4.

10. The region should adopt the GIA (Gemological Institute of America) standards as a minimum requirement.

Research and development

11. The goal of research and development should be oriented towards increased profitability. This equates to improved pearl quality and retention, more efficient culture methods and stock improvement.
    a. Existing opportunities for research include genetic selection, triploidy and seeding techniques;
    b. James Cook University (JCU) of Australia is well placed to deliver on the research and development programmes identified above.

12. Capacity for pearl disease management must be enhanced.
    a. SPC should collaborate with other key regional agencies such as SOPAC and SPREP in developing guidelines for best farming practices.

13. There should be efficient communication between the various stakeholders involved in the research and development process.
    a. SPC could act as a vehicle for establishing communication, utilising mechanisms such as the *SPC Pearl Oyster Information Bulletin* and aquaculture portal website to achieve this.

14. There should be special emphasis on the monitoring and evaluation of seeding technicians.
    a. Critical control points, such as United States HACCP standards, could be used as a checklist and as minimum standards for technicians and farmers to adhere to;
    b. Where comparisons may be useful, countries within the region should be encouraged to share data on the seeding success/failure rates of their technicians;
    c. A standard reporting sheet could be developed that countries could adopt to develop a common database. There would need to be confidence within countries

and industry on the handling of sensitive seeding information;

d. A regional or national "grafting inspector" may be required within the profession.

Infrastructure

15. The development of hatcheries and spat collection to ensure consistent supply of spat for farming is a critical infrastructure area that needs to be addressed urgently.

Training

16. Training in oyster biology and hatchery culture is a key priority for the region.
    a. JCU and the University of Hawaii at Hilo (UHH) are training institutions within the region. JCU has run courses in this area in the past funded by the Australian Centre for International Agricultural Research (ACIAR);
    a. ACIAR is a potential funding agency within the region;
    a. The concept of an oyster biology/hatchery training programme could include the following:
        - two courses run per year over a three year period;
        - six-week courses covering longline/equipment deployment; microalgae culture spawning induction; hatchery culture; larval, nursery culture and grow out;
        - once the course has been fine-tuned and established, it should be phased into the region by involving the University of the South Pacific (USP) as a regional training centre. This could occur around year 3.

17. Training efforts should be undertaken to increase the number of well-qualified local seeding technicians in the region, particularly in countries with large commercial production.
    a. A source of abundant pearl oysters must be found so that training can take place. This may necessitate a regional training centre where resources can be pooled (e.g. a hatchery);
    a. It is preferable that training be undertaken in-country;
    a. A travelling trainer may be the most effective way of providing training in seeding techniques to remote and distant areas. A "Master Grafting Technician" qualification could be required within the seeding technician profession.

18. A regional workshop on pearl grading should take place to strengthen farmers' knowledge of pearl quality and marketing aspects.
    a. SPC should be tasked with organising and seeking funding for such a workshop;
    a. It may be more effective for a travelling trainer/grader to visit countries.

19. Certification provided by training programmes could be a requirement for those wishing to be granted a permit under a national permit system (e.g. for French Polynesia).
    a. This could ensure a minimum level of technical competence within the industry;
    a. Regional standards could be incorporated into national certification programmes.

A low cost pearl hatchery in Kiribati