

A QUIET ACHIEVER: AQUACULTURE IN THE PACIFIC

Introduction

The Pacific has its own unique brand of aquaculture, one tailored to its needs and quietly assisting the economy and well-being of its people. It may come as a surprise to some people that aquaculture products are among the region's most valuable fisheries exports, ranging between USD 130 and 180 million each year. As well as its monetary value, the social capital of aquaculture in the Pacific is immense.

Aquaculture is the world's fastest-growing food production sector, currently accounting for one-third of all fish production; the remainder is provided by wild fisheries. By 2020, this trend is expected to be reversed, with 70 per cent of the world's fish needs produced through aquaculture.

Aquaculture includes anything to do with farming in fresh water or marine water (the term "mariculture" specifically refers to farming in seawater). A handful of key commodities — black pearls, prawns, seaweed and freshwater fish — demonstrate aquaculture's appropriateness and significance to the region.

Current value and future wealth

By the late 1990s, cultured black pearls had become the flagship aquaculture product of eastern Polynesia and its most valuable export.

Top: Justin Hunter in Savusavu, Fiji Islands, with some beautiful examples of valuable Pacific black pearls.

Bottom: Prawn farming in New Caledonia is conducted to high environmental standards.

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In 1999, French Polynesian pearl exports topped USD 164 million and in 2000 exports from the Cook Islands amounted to USD 9 million. Subsequently, both countries experienced a slump. In French Polynesia, this was due to an oversupply of poor-

quality pearls, and in the Cook Islands it was from a pearl disease. French Polynesia is now consolidating after a campaign to control quality, while the Cooks are still struggling to recover from the disease.

Pearl farms are being established in many other countries, notably Fiji Islands, where Justin Hunter from J. Hunter Pearls Ltd., reports that "steady progress is being made".

High quality and care for the environment

Prawn farming is a commercial success story in New Caledonia. Succulent white penaeid prawns



were introduced from Mexico several decades ago and now command a top market niche in Japan and France. They are the country's most valuable agricultural export commodity at USD 22 million, and with new farms under construction. Current production is expected to double to 4000 t by 2007.

The industry is renowned for its high environmental standards. Mangroves have not been cleared to make way for prawn ponds; instead, the mangrove forest has been retained to absorb nutrient outflows.

Benefits for rural communities

Kappaphycus seaweed (trade name cottonii) produces a starchy gel called carrageenan that is used primarily in the food industry. Although easy to farm and requiring little capital input, the main drawback to seaweed farming is that the distant markets and limited transport links mean freight costs make it only marginally profitable for local middlemen.

Solomon Islands is experiencing exponential growth in production. Exports (to France) went

from 4 tonnes in 2002 to 240 t in 2004. Villages such as Vaghena used to rely on diving for sea cucumber, but with stocks overfished and a moratorium on harvesting coming into force, seaweed farming will provide up to 90 per cent of the people's cash income, essential not only for their basic daily needs but also school fees, church donations and other social obligations. With planned expansion to places such as North Malaita, Reef Islands and the low-lying atoll of Ontong Java, the country could eventually export up to 4000 t per year, according to Rory Stewart of the EU-funded seaweed project.

Kappaphycus seaweed is also being farmed in Kiribati and Fiji Islands.

Securing local food sources

In Fiji, the GIFT strain of Nile tilapia (not to be confused with Mozambique tilapia, which is considered a pest) is a popular freshwater fish. At Driti Village, in the interior of Vanua Levua, a women's group raises tilapia for village consumption and modest commercial sales. This alleviates the burden on the men, who must earn wages from seasonal labour in the Labasa sugarcane fields. Elsewhere in Fiji, Laisani Baleinacagi from Navua in Viti Levu says he would like to showcase tilapia farming as a "positive way forward of utilising unused rice paddies".

There are 11,000 fish-pond farmers in Papua New Guinea. GIFT tilapia and carp are being farmed in the lowlands, while in the mountainous highlands it is rainbow trout. Barramundi farms are also being established.



**Top: The popular GIFT tilapia
Bottom: Seaweed farming is an important local business for the people of Solomon Islands.**

Where to now?

As with any emerging production sector, there are a host of challenges to be addressed. These include:

- Responsible environmental safeguards should be in place. For example, a robust biosecurity programme is required to support the proper introduction of new genetic material.
- Profitability is a key bottom line. Many past failures have been attributed to poor market research, and future efforts must be supported by proper economic and financial analysis.
- Expansion of fish and shrimp production will depend on developing cost-effective feeds, based to the greatest degree possible on local ingredients.

- Aquaculture may assist in replenishing commercially overfished stocks and providing alternative livelihoods for those affected by such overfishing. The sea cucumber is one such fishery, and pioneering experiments are being conducted in New Caledonia to artificially breed and restock juveniles.
- The Pacific should be mindful that it sits at the doorstep of Asia — a powerhouse and low-cost producer. A graphic example is China, which in just a few years has switched to culturing *Penaeus vannamei* prawns and flooded the world market with hundreds of thousands of tonnes, driving farm prices down to a low of USD 1.50 per kilogram.

- Where practical, efforts should be made to encourage the domestication of local species rather than introduce exotic species. Farming should also integrate traditional practices. In Vanuatu and Wallis and Futuna these concepts are being trialled, with the local freshwater shrimp *Macrobrachium lar* being cultured alongside dalo (taro) in swamp beds.

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