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Ministry of Fisheries, the Kingdom of Tonga  
Japan International Cooperation Agency



## Marketing Trial of Cultured Giant Clam, *Tridacna gigas*, in Tonga

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### Abstract

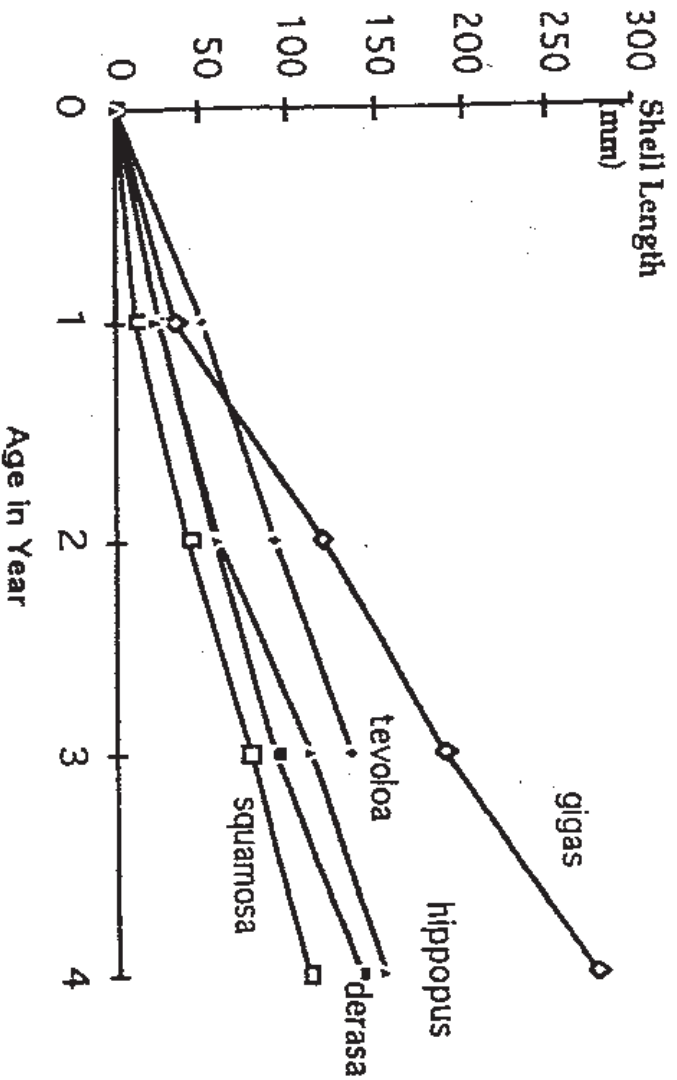
A marketing trial of the cultured giant clam, *Tridacna gigas*, was carried out in October 1994. The clams were sold at T\$1.00 - T\$4.00 per piece depending on their size. All the clams on sale were 4-year-old and still immature with no development of gonads. Even though the price in relation to clam size was attractive, as the consumers were unfamiliar with the clams, only few bought large quantities of them. The preference of local consumers for clams with gonads was found to be one of the major factors for the low sales.

### Introduction

*Tridacna gigas*, the largest and fastest growing species of giant clam does not occur naturally in Tongan waters. In 1991, approximately 11,000 5-month-old *T. gigas* were introduced from James Cook University Orpheus Island Research Station, Australia under the Australian Centre for International Agricultural Research (ACIAR) funded giant clam culture project. The aim was to establish a stock in the wild (ACIAR, 1992). Clams had been kept in a quarantine tank system at Sopu Mariculture Centre (SMC) for half a year before they were transferred to Sopu Ocean Nursery. They were kept together with other species of giant clams and their growth and maturation was monitored.

The growth rate of the *T. gigas* was significantly higher when compared to that of the other species (fig.1). The average size of a 4-year-old *T. gigas* was almost double that of any of the other species.

Figure 1 Growth of 4 species of giant clams reared in Tonga



Its rapid growth rate inspired the idea to import larvae or spats and raise them to a marketable size to sell locally. As *T. gigas* was exotic to local consumers and its features were quite distinctive, the Ministry of Fisheries carried out a marketing trial to determine if consumers would buy them as a substitute for other species.

### Materials and Methods

A total of 120, 4-year-old *T. gigas* were prepared for the marketing trials. Five trials were conducted between 8 October 1994 and 22 October 1994. The clams were harvested from Sopu Ocean Nursery before each trial and divided into four price categories by size and weight as shown in table 1. They were then sold at the SMC and two local fish markets, Vuna wharf and Tu'imatamoana. Their price was based on the average price of giant clam at fish markets in Nukualofa being T\$1.00/kg. The price for individual sales of larger clams was normally more than T\$5.00 each, therefore trial prices for *T. gigas* were thought to be reasonable for the consumers. The unsold clams were returned to the stocking tank at SMC and sold in subsequent trials.

Table 1 Categories for the market trial clams

Size Class	18cm - 20cm	21cm - 23cm	24cm - 26cm	27cm - 31cm
Weight	1.2kg - 1.5kg	1.6kg - 2.4kg	2.5kg - 3.5kg	3.6kg - 5kg
Price	T\$ 1.00	T\$ 2.00	T\$ 3.00	T\$ 4.00

### Results

Seventy-four of the one hundred and twenty clams were sold during the marketing trial (table 2). *T. gigas* was bought by Tongan people in spite of being an unfamiliar species, however, complaints were made by many customers and some clams were returned. Details are as follows:

- 1) 08 October 1994 (Saturday)  
Fifteen clams were sold at Tu'imatamoana fish market. The first customer wanted to buy the clams for Tongans living in the United States and purchased all the clams.

- 2) 12 October 1994 (Wednesday)  
Six clams were sold at SMC. The others were taken to Yuna fish market. One Chinese and four Tongans purchased a total of eleven clams. Only two T\$2.00 clams remained after two and a half hours trading.
- 3) 14 October 1994 (Friday)  
The total of twenty-six clams were ordered by one customer. Ten T\$1.00 clams were, however, later returned.
- 4) 15 October 1994 (Saturday)  
A total of twenty-six clams were offered for sale and thirteen clams were bought by customers at Yuna market. The remaining clams (10x T\$2.00, 3x T\$3.00) were left unsold after six hours trading.
- 5) 22 October 1994 (Saturday)  
Only three clams were bought by one customer at SMC. No clams were sold after seven hours trading at Yuna market.

#### Discussion

Giant clam is one of the most favoured shellfish of the Tongan people (Tu'avao, *et al.*, in prep.). A major but unique market for giant clam is for private export. Up to 50% of the clams fished in Tonga are sent to Tongans who have migrated to countries such as New Zealand, Australia and the USA (Tacconi and Tisdell, 1992a). The Tongan government also allows a person to carry 10 kg of clam meat when going overseas. Tisdell and Wittenberg (1990) and Tacconi and Tisdell (1992b) indicated the significance of this specific giant clam market. Another demand for giant clam is as a food for traditional or ceremonial dishes. For both markets, taste is not as important as size and availability,

indicating *T. rigas* might be an acceptable alternative to the usual species.

On the other hand, the price as well as taste of the clams is a very important factor for the average consumers. The price of *T. rigas* compared favourably to the other species sold at the market, but taste was an uncertainty. Some customers were tempted to buy the clam at first sight, however, the majority of customers hesitated to buy large quantities due to the clam's unfamiliar features and taste. At the beginning of the trial, clams sold relatively quickly but as the trial progressed, the sale rate decreased gradually to nothing on the last Saturday. Usually the small clams remained unsold. Comments from customers who bought the clams indicated a preference for gonads. This may be why most customers preferred the larger clams, yet none of the clams had developed gonads. They also claimed that the clam meat has more water content compared to other species. In addition, size of the adductor muscle of *T. rigas* was half or less than half of that of similar sized *T. squamosa*. One customer returned the clams after he learnt from another customer that the clam had no gonad and its meat was watery. Another customer who bought fifteen clams and requested more to send abroad, didn't return to collect the remainder. Peavey and Riley (1993) reported that *T. rigas* received the lowest scores throughout all the taste sensory categories in the Federated States of Micronesia (FSM) compared to *T. derasa* and *H. hippopus*, however, the taste of gonads was not mentioned in this trial.

The results of this trial suggest the clams should be left until they mature in several years. These clams could also be allowed to spawn and then be released to establish stock in the wild. Another marketing trail is recommended for the future using the mature clams (with gonads) to better

determine the economical feasibility of farming this fast growing species.

Table 2 Results of the trial marketing of giant clam, *T. gigas*, in Tonga.

Date	Price	No. of clams prepared	No. of clams sold	Place and time
08/10/94 (SAT)	T\$ 1.00	5	5	Tu'imatamoana Market 7 A.M. - 9 A.M.
	T\$ 2.00	5	5	
	T\$ 4.00	5	5	
12/10/94 (WED)	T\$ 2.00	11	9	Sopu Mariculture Centre Vuna Fish Market 2:30 P.M. - 5 P.M.
	T\$ 3.00	8	8	
14/10/94 (FRI)	T\$ 1.00	10	0	Sold upon an order
	T\$ 2.00	17	17	
	T\$ 3.00	9	9	
15/10/94 (SAT)	T\$ 1.00	2	2	Sopu Mariculture Centre Vuna Fish Market 10 A.M. - 4 P.M.
	T\$ 2.00	11	1	
	T\$ 3.00	7	4	
22/10/94 (SAT)	T\$ 4.00	6	6	Sopu Mariculture Centre Vuna Fish Market 9 A.M. - 4 P.M.
	T\$ 2.00	10	0	
Sub total	T\$ 3.00	3	3	
	T\$ 1.00	17	7	
	T\$ 2.00	54	32	
Grand total	T\$ 3.00	27	24	
	T\$ 4.00	11	11	
		120	74	

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