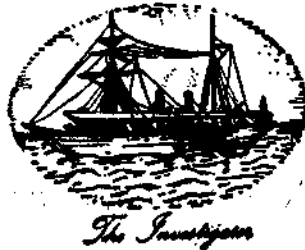


PROCEEDINGS OF THE SYMPOSIUM ON COASTAL AQUACULTURE

Held at Cochin
From January 12 to 18, 1980

PART 2 : MOLLUSCAN CULTURE

(Issued on 31st December 1983)



MARINE BIOLOGICAL ASSOCIATION OF INDIA

POST BOX NO. 1023, COCHIN 682011, INDIA

Price : Rs. 350.00

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SYMPOSIUM SERIES 6

Abbreviation

Proc. Symp. Coastal Aquaculture, Pt. 2

PRINTED IN INDIA BY K. G. JOHN AT THE DIOCESAN PRESS, MADRAS 7 AND PUBLISHED BY
E. G. SILAS ON BEHALF OF THE MARINE BIOLOGICAL ASSOCIATION OF INDIA, COCHIN-682 011.

SOCIO-ECONOMIC PERCEPTIVES OF OYSTER CULTURE IN INDIA

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ABSTRACT

The potential for introducing any labour intensive, income generating marine farming programme aimed at uplifting the socio-economic conditions of the artisanal fishermen has to be properly assessed by the farm scientists before embarking on large-scale propagation of the venture in question over wider areas. In a vast country like India this aspect has to be studied region by region since conditions differ from the coast of one State to another. Proper orientation given based on such a careful analysis will help to ensure effective functioning of the scheme, particularly when it happens to be a new venture. 'Transfer of Technology' scheme initiated in 1979 provided an opportunity to test the feasibility of introducing oyster culture technology developed by Central Marine Fisheries Research Institute amongst a group of small-scale fishermen at Tuticorin.

INTRODUCTION

It has been stated by fishery experts all over the world that capture fisheries are very likely nearing the limits of practical production capabilities in spite of the fact that the potential resources of deeper sea areas of many underdeveloped and developing countries are yet to be fully utilised. (Hanson, 1974) Fishery economists hold the view that the cost of sea-food production by means other than mariculture are likely to continue to rise because of capital expenditure involved. It is in this context that mariculture, particularly molluscan culture assumes greater significance. Greater predictability of production and absence of entry limitations create confidence in those who practise culture operations. Added to these, the more pervasive the practice of mariculture becomes the more routine its procedures and the production. This is again strengthened by cost reductions effected through simplification, improvements and refinements in techniques. The economics of production are affected only by local environmental advantages

and disadvantages as manifested in topographical, physical, chemical and biological properties of farm site. These can be easily overcome by selecting the right area for culture and identifying similar watermasses for further expansion. Considering this, comparison of the economics of production in one country, of any particular culturable species, with another country may not help to evaluate their relative efficiency; more so because of the disparity in labour cost, cost of farm materials, market disposal rates and intensity of consumer demands. But the very fact that culture practices are prevalent and expanding in several countries show that the income generated by such means leads to profit to those engaged in the ventures.

Prawn farming in brackishwater areas has been in vogue in some parts of our coast, mainly Kerala State and has served as a forerunner of similar enterprises elsewhere in very recent years. The same cannot be said about any other culturable species including molluscs. Molluscan culture for producing sea food is something to which the fishermen are not mentally adjusted to even though subsistence fishing for clams in estuarine regions is prevalent. Kerala, Karnataka and Maharashtra fisherfolk regularly exploit natural availability of clams

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and mussels during certain seasons for consumption and sale in the local market.

OYSTER CULTURE

Notwithstanding the natural occurrence of beds of edible varieties like *Crassostrea madrasensis*, *C. gryphoides* and *C. discoides*, oysters do not appear to have been exploited except for meagre exploitation in a strip of Tamil Nadu Coast and Maharashtra. Numerically and distribution wise *Crassostrea madrasensis*, called 'Madras oyster' enjoys a better status and is therefore a candidate for culture attempts on scientific lines. The need for culture of oysters in India even when natural stock is left unutilised is best understood only when the difficulties involved in collecting them from natural habitats are explained. The natural beds are rugged areas and because of the habit of oysters to settle down and get cemented to the substratum and grow as clumps, removal and separation of oysters is a time consuming process. The places where they settle down and grow are shallow, muddy locations, at times inaccessible without injuring the feet or getting the body bruised. Hours of work in the natural bed may but yield scanty oyster flesh not commensurate with efforts spent which the fisherfolk otherwise feel can be expended by engaging themselves in other easy money earning efforts. This has resulted in their total disregard for oyster exploitation from time immemorial. The present day techniques of culture of oysters had put oysters on a par with other edible seafood products with very little difficulties posed in harvesting the tended stock.

Main considerations and criteria in oyster culture

(a) Area availability and resources

Tamil Nadu coastal area has been identified as rich in the natural resources of the edible oyster *Crassostrea madrasensis* and environmental characteristics of the water mass

are also suitable for attempting oyster culture. It has been estimated that an area of 0.145 million hectares of brackishwater area are available for utilization (Silas, 1977) and an equal area of shallow coastal belt can also be utilised for establishing farms wherever conditions permit.

(b) Availability of culture technique

Initial breakthrough in oyster culture has been made by C.M.F.R.I. at Tuticorin. The feasibility of culturing oysters by following 'Rack' system has been shown whereby a production estimate of 140-150 tonnes per hectare is within easy reach. The initial cost involved in the process does not entail huge capital investments. The period needed for growing oysters to marketable size is inside of 12 months from the date of spat collection and only marginal attention and labour is needed for farm management. Women and children can easily carry out the works, connected with routine farming operations. The entire process is ideally suited for marginal fishermen for taking up the venture as a spare time avocation.

(c) Cost of production

Cost of production involved, worked out for a set of 1 rack, is as follows :

Cost		Rs.
Teakwood (17 poles)	..	170.00
Ropes etc.	..	30.00
		<hr/>
		200.00
Cost of 20 cages per rack	..	600.00
		<hr/>
Total	..	800.00
		<hr/>

Production

No. of oysters at 250 per cage	..	5000
Mortality 8%	..	400
		<hr/>
		4600
		<hr/>

At the end of 12 months wt. of oysters at the rate of 8 oysters/kg. $\frac{4600}{8} = 57.5$ Kg

Total wt. of flesh at 10% of weight 57.5 Kg

The oysters (with shell) can be marketed to internal agencies at the rate of Rs. 20/100 which will yield Rs. 920 per rack, thus yielding a net profit of Rs. 120 per rack. The area occupied by a single rack is 25.5 sq. m and in 1 hectare it is possible to erect at least 250 racks which will yield a production of not less than 140 tonnes (shell on weight) and a minimum of 14 tonnes meat weight. In terms of income per hectare, yield will be Rs. 30,000 giving an average of 2500 per month. For managing a hectare farm collective labour needed will amount to 10 members although it might be less depending on the ability of fishermen to manage. Each rack together with the cages is good for a period of 3 years and so capital investment is 'zero' in second and third year. Maintenance expenditure will amount to Rs. 350 per year by way of mending the cages and renewing and replacing the snapped ropes. Thus the venture is not only financially sound but also productive and employment oriented. (The figures are based on actuals arrived at by operating 100 racks during 1976-77 and 1977-78).

(d) Economic considerations

The earning capacity of an active fisherman is considered fairly high, especially so when he is a mechanised boat owner. Naturally the appeal to him will be less. On the other hand an artisanal fisherman who ekes out a living of bare means will be benefited by the culture practice. In any effort to make the fisherman get involved a daily income appears to hold the key, since they are poor and cannot wait till the year to market their products and get the proceeds as in the case of agriculturists. This is because of their poverty and habit of purchasing their domestic food and ration requirements on a day-to-day basis. Therefore any effort to involve them in farm practice should be

without affecting their normal fishing routines whereby they get daily returns.

(e) Mobility of labour

Labour in fishing industry has not exhibited signs of mobility so far. But in recent years the outlook has changed when it comes to the question of earning more money by exploiting resources of the sea. Such works involve shifting of operations from one place to another, total abandonment of traditional fishing for the sake of new enterprise, a sort of 'pescatorization' (FAO, 1957). This change in attitude augurs well for introducing new systems of fishing like 'oyster culture'.

Experimental transfer of technology

At Tuticorin Research Centre where oyster farming methods have been developed, it was planned to introduce the programme of transfer of technology on oyster culture to a selected group of small-scale fishermen. Many fishermen who were controlled did not come forward since no money is to be given to them to start with either as grant or subsidy. It was explained to them that all they need to do is to spend a few hours of their leisure which would eventually bring them a steady additional income without hampering their normal fishing activities. But many could not comprehend the significance of this programme probably because the very idea was new to them. Those who were convinced, expressed willingness to take up oyster farming as an additional occupation. A benchmark survey was conducted to get information on family details especially their income, etc. of 15 families selected for this programme. There is not much social disparity amongst them although a group of four fishermen owning boats seemed to enjoy a slight edge over the rest. All the fifteen were classified as belonging to economically backward fisherfolk.

The level of education attained by them is deplorably low. For a well developed urban

centre like Tuticorin with plenty of facilities and opportunities for getting atleast a fairly moderate level of education with all incentives offered by Government, the youth are least attracted and continue their blissful oblivion forsaking their educational pursuits in favour of the call of the sea.

The annual income of a labourer is approximately Rs. 3600. Of this major slice goes for domestic expenditure. The boat owner's annual net income is about Rs. 5400 while his budget for domestic side is a bit high, a considerable sum is earmarked and spent for the maintenance of craft and gear. Ultimately the boat owners as well as labourers draw blank in their credit since the habit of 'savings' is unknown to them. They not only spend what they earn everyday, but also borrow regularly.

During the initial period, considerable pains were taken to explain to the fishermen about the necessity of constant farm attendance. Several

goodwill visits to the fishermen colonies by the connected staff were made. This exercise had the desired effect and now, the fishermen visit the farm during their leisure time after fishing even without our initiative. At present the womenfolk are not in a position to get involved in the farming system, apart from help rendered in fabricating the oyster rearing trays in their huts. Although the children in the family are not at present fully involved in any of the activities of the parents, this younger generation may by virtue of seeing the new type of activity engaged of the elders, take to oyster farming in full measure in the years to come.

The programme is being implemented with certain amount of optimism that this initial experiment an extension education would form the basis for an oyster culture industry in the country. Perhaps a clearer picture might emerge at the end of the first harvest based on which future course of action can be planned.

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