MARINE PEARL PRODUCTION
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INTRODUCTION
The pearl is a gem and has been in high esteem from time immemorial. The Central Marine Fisheries Research Institute (CMFRI) at its Tuticorin Research Centre has taken up production of cultured pearls in 70's and is now the prime centre in the country for R & D on pearl culture. The advances achieved in the seed production and pearl production have received world wide acclaim. This centre, at present is engaged in the expansion of this technology to distant areas where the pearl oysters do not occur.

PEARL OYSTER DISTRIBUTION
Of the 28 species of pearl oysters occurring almost in all the seas of tropical and subtropical belt only 3 species produce pearls of commercial value. Of these Pinctada fucata and P. margaritifera are available in the Indian waters.

In India, they occur in the Gulf of Kutch, Gulf of Mannar, Palk Bay, Vizhinjam Bay, Andamans and Lakshadweep Islands. The pearl oyster beds in the Gulf of Mannar extend from Pamban in the North to Kanyakumari in the South. The Tuticorin region had the most productive beds and the pearl fisheries of earlier days were conducted mostly from this region. The oysters are found attached to hard / rocky substrates which lie at a depth ranging from 12 to 25 meters and 12-15 km away and parallel the coast. They are collected from the beds by diving.

PEARL OYSTER FARMING
Spat, mother oysters and nucleated oysters are farmed by raft and rack methods, the former employed when the water depth exceeds 5m and the latter when it is less than 5m. Culture of oysters from raft is one of the suitable farming methods in sheltered bays. A raft of the size 6m x 5m constructed with 30-40 stakes and floated with buoy will hold about 100 culture cages.

In the rack culture method, stake poles are driven into the seabed at equal intervals of 1m and horizontal poles are lashed with cori ropes above the seafloor level. Culture cages are suspended from the horizontal poles. The rack can be extended as per the requirement.

Large concrete tanks having the capacity of 75-150 tonnes of water are used for onshore pearl oyster farming. The spat/mother oysters/nucleated oysters cultured in these tanks are fed with suitable cultures of phytoplankters. Different culture methods like long-line culture and bottom culture can also be employed according to the condition of the sea and seabottom.

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PEARL HARVEST

Pearls are harvested manually. Oyster are opened and pearls are squeezed out. In case of reuse, the pearls are removed carefully by opening the pearl-sac through the gonad without damaging it. The harvested pearls are washed in distilled water, polished in refined sea and again washed in distilled water. They are stored according to size, colour, shape, lustre and other external characters.

TRAINING PROGRAMME

As a mandatory to extend the proven technologies developed by the Institute, training programmes are organised as per the demand. Long-term and short-term courses for periods ranging from 4 to 20 weeks are conducted. The former course is a comprehensive one useful for managerial and supervisory personnel and the latter for technicians dealing with mother oyster culture, surgery and pearl production. A short technical course is also conducted for a period of 10 days in which intensive practical training is given on nucleus implantation and surgery. Entrepreneurship development courses comprising pearl oyster seed production, farming and pearl production are also organised and conducted for a period of eight weeks.

ECONOMICS

Pearl oyster farming in terms of value is one of the world's leading aquaculture industries. In 1993, the world production of marine pearls was around 77,400 Kg with an estimated value of over U.S.$ 1043 million. India is importing pearls worth about 29 million dollars per year. Pearl culture is a long-term investment and huge profits can be made by successful operations.

In a recent field study conducted at Valinokkam, a coastal bay in the district of Ramanathapuram, Tamil Nadu, by employing near shore raft culture method a return of 55.7% was obtained, which is the highest gross income per unit area when compared to various production systems in aquaculture.

In a raft of the size 6m x 6m, 10355 oysters in 100 box cages were cultured. A total of 9414 oysters were subjected to single implantation with nuclei of 3-5mm and for the operation 941 oysters were used for graft tissue preparation. In the post operation period of one year 2108 oysters died. Out of 7306 oysters, 1849 pearls valued at Rs. 85,633 were obtained.

EXPENDITURE

1. Cost of teak poles, floats and anchors 13,000
2. Box cages 100 Nos. 10,000
3. Oysters 10355 @ Rs.1.40 per number 14,500
4. Shell bead nuclei (9414 Nos) 9,500
5. Instrument, Chemical, Glassware and Plastic Wares 5,000
6. Labour Charges 3,000
   Total 55,000

First item can be used for 2 years

REVENUE

Value of 1849 pearls produced 85,633

PROSPECTS

Pearl culture is unique and location specific. The culture site should provide congenial conditions in the form of protection, water clarity, optimum salinity, temperature, seabottom and adequate amount of phytoplankton. The farm should be free from any form of pollution. Mother oysters need continuous farming and they have to be reared in rafts, racks, long lines or on the sea bottom. These conditions exist only in a few areas in the southeast coast bordering the Gulf of Mannar.

Attempts to culture pearl oysters in large onshore tanks, feeding them with cultured phytoplankton have given good results. Making use of this advantage, trial production of pearls has been attempted in some of the prawn hatcheries in Tamil Nadu and Andhra Pradesh. Initial success in pearl formation in onshore tanks has been achieved. This will go a long way in the history of pearl culture in India.