PEARL CULTURE - EMERGING INVESTMENT AVENUE

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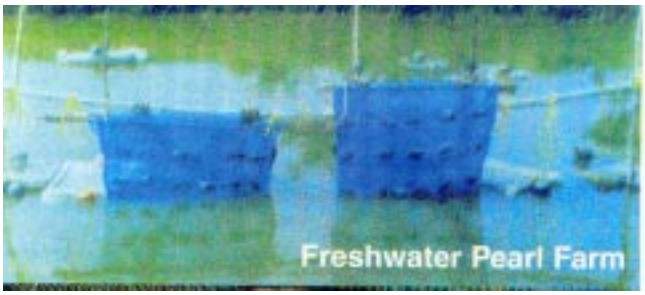
Introduction

Pearl has a history more fascinating and more regal than any other gem. Pearls from India are known from time immemorial. Admired all over the world as the finest of 'Oriental Pearls' they were in high demand all over the world. However natural pearl resources in India as in other parts of the world have depleted and pearl fishery was stopped in India about four decades ago. There is a huge gap between production and demand and the only option left is culture of pearls. The world trade of cultured pearl is reported to be over US$ 3 billion per year. The major pearl producing countries are Australia, Tahiti, Indonesia, Japan and China. India is one of the major importers of pearls importing pearls worth US $ 4 million every year to meet the growing domestic market demand.

India has a wealth of marine pearl producing oysters and fresh water pearl mussels. Pearl producing oysters in India are *Pinctada fucata* in Gulf of Mannar, Palk Bay and Gulf of Kutch and *P.margeretifera* in Andaman and Nicobar Islands. Fresh water pearls have been successfully produced in three species of bivalves, viz., *Lamellidens marginalis, L. corrianus* and *Parreysia corrugata*.



Central Marine Fisheries Research Institute (CMFRI) has standardized the technology of culture of marine pearls and Central Institute of Fresh water Aquaculture (CIFA), that of freshwater pearl. Hatchery technology of *P.fucata* has also been successfully developed. A number of entrepreneurs in Orissa, West Bengal, Andhra Pradesh and Maharashtra have adopted the technology of Fresh water pearl culture and a Few projects with institutional finance and NABARD refinance have taken up in Andhra Pradesh for producing marine pearls. It is only a humble beginning and there is need for more concerted efforts for developing pearl culture in India.

Pearl Culture Technology

The culture of pearls involves the following steps. culture

1. Collection and conditioning of native pearl mussels
2. Surgical implementation of mantle grafts and appropriate nuclei in the internal organs of the recipient mussel
3. Post operation care of the implanted mussel.
   a. For fresh water pearl mussel culture, implanted mussels need to be reared in natural pond environment.
   b. In case of marine pearl oyster culture, farming can be either 'on farm' or off shore/open sea. Off shore culture can be of different types: Floating Raft, long line systems or racks fixed on stacks.

Floating Raft Culture

In this system, the oysters are placed in box cages of 40/40/40 cms. and suspended from the raft at 5m depth in the sea. All the cages containing implant oysters are stitched with velon screens of 1.5 mm mesh at the bottom to prevent the rejected nuclei from falling into the water. In a box cage, 85-100 oysters of the size 40-45 mm can be accommodated. The cages are numbered with aluminum/plastic plates. Once in two months the cages are lifted to remove the predators from the cages. The duration of post operative culture varies from 4-18 months depending on the size of nucleus and maturity of the pearls. These floating rafts are used for farming oysters in the open sea.

Fixed Rafts

In shallow sheltered bays racks are employed. In rack system which is a fixed culture, teak wood polls are driven vertically into the sea bottom and the rack is constructed by lashing horizontal and cross polls on them with coir ropes at a convenient height of 0.5 m above

the water level so that the rack thus erected remains always above the water. The oyster cages are suspended from the wooden frame.

Institutional finance for pearl culture

Pearl culture is an eligible activity for bank finance and NABARD refinance. For pearl culture NABARD provides refinance facility to eligible institutions like State Cooperative Agriculture and Rural Development Bank (SCARDB), Regional Rural Banks, Commercial Banks, Agriculture Development Finance Corporation (ADFC) and other financial institutions approved by RBI. The loan is up to a period of 15 years. The ultimate beneficiaries of the investment finance may be individuals/partnership firms, companies, state corporations or cooperative societies.

Items of investment

The following items of investment are eligible for financial assistance from banks

a. Capital Investment:

- Cost of land
- Land and site development : clearing,leveling, fencing
- Building and civil works : (Preparation ponds / tanks, bunds, feeder canals, drains, sheds, generator rooms, pump house, inlets/outlets, diffuser tanks, office building, water intake system, internal approach roads)
- Plant and machinery: Motors, Generators, Iron stands, Fibre cages,
- Vehicles
- Preliminary and preoperative expenses
- Technical know how fees
- Deposit for electricity
- construction of rafts, racks,stacks, cages, longlines, anchors

b. Recurring expenditure/Working capital

- Cost of seed, feed, nuclei, surgery charges, harvesting charges, fuel/electricity charges, repairs and maintenance of plant and machinery, maintenance of civil works, staff salaries, administrative expenses, processing charges, laboratory equipments.

Pearl culture and Rural Development.

CMFRI and CIFA have over the years adopted an open policy of training. Dr. Richard Fassler, a world authority in pearl culture remarked that while all countries are secretive regarding their pearl culture technology, India is the only country, which has an open training programme. The marine pearl culture for rural upliftment through participatory approach was successfully carried out at Vallinokkam, a small coastal village of Tamil Nadu in South east coast of India. Following the success of this experiment, the M.S. Swanithan Foundation has embarked on an ambitious rural programme in the coastal villages of Gulf of Mannar to create alternative livelihoods and additional source of Income for the poor fishers. The programme with the technical know how from CMFRI is aimed at sustainable management of the fishery resources as well as conservation of the biodiversity of the Gulf of Mannar. Fresh water pearl culture has been successfully tried in some states along with fish culture.

Constraints for commercialization

Pearl farming on commercial scale failed to catch the interest of entrepreneurs in a large scale,though the technology of marine pearl production was successfully developed as early as in 1973 and fresh water pearl production in 1989. Even where pearl culture was commercially adopted, the returns were very low. The reasons have been attributed to ecological condition of the seas around Indian coast, scarcity of the protective bays, roughness and heavy wave actions of the open sea, heavy silt conditions in some areas which resulted in increased mortality of oysters and the absence of high primary production . The recurring expenses and the high labour involved is yet another reason for low returns. The rate of rejection of nucleus and relatively low survival rate of implanted oysters in India make pearl farming less remunerative to be taken up. The quality and size of pearls now produced in India do not fetch very high price in the international market. Large pearls have superior value. The technology for producing the steel black pearls from the black-lip pearl oyster, *Pinctada margaritifera* predominant in Andamna & Nicobar islands has to be developed in India. Pearls produced by giant pearl oyster P.maxima is only next in price to Black pearls. Myanmar is one of the leading producers of these pearls. We share a common sea with Myanmar. Survey has to be done to locate P. maxima beds and if not available P.maxima need to be transplanted to our waters to produce quality pearls. At present we are depending on imports of nuclei from American fresh water mussel shell for implantation. Imported shells are costly. Indigenous production of high quality nuclei will help in reducing the production cost of pearls. All these issues need to be addressed for commercialization of pearl culture.

Initiatives needed

In an era of globalisation it is imperative to improve productivity in terms of quality and quantity of pearls produced in India. Considering demand in domestic and International market the following initiatives are identified for developing pearl culture activity as an industry

i. Mapping of suitable sites for pearl farming
ii. Genetic selection experiments to produce oysters with larger depth, faster growth and good quality nacre.
iii. Appropriate leasing policy
iv. Participation of local fishermen
v. More awareness programmes.
vi. Coordinated efforts of all stakeholders.
vii. Demonstration regarding economic viability of the project