



CULTURED SPLENDOUR: A worker showing the pearl culture at the Tuticorin V.O.C. Port.- Photos: N. Rajesh

Failure of pearl fishery is due to non-revival of pearl oyster population in natural beds which may be due to environmental impact

The writers are C. P. Suja and M. S. Madan are with CMFRI, Tuticorin

People believe that pearl is conceived by oyster when it receives a drop of rain or dew. Natural pearls form under a set of accidental conditions when a microscopic intruder or grain of sand enters an oyster (mollusk) and settles inside the shell. The oyster, being irritated by the intruder, secretes a substance called nacre to soothe its irritation. This process is repeated for many years, thus producing a real pearl which may or may not be found by man. For a natural pearl forming with a nice round or oval shape, and free of any flaws, is actually a real-life “miracle.” The chances of a perfect natural pearl are one in a million. Nacre is a combination of crystalline and organic substances.

What is a cultured pearl?

Modern day cultured pearls are the result of discoveries made in the late 19th and early 20th centuries by Japanese researchers Tatsuhei Mise, Tokishi Nishikawa and Kokichi Mikimoto, the son of a noodle maker. Natural pearls are pearls formed by chance, while cultured pearls are given a helping hand by man. Inserting a foreign object called nucleus, made up of shell material, into a mollusk by skilled persons through surgical operation can induce the creation of a pearl.

From there, the same process of natural pearl creation takes place.

The difference is that in this case the inducement is intentional. Cultured pearls can be distinguished from natural pearls by X-rays, which reveal the inner part of the pearl. Both natural pearl and cultured pearl are sea dependent.

Efforts are being made to produce coloured pearls by incorporating metallic salts in feed, by allowing the oysters to absorb metals through enrichment of sea water medium.

What is a Mabe pearl?

Mabe pearl is a hemispherical shaped pearl or a desired image which is grown against the inside of the oyster's shell, rather than within its tissue. Mabe pearls occasionally appear in nature. Cultured mabe pearls are used in rings and earrings, rather than in necklaces. They tend to be very beautiful with high lustre but are priced much lower than round pearls. The technology for this Mabe pearl production is easier than cultured pearl.

What is a tissue culture pearl or in-vitro pearl?

Environmental pollution has caused great concern to pearl culture entrepreneurs throughout the world. In the light of the hazards sea-based pearl oyster/pearl production practices face, the only and safer option is a technology which is not sea water dependent. The small pieces of mantle are introduced into culture flasks and culture medium is added. This study has given a clear clue with regard to type of cells and their functions. The progress made so far by Central Marine Fisheries Research Institute at Tuticorin is only a small beginning.

Status of natural pearl production

India is one of the famous pearl producing countries in the world. It is bestowed with pearl oyster population in the natural pearl banks of Gulf of Mannar in southwest coast of Tuticorin. The natural pearls produced by the pearl oysters from the Gulf of Mannar and Persian Gulf are considered to be the best "Orient Pearls"

and highly valuable than pearls from other countries. Tuticorin was at one time a converging point for natural pearls extracted from pearl oysters from the beds by organising periodic pearl fishery. The last pearl fishery was conducted in 1961 in the Gulf of Mannar and in 1966 in Gulf of Kutch. In view of its famous Orient Pearls, Tuticorin is named 'Pearl City.' The main reason for the failure of pearl fishery is non-revival of pearl oyster population in the natural beds which may be due to environmental impact. Therefore natural pearls have become a rarity.

Status of cultured pearl production

In order to revive the glory of Indian pearls, the CMFRI initiated efforts to produce cultured pearls, utilising the available pearl oyster resources of the beds in 1972 and succeeded in producing cultured pearl in 1973 for the first time in the country by K. Alagarwamy. Commercialisation of pearl culture was not possible due to non-availability of wild stock and high cost in collection. In view of non-productive wild stock, hatchery technology was developed to augment sustained supply of oysters to pearl culture. The survival of pearl oyster stock faces uncertainty in view of viral diseases.

Having realised the need of establishing an industry, top priority was given for establishing a hatchery technology for production of pearl oyster spat (seed). The breakthrough came in 1981 when the first batch of pearl oyster spat was produced in the hatchery by a team of scientists. These pearl oysters were grown and employed in surgery for pearl production and used as brood stock for raising further generations. Pearl oysters and spat were kept in rafts in the Tuticorin harbour farm in special cages.

This centre has a well known phytoplankton laboratory to supply the feed of microalgae (*Isochrysis galbana*) for the larval rearing in the hatchery and it also facilitated the students and other entrepreneurs by giving pure cultures of different species of microalgae for studies.

To transfer the technology of pearl culture and pearl oyster hatchery, the CMFRI has organised training courses for the benefit of fisheries departments in various States and Union Territories. This has been taken advantage of by Gujarat, Karnataka, Kerala, Tamil Nadu, West Bengal, Andaman and Nicobar Islands, Lakshadweep and also by countries like Belgium, Philippines, Indonesia and Baharain.