



Pearl Culture and Craftsmanship: An Overview

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<https://doi.org/10.5281/zenodo.10160735>

Abstract

Pearls are an exquisite gem formed in a living creature and pearl oysters are an important group of marine molluscs which produce natural pearls. Pearls are classified as timeless natural pearls, cultured pearls and affordable artificial pearls. This article provides an overview of pearls and pearl formation including natural, artificial and cultured pearls. It also details about pearl culturing methods such as mantle cavity implantation, mantle tissue implantation and gonadal implantation and pearl harvest.

Introduction

Pearl is the only gemstone formed in a living organism called oyster and all the other gems are formed in the crust of the planet. Natural pearls are considered as rarest jewels as only one in every two thousand oysters have pearls. Pearl oysters are an important group of marine molluscs which produce pearls and freshwater pearl culture technology was developed in China about 2,000 years ago. However, commercially freshwater pearl culture was started in the late 1960s and early 1970s. Pearl culture is a delicate practice of rearing and harvesting that blends the efforts of nature and human skills.

Pearls are produced by pearl-bearing oysters in fresh or salt water, and it is formed when foreign bodies accidentally enter the body of an oyster. Nacre is a soothing substance, secreted by the mantle tissues around the foreign particles to protect the oyster which forms the pearl. There are three types of pearls such as natural, artificial, and cultured pearls. **Natural Pearl:** Natural pearls are collected from wild caught pearl oysters and thousands of pearl oysters must be slaughtered in order to find a good quality pearl. It is very rare to find a large, perfectly shaped and a good surface quality pearl, and for this reason, natural pearls are always expensive than the cultured ones.





Artificial Pearl: Oysters do not participate in the formation of artificial pearls. Many varieties of synthetic pearls are available which is made up of glass, plastic or natural shell of mollusc. The glass or plastic bead acts as the nucleus which gives the basic structure and weight for artificial pearls. The bead is coated with substances such as crushed mussel shells and then several layers are coated and polished. These pearls are coloured with dyes for mimicking natural pearls and various coloured pearls are available in the market.

Cultured Pearl: Cultured pearls are same as natural pearls but the only difference is human intervention. Many of the oysters have pearl-bearing capability so it is collected from their natural habitat, and the nuclei is manually inserted into the oysters. This is method is called as *Grafting*. The oysters are then cultured in a pond and harvested.



Another difference is that natural pearls have a thick nacre than the cultured ones. Any pearl that has a thick nacre will last longer than those with a thin one.

Grafting

Grafting also called nucleus implantation, is the manual surgical implantation of a shell nucleus and tissue graft into the pearl oyster. Only a qualified technician could do this surgical procedure to produce high-quality pearls as it requires years of practice and dedication. There are three types of grafting methods such as Mantle Cavity Implantation, Mantle Tissue Implantation and Gonadal Implantation.



Mantle Cavity Implantation

This method requires minimal skill and it is the simplest among all the other methods. Nucleus is implanted between the inner surface of the shell and the outer layer of the mantle cavity, and nacre is secreted by the outer layer of the mantle surface. Mussels are kept in care units after implantation and then cultured in pond environment.

Mantle Tissue Implantation

In this method, mussels are classified as donor and recipient. A small piece of graft is taken from tissues of the donor mussel and implanted into the recipient mussel. A pocket is made on the posterior side of the mussel, and nucleus along with the mantle graft is being implanted inside the pocket. Nacre is secreted by the mantle graft and after implantation, the mussels are cultured in the pond and examined every day. Dead mussels and the mussel which rejects the nucleus are removed.



Gonadal Implantation

In gonadal implantation, mantle graft and the nucleus are inserted together into the small incision made in the gonad of the mussel. A live graft is taken from the mantle and inserted along with the nucleus. The gonad implanted mussels are then maintained in care units for 7 to 10 days with antibiotic supplements.

Harvest

After the period of culture (12 to 18 months), pearls are harvested from the oysters, and sorted based on its size, shape, colour and texture. After the harvest, muscles could be reused but utmost care should be taken while harvesting the pearl from oyster to avoid death of the animal.



Conclusion

Pearl farming is an emerging sector and fetches high profits, require minimal labour and low maintenance. Pearl farming is a process which involves implantation of a small external irritant manually inside a living mussel, which then forms into a pearl. This pearl culture implantation highlights the symbiotic relationship between human skill and nature. Government of India provides subsidies to pearl farmers, and ICAR-CIFA located at Bhubaneswar conducts trainings and workshops on pearl culture for farmers and entrepreneurs as it has a great scope for entrepreneurial ventures.

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