



## DESIGNER FRESHWATER PEARL TECHNOLOGY

The freshwater pearl mussel, *Lamellidens marginalis* is a unique resource in Indian subcontinent not only for pearl-making capabilities, but also for multifaceted uses viz., as human food, feed for lower animals, uses of shell in button, pharmaceutical, cosmetic, decorative and lime industry. Pearl mussels are most commonly found in rural as well as in urban belts of the country. The genus *Lamellidens* is represented by nine species and two sub-species, while the genus *Parreysia* is represented by 35 species and 6 sub-species under two sub-genera. *Lamellidens marginalis*, *L.corrianus* and *Parreysia corrugata* are the three common candidate species used for freshwater pearl culture in the Indian subcontinent. The designer pearl productions have a lot of potential in the cottage industry setup. The technology is quite simple and the surgery to obtain a designer pearl is not so intricate.

Mantle cavity insertion method is a simple technique, used for designer pearl production. In this method, appropriate nuclei (Image) of size up to 1 cm are placed in the mantle cavity of pearl mussels. The implanted mussels are reared for a period of 8-12 months in the aquatic environment. The success rate is about 60-70% of the mussels implanted.

### DIFFERENT STEPS FOR DESIGNER FRESHWATER PEARL PRODUCTION

**Products:** Shell attached Designer pearl or half round pearls

**Duration of culture:** 8-12 months

**Materials:** Freshwater mussels, Surgical instruments (mussel clamp, speculum, spatula and forceps) image beads, round nucleus, antibiotics

#### Surgical procedure

- Collect healthy freshwater mussel *Lamellidens marginalis* of the size 8-10 cm from wet laboratory.
- Open the mussel carefully by means of speculum, 1 cm wide, without causing injury to adductor muscle and soft body parts of mussel.
- Hold the mussel in the clamp.
- Lift small area, preferably middle portion of the mantle region carefully by means of spatula.
- Insert the nucleus of desired shape and size (Image/Round) slowly into the mantle cavity by using forceps.

- Push the nucleus deep to avoid rejection.
- Close the lifted mantle tissue carefully.
- Turn over the mussel and similar implantation will be made in the opposite side of mantle cavity.

### **Post-Operative Care in Wet Laboratory**

- Keep the mussel in post-operative care units after implantation.
- Place the implanted mussels @ 2 mussels per bag (30 cm x 12 cm) with ventral side up position for a period of 7-10 days.
- Add green water (algae enriched) into the unit after 3 to 4 days of implantation.
- Treat the implanted mussels with broad spectrum antibiotics Chloramphenicol @ 1-2 ppm as a prophylactic measure.
- Remove the dead mussels and the one that rejects the nucleus from the post-operative care unit.
- Transfer the mussels into the pond culture environment or tank culture after 7-10 days of implantation.

### **Precaution**

- Use only healthy mussels for surgical implantation.
- Do not open the mussel forcefully.
- Mussel should not open more than 1 cm wide.
- Sterilize the surgical instruments before use.
- Wash, clean and dry the surgical instrument after use.
- Use only appropriate size nucleus according to size of mussels.

### **Pond /Tank culture of implanted mussel:**

Traditional carp culture ponds with clay-soil base and slightly alkaline waters are suitable for pearl farming. Ponds without aquatic macrophytes and algal blooms such as *Microcystis* and *Euglena* are ideal for pearl culture farming. The ponds are provided with bamboo poles as rafts for hanging the implanted pearl mussels. The implanted mussels at a density of 50,000 to 75,000/ ha are placed in nylon bags (30 cm x 13 cm; mesh size 1.5 cm) @ 2 mussels per bag and reared. Periodic addition of green water (*Chlorella* sp., *Chlorococcum* sp. and *Scenedesmus* sp.) at regular intervals into the pearl culture ponds as direct mussel feed is observed to be an ideal practice for proper up-keep of the pearl bearing mussel standing crop. The pond culture of operated mussel varies from eight to twelve months. In the absence of ponds, one can do pearl mussel culture in FRP tank or aquarium at small scale with the provision of proper aeration and feeding.

### **Human Resource Development**

To develop human resource on freshwater pearl culture in the country, ICAR-CIFA conducts hands on training programme on freshwater pearl culture for the progressive pearl cultivators in a user-friendly manner. The schedule of the training programme is advertised every year on the institute website.

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