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PROVEN TECHNOLOGY

INDUCED MATURATION OF PRAWNS FOR PRODUCTION OF SPAWNERS FOR HATCHERIES

High lights:

Spawners for hatchery production of prawn seeds were always collected from the commercial fishing grounds where they are known to mature and spawn. The collection of these spawners from the sea has been a serious problem as their availability is not only seasonal and uncertain but their procurement and transport expensive. The researches carried out at the NPCL of CMFRI have made it possible to mature and develop the spawners from the farm reared prawns. Adult prawns taken out from the grow-out ponds of the farm are subjected to unilateral eyestalk ablation and treated in special broodstock development pools where they attain full gonadal development and become ready to spawn. Using this technique several generations of the Indian White prawn *Penaeus indicus*, that have not gone to the sea during any phase of their life cycle, have been grown in the NPCL farm.

Operational details:

Large sized *P.indicus* (over 140 mm in size) caught from the grow-out ponds are acclimatised in 32-34 ppt settled and filtered seawater kept in one ton capacity plastic pools for a day. After acclimatization the females are selected and one eye-



Fig.1. Unilateral eyestalk ablation by electric cauterisation at Narakkal Prawn Culture Laboratory.

stalk of each of them is removed by using an electro-cautery apparatus (Fig.1). Mortality caused by the procedure is negligible. The cauterised females and half the number of acclimatised males



Fig. 2. Brood stock pools at NPCL

are transferred to the maturation facility for gonadal maturation. The facility consists of 10 ton capacity circular seawater tanks fitted with sub-gravel biological filters with air-lift recirculation arrangement for maintaining the quality of the seawater (Fig.2). The biological filter converts the toxic ammonia excreted by the prawns into relatively harmless nitrates and maintains water quality. The pH of the seawater is adjusted to remain at 8.2. The prawns are fed *ad libitum* with fresh clam meat. Under these conditions the females mature within 3-5 days after eyestalk removal and then they are transferred to the spawning tanks of the hatchery. About 75% of ablated females develop mature ovaries and spawn viable eggs.

Production:

40 females and 20 males of *P.indicus* are kept in a 10 ton capacity broodstock pool. On an average 30 spawners will be ready for spawning in 3-5 days and each spawner will produce not less than 1,00,000 nauplii i.e. 3 million nauplii from each pool. If daily production is required the number of broodstock pools should be increased to 5 or 6. At present, NPCL has 3 broodstock pools.

Inventory and cost:

The maturation facility is to be considered as part of a hatchery meant to produce prawn seeds. The special inventory required for the maturation facility for a daily production of 3 million nauplii consisting of pools, filters, compressors, pumps, chemicals and testing equipments will cost around Rs. 0.5 million; the land and building will cost

around Rs. 0.5 million and contingencies including salary component, labour, maintenance, feed, seawater pumping cost, etc. will cost around Rs.0.5 million; totalling to about Rs.1.5 million. However this cost can be considerably reduced when the project is undertaken as part of a hatchery project.

Estimated cost of production:

It is difficult to estimate cost of production in view of the fact that the broodstock pools form part of a hatchery utilizing many of its general faci-

lities. However the production cost per spawner may not exceed Rs.5.

Prospects:

A maturation facility, as an integral part of the hatchery, ensures a steady supply of spawners and helps efficient planning of hatchery operations to produce prawn seeds on a large scale. In a developed state it may be possible to sell spawners to nearby hatcheries or even sell newly hatched nauplii to those having only rearing facilities.

