

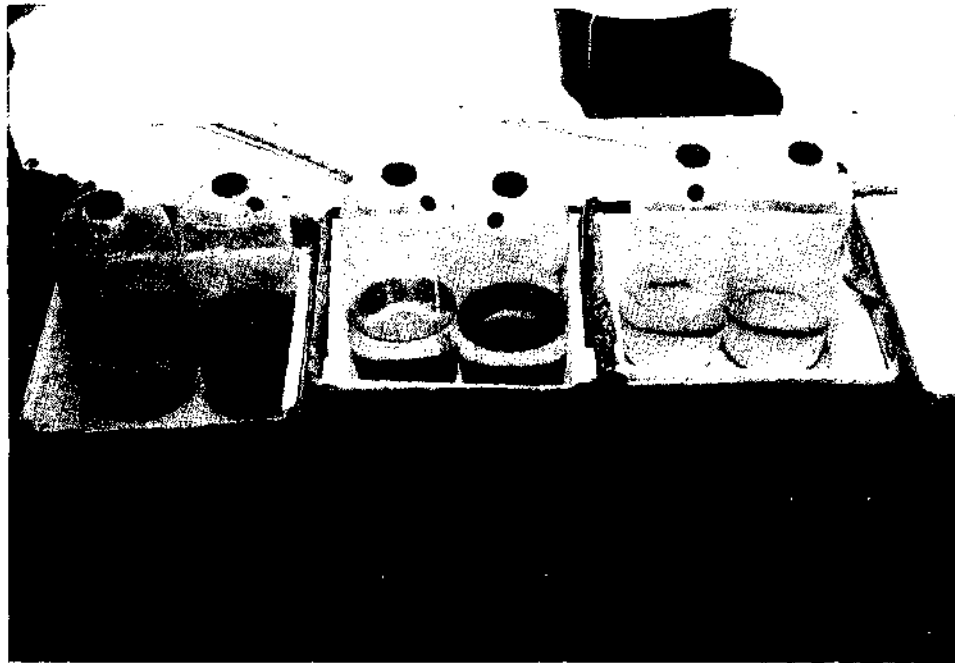
BREAK THROUGH IN WHITE PRAWN NAUPLII TRANSPORTATION BY CMFRI

A major problem faced by our shrimp hatcheries is the non-availability of spawners of the desired species around the year. It impairs the planning of the hatchery operations on an year round basis. For instance the spawners of the white prawn, *Penaeus indicus* which are not always available along the west coast are available in plenty off the east coast. This prompted the CMFRI to investigate the feasibility of transporting Nauplii from east coast to west coast. The team consisting of N.N. Pillai, P.E. Sampson Manickam, K.R. Manmadhan Nair, M.R. Arpudaraj, N. Rajamani and K.N. Gopalakrishnan worked on this project and achieved the breakthrough in nauplii transportation to help the languishing hatcheries and to reduce the substantial cost of spawner maintenance and consequently the cost of seeds.

India is one of the leading shrimp producing countries of the world. Presently, the fishery of the country depends almost entirely on the natural stock which has been increasingly exploited over the past two decades resulting in stagnation of the conventional shrimp stocks. Thus a stage has reached that further increase in fishing effort will not help a corresponding increase in the shrimp catch in the capture sector. Increase in shrimp production is possible only

through aquaculture or extending the fishing operations to new fishing grounds in deeper waters.

The potential for increasing shrimp production through aquaculture in India is immense. At present, only 65,000 of brackish water area available in the country are brought under shrimp farming out of an estimated total area of 1.2 million hectares. Recently, shrimp farming has gathered momentum in India.



Penaeus indicus nauplii packed in collapsible plastic bags with oxygen after a journey of 24 hours



A view of the spawning tanks at Tuticorin Research Centre of CMFRI

Shrimp farmers, to begin with, depended on shrimp seeds collected from the wild for stocking their ponds. With more areas being brought under shrimp farming the seed from natural source have become inadequate to meet the increasing demand. A number of shrimp hatcheries have been established throughout the coastal belt in recent years with a view to meet the seed requirements. The operation of these hatcheries, depended entirely on spawners collected from the sea. As the availability of spawners of the desired species in a particular area is uncertain and seasonal or erratic it becomes difficult to plan hatchery operations on an year-round basis. For instance, ripe spawners of the white prawn (*Penaeus indicus*) are not readily available along the west coast during monsoon and post monsoon periods in required quantities. But they are available in plenty, off the east coast during this time. This had prompted the CMFRI to investigate the feasibility of transporting larvae from east coast to west coast. There were some sporadic trials for the transportation of *P. monodon* nauplii by some private parties also.

A series of experiments were carried out re-

cently at the Tuticorin hatchery of the Institute during the monsoon and post monsoon periods of 1992. Mother prawns of *P. indicus* were collected from trawl and trammel net catches brought to the laboratory and provided ideal conditions for their acclimatization and spawning and further development of eggs. The freshly hatched larvae (*nauplius*) during different trials were packed in different concentrations from 2000/litre to more than 1,00,000/litre (1/3 water and 2/3 oxygen) and kept in room temperature for a period over 24 hours. It was found to be safe to pack at 1 lakh/litre without any mortality. And after confirming this, transport experiments were under taken at different concentrations between 10,000/litre to 1 lakh/litre from Tuticorin in east coast to Cannanore in west coast. Transportation was done partly by public buses and train. Results have shown, as in the packing trails, in transportation also one lakh/litre concentration was safe, resulting in 100% survival. Such transported larvae were further grown to postlarvae in the Cannanore Matsyafed hatchery and they were not showing any stress effects whatsoever. These experiments yielded very useful data pertaining to the technique of nauplii transport to distant places. The technology developed is a low coast one and it can be very easily adopted by the fishermen. Experiments revealed that a Polyethelene packet of 15 litre capacity with 5 litre water and rest with oxygen can transport 5 lakhs of freshly hatched larvae which is quite sufficient to produce seed for a 2 hectare pond for semi-intensive culture. Transportation by any mode can be done with in 30 hours at the maximum. The larvae withstood the rigors of journey, showed hundred percent survival and developed in normal way to seed size under hatchery conditions.

The cost of one lakh of white prawn nauplii including the cost of spawner, hatching facilities, packing materials oxygen and labour, works out to Rs. 250-300/- and the same could be sold at a rate of Rs. 500-600/-. Thus an enterprising fisherman

engaged in daily fishing trip could very easily earn an additional income of Rs. 250 - 300/- per spawner.

Hatcheries stand to benefit from this. In a prawn hatchery, one third of the fixed cost goes for establishing a broodstock facility. If nauplii could be readily made available, the expenditure to maintain a broodstock could be avoided. Further, as the hatcheries are free from its dependance on locally available breeders it could be run continuously year-round and thus reduce the cost of production of seed and

increase the profit. Moreover, if the transport of nauplii from the place of availability of spawners is popularised this could eventually lead to the establishment of satellite spawning centres for major hatcheries in order to maintain round the year seed production.

It is foreseen that the technique can be utilized for transporting tiger prawn seed from east coast to west coast where the availability of mature prawns of this species is very limited and the demand for its seed very high for farming.
