Shrimp Culture Techniques Developed by IFREMER: Impact on Development

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ABSTRACT

Shrimp culture represents a growing activity mainly in tropical areas due to a constant increase in demand for, and limited supply of, shrimp in the world market. The rate of development of this activity depends largely on techniques developed in the last 20 years by numerous research teams. Since 1970 CNEXO, presently Institut Francais de Recherche pour l'Exploitation de la Mer (IFREMER), has conducted a large program of research and development mainly at its Centre Oceanologique du Pacifique located in Tahiti.

Screening of numerous penaeid species has allowed selection of five at present as the best candidates for culture in tropical conditions: Penaeus. monodon, P. indicus, P. vannamei and P. stylirostris. Major components or phases of the production system have been investigated. For all the species the establishment of broodstock in captivity through successive generations has been achieved. Maturation throughout the year is obtained through the control of physical parameters (temperature, salinity and light and of the feeding regime enhanced by eyestalk ablation. Artificial fecundation is done for open thelycum species.

Mass production of post-larvae at densities from 50 to 100 PL/liter is routinely achieved in tanks of 0.5 to 15 m^3 at a low production cost. Food is made of unicellular algae, artemia nauplii and microparticles. Strict preventive sanitary measures are applied. Initial growth in nursery systems allows a better control of the subsequent grow-out. Semi-intensive and intensive systems are under investigation for optimization. Yields of 2 to 4 tons/ha/year in earth ponds and of more than 20 tons/ha/year in tanks are obtained using different formulated feeds.

Most of these techniques have been transferred to commercial production by a subsidiary of IFREMER, France Aquaculture, in different foreign countries: Ecuador, Indonesia, Malaysia, Fiji.