

TECHNOLOGY VERIFICATION STUDY ON *PENAEUS INDICUS* HATCHERY

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Significance of the Study

The production of *P. indicus* in ponds still remains more or less incidental to major crops such as the sugpo or bangus. This situation is mainly due to the scarcity of shrimp fry supply from the wild for commercial scale stocking. Thus there is a need to produce *P. indicus* fry in hatcheries. Although there is already a hatchery technology for sugpo which may be used for producing *P. indicus*, its application to produce *P. indicus* fry in previous attempts mostly resulted to very low and unpredictable survival records. The development of technology that is specific for *P. indicus* could improve the production status of *P. indicus* as an aquaculture species.

Objectives

The general objective of this study was to develop larval rearing technology for *P. indicus*. The specifics were:

- a) To test the applicability of *P. monodon* larval rearing techniques to *P. indicus* larvae;
- b) To determine the optimum stocking rate for *P. indicus* larval rearing;
- c) To determine the feeding regime of *P. indicus*, and
- d) To determine the optimum physico-chemical parameters for the larval rearing of *P. indicus*.

Collection and Spawning of *P. Indicus* Spawners

Previous experiments on the larval rearing of *Penaeus indicus* were hampered by the low number of spawners that can be collected and by the low production of viable eggs from them.

To be able to acquire an adequate number of larvae for the present study, *P. indicus* adults were collected for broodstock development in the laboratory. These adults served as the source of spawners during the conduct of the larval rearing experiments. To ensure continuous supply of spawners, the number of broodstock were maintained at 90 individuals per month at 30:60 male to female ratio.

Gravid *P. indicus* from the wild were stocked in a 30-L white basins filled with dechlorinated seawater, and provided with aeration. After spawning, the spent spawners were scooped and returned to the broodstock tank for rematuring.

The eggs were siphoned and collected in a fine-mesh nylon screen and washed with filtered or dechlorinated seawater before they were transferred to a separate basin for hatching. The nauplii produced from hatched eggs were stocked in a 0.5 ton fiber glass tank 50 individuals per L.

Feeding

P. indicus larvae were fed with phytoflagellate *Tetraselmis* at a concentration of 40,000 to 50,000 cells per ml from early zoea to myosis stage and 50 individuals per L of *Artemia* sp. during the postlarval stages PL1 to PL10 (Table 1).

At PL11 to PL20 stages, ground fish meat and pelletized feeds (President Brand) were introduced at 10% of their estimated total biomass.

Table 1. Feeding scheme for *P. indicus* larvae.

Stocking individual water volume	Stages /L(cells/ml)	Feed type	Feeding Level	Water density Management 50%
50	Zoea4 h	<i>Tetraselmis spp.</i>	40,000-50,000	daily
50	Myosis	<i>Tetraselmis spp.</i>	40,000-50,000	daily
50	Postlarvae	<i>A. salina</i>	50 nauplii/L	daily

Water Management

Water exchange for each tank was done daily, replacing 50% of the total volume with fresh seawater.

Water Physico-chemical Parameters

P A 2KW submersible rod heater was used to maintain water 3/3 temperature between 27°C to 30°C. Other chemical parameters were not monitored since 50% of the culture water was changed daily.

Results and Discussions

Eight larval rearing trials were conducted from October 19, 1990 to November 20, 1990 (Table 2). Of these, only four trials produced stockable fry of postlarvae (PL20) with different survival rates. The other trials suffered mass mortalities during the late myosis (M3) and during one day old postlarval (PL1) stages and were subsequently discarded. Pathological analysis of dead larvae revealed the presence of *Vibrio* sp.

Survival rates of the four successful larval rearing operations ranged from 1.25% to 30.76% with an average of 7.92% (Table 2).

Table 2. Number of operations and survival per stages.

Date	POPULATION			
	Zoea	Myosis	Postlarva (PL20)	Rate of survival
Oct/90				
19	83,200P	40,800P	25,600 (#, &	30.76
20	55,000P	36,600P	12,000P(#, &	21.81
21h	51,000P	8,000P	100 (#, &	1.25
22h	60,000P	Discarded4	-	-
04	18,000P	Discarded4	-	-
06	41,920	Discarded	-	-
09	42,300	Discarded	-	-
20	262,400	52,000	500	9.6
Mean survival rate -----				9.92%

The results from the experiments showed that *P. indicus* postlarvae can be reared until PL10 following the scheme used (Table 2) in the present study. However, the average survival rate was low in comparison to the results commonly obtained in the larval rearing of *P. monodon*.