



RESEARCH ARTICLE

PERFORMANCE EVALUATION OF COMMERCIAL FEEDS ON FEEDING AND GROWTH OF THE
PRAWN, *MACROBRACHIUM ROSENBERGII* AT PRAWN FARM, THANJAVUR.

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ABSTRACT

Feeding and growth experiments were conducted with reference to three commercial feeds namely, C.P.Scampi feed, Aqua Prime+ feed, and Higashimaru Aqua Feed. The experiments provided evidences to show that C.P.Scampi feed is better than other two commercial feeds under investigation. A body weight of 746 mg/day was gained in those juveniles fed with C.P.Scampi feed, whereas Higashimaru Aqua Feed promoted growth at the rate of 540 mg/day and Aqua Prime + Feed only 296 mg/day. A similar trend was recorded with reference to increase in length (0.0166 mm / day, 0.0141 mm / day, 0.0114 mm / day, and in width 0.13 mm/day, 0.086 mm/day and 0.064 mm/day).

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INTRODUCTION

In the Indian subcontinent, 75% of aquaculture development is on the east coast along the Bay of Bengal. India has recorded a dramatic increase, emerging as the third largest producer of cultured shrimp in the world. In 1991, the country's aquaculture production, formed approximately 12 to 14% of the total world aquaculture production (Jhingran 1991). Driving forces in aquaculture development are the increasing demand for aquaculture produce, potential for earning foreign exchange, utilization of waste lands for productive purposes, reasonable profits and income, and the urgent need for sustainable food supply. The most important species from the point of commercial aquaculture is the giant long legged freshwater prawn *Macrobrachium rosenbergii*, commercially known as "Scampi". It is able to grow both in freshwater and low saline waters. It is compatible for polyculture with carps. Omnivorous in feeding habit, Hardihood and grows fast. It is fairly well resistant to various diseases. Above all it has good consumer preference. It has ever increasing demand both in the domestic as well as export market. To increase freshwater prawn culture activity seed production needs to be enhanced in hatchery and aquaculture. Knowledge in this technique is to be improved by undertaking research on hatchery by local condition. Since seed production requires very delicate optimal conditions, rigorous experimental studies are essential to perfect the technology, suitable for local conditions.

Hence the present work is undertaken to evaluate the performance of seed production techniques in EMK hatchery unit and to suggest ways and means to improve its efficiency.

MATERIALS AND METHODS

Macrobrachium rosenbergii is found extensively in the tropical and sub-tropical waters of the Indo-Pacific region in Malaysia, Thailand, Philippines, India, Srilanka, Bangladesh, Myanmar, Indonesia and Vietnam. They are generally found in freshwaters like ponds, rivers, lakes, ditches, canals, depressions, low lying flood plains and river mouths. Most of the species spend their early life in the brackishwater that is directly (or) indirectly connected with the sea. Some species complete their life cycles in freshwater, but these are not of commercial importance. Prawns move upstream, entering lakes and even paddy fields, upto about 200 km from the sea. This type of migration is observed not only in *M. rosenbergii* but also in other species of *Macrobrachium*. *M. rosenbergii* has been used in research more than any other species and has been introduced into many new countries for commercial culture. Breeding biology of *Macrobrachium rosenbergii* have been studied in the EMK fish and Prawn Seed Farm in Vialur, Thanjavur Dist., Broodstocks (brooders) are maintained in separate tank, periodic examination of males and females were carried out for observing sexual maturity. Observation on breeding biology was made in female for

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maturity of eggs. The broodstock with fertilized eggs are selected for hatching purpose.

The EMK prawn farm is using the commercially available formulated feed, namely, C.P.Scampi Feed, Aqua Prime+, and Higashimaru Aqua Feed. These commercial feeds were chosen for the evaluation of nutritional value in order to promote the growth in prawn. For the present study about 25 nos. post larvae were introduced each into three separate fibre glass tank with the capacity of 95 lit. The water quality parameters such as temperature (C°), pH, Dissolved Oxygen (DO) and Salinity (ppt) were periodically analysed. The post larvae of *Macrobrachium rosenbergii* were allowed to acclimatize in the laboratory condition for 10 days. After acclimation the post larvae were fed with the three specific commercially formulated feeds with 10% of its body weight. The total body length [tip of Antennae to end of the telson], body weight, and body width was periodically measured once in seven days. The experiment was carried out for 60 days during from Sep. to Nov. 97).

The present study to increase the freshwater prawn culture activity, seed production needs to be enhanced in hatchery and aquaculture. The hatchery technology followed in EMK prawn farm is largely based on the techniques explained by Reddy (1997) and Rayes *et al.* (1985). However, a mass mortality of post larvae was experienced during seed production period under study. The reason for such mortality was attributed to the sudden shift in the salinity of medium of the PL from 14 ppt to freshwater. It was found out that gradual decrease of the salinity of the medium has to be ensured for prevention of mass mortality. The healthy post larvae were sold out. Twenty five post larvae were introduced in the tank of freshwater (Fibre glass tank measuring 54 cm x 46 cm x 30 cm). They were fed with 10% of their body weight of commercial feed. The juveniles were reared for a period of 60 days. The feeding and growth experiments were conducted with reference to three commercial feeds namely, C.P.Scampi feed, Aqua Prime+ feed, and Higashimaru Aqua Feed. The hydrological parameters of the water were examined. The air temperature of the experiment tanks ranged from 27.8°C to 33.6°C and the water temperature from 26.9°C to 30.3°C. The pH fluctuated within a narrow range (7 – 7.5). The dissolved oxygen level fluctuated from 8.6 – 9.0 mg/l, and the salinity did not show wider fluctuation (0.89 ppt to 0.91 ppt).

RESULTS AND DISCUSSIONS

At the interval of seven days, mean body weight, length, and width were measured in juveniles fed with three commercial feeds (Hossain & Parween 1992). The data are presented in Fig. 1-3, At the end of 60 days the juveniles fed with C.P.scampi feed registered a mean body weight of 4.720 g (initial weight of 0.244 g). Similarly the mean body length increased in 60 days from 4.36 to 11.34 cm, and the body width from 4.00 to 11.8 mm. The juveniles fed with Aqua prime+ feed registered a mean body weight in 60days from 1.900 g (initial weight from 0.120 g). Similarly the mean body length increased in 60 days from 2.82 to 9.70 cm, and the body width from 3.2 to 7.04 mm. The juveniles fed with Higashimaru Aqua Feed registered a mean body weight of 3.460 g (initial weight from 0.216 g) in 60 days. Similarly,

the mean body length increased in 60 days from 3.70 to 10.2 cm, and the body width from 3.4 mm to 8.6 mm.

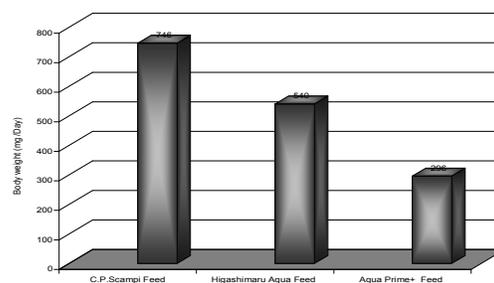


Fig.1. Body weight of juveniles of *Macrobrachium rosenbergii* in relation to three types of commercial feeds.

The evaluation experiments provided evidences to show that C.P.Scampi feed is better than other two commercial feeds under investigation. A body weight of 746 mg of body weight / day was gained in those juveniles fed with C.P.Scampi feed, whereas Higashimaru Aqua Feed promoted growth at the rate of 540 mg/day and Aqua Prime + Feed only 296 mg/day. A similar trend was recorded with reference to increase in length (0.0166 mm / day, 0.0141 mm / day, 0.0114 mm / day, and in width 0.13 mm/day, 0.086 mm/day and 0.064 mm/day).

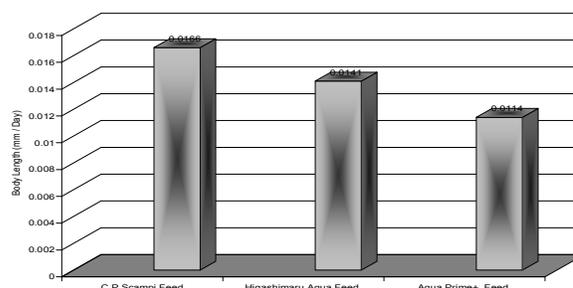


Fig.2. Body length of juveniles of *Macrobrachium rosenbergii* in relation to three types of commercial feeds.

The data on growth rate and amount of food supplied and consumed are used for calculation of food conversion ration with respect to each commercial feed.

$$\text{Feed Conversion Ration} = \frac{\text{Feed intake}}{\text{Weight gain}}$$

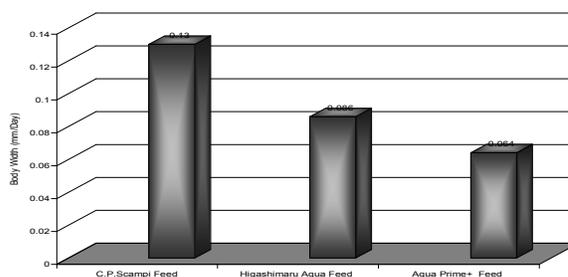


Fig.3. Body width of juveniles of *Macrobrachium rosenbergii* in relation to three types of commercial feeds. The most important aspects of hatchery is the cost-benefit analysis (Shang 1981 & Fuller 1992). In the present

work annual profit is around 34.7% (Rs.10, 74,100). Hence the annual profit would be substantially increased. However, demand for seeds will not be uniform, unless more prawn culture farms are encouraged to operate by Government Agencies.

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