ABSTRACT

Freshwater prawn industry is one among the export-oriented units that attract enormous financial resources both from the Indian public and foreign investors. However research work related to Macrobrachium malcolmsonii is very limited. Hence an attempt is made in the present study to find out the feed requirement of M.malcolmsonii, for feed plays a major role in the operational cost of aquaculture.

To find out the seasonal availability of M.malcolmsonii in the river Cauvery at Jederpalayam, periodical visits were made to the village in the past four years and the data were collected. Secondary data available at the Tamil Nadu Fisheries Department, Jederpalayam were also collected. Observation shows that the period of juvenile fishery of M.malcolmsonii in the river Cauvery at Jederpalayam, Namakkal District, Tamil Nadu is during October to March.

To assess the protein requirement, ten test feeds were compounded (feeds 1 to 10) with protein levels ranging from 18 to 36 percent at 2 percent interval and feeding trials were conducted using prawns of 1.2 ± 0.4 cm size. Maximum growth was observed among the animals fed on feed containing 30 percent protein. The rate of consumption decreased with increase in protein level while the rate of production increased with increase in protein level. But beyond a level of 30 percent, the growth did not increase. The best feed conversion ratio was observed at 30 percent level. All these observations indicate that 30 percent protein is the optimum level suitable for the cultivation of M.malcolmsonii.
Feeding trials were conducted using juveniles of four different sizes i.e., 1.2 ± 0.2, 3.2 ± 0.2, 5.1 ± 0.1 and 7.1 ± 0.3 cm and feed pellets of eleven different diameters (feeds 11 to 21), to find out the optimum size of the pellet suitable for their culture. Observation showed that the size of feed pellet plays an important role in influencing the feed intake. Experiments carried out using pellets of different sizes on animals of four different sizes showed the maximum rate of consumption and growth in the optimum pellet size.

Experiments were carried out using feeds 22 to 25 to find out the effect of different feeding frequencies on the growth performance of *M. malcolmsonii* of four different sizes i.e., 1.1 ± 0.2, 3.2 ± 0.2, 5.1 ± 0.1 and 7.1 ± 0.2 cm. The total feed consumption and consequent production increased as the feeding frequency increased. The increase in the above parameters was noted only up to the feeding regimes of four times a day for 1.1 ± 0.2 cm size prawns and three times a day for 3.2 ± 0.2, 5.1 ± 0.1 and 7.1 ± 0.2 cm size prawns, giving the best feed conversion ratio in the respective feeding regimes. Further increase in frequency of feeding did not promote the growth parameters.

In order to determine the ideal combination of various ingredients at various percentages suitable for the formulation of feed for the culture of juveniles of *M. malcolmsonii*, ten different feeds were prepared (feeds 26 to 35) incorporating different conventional and non-conventional protein sources of animal and plant origin (Experiment-1). The observation showed that prawnmeal and fishmeal are essential for the growth of *M. malcolmsonii* and soybean meal and spirulina meal can replace the animal protein source to some extent.

An attempt was also made in this study to find out the suitability of greengram (*Phaseolus aureus*), a locally available legume as a
replacement for oil cakes in the feed of *M. malcolmsonii* (Experiment-2). The maximum growth performance was observed among the animals fed on feed containing autoclaved greengram followed by those fed on feeds incorporated with roasted and germinated greengram.

Since heat treatments are known to improve the feed quality and in turn the rate of production of the culture organisms, experiments were conducted in the present study to find out the effect of dry heat (roasting) and wet heat (autoclaving) on the efficacy of the ingredients in the feed (Experiment-3). Maximum growth was promoted by the feed containing plant protein sources subjected to 30 minutes of autoclaving, followed by the feed containing plant protein sources roasted till golden yellow in colour.