a Survey conducted for four years (1994 - 1998) at the bed regulator of River Cauvery at Jederpalayam village indicated that the peak period of *M. malcolmsonii* juvenile fishery is from October to March. Secondary data collected from the Tamil Nadu State Fisheries Department show fluctuations in their availability (1979-1998).

H To assess the optimum protein requirement of the juveniles of the freshwater prawn *M. malcolmsonii* (H. Milne Edwards) ten test
feeds (feeds 1 to 10) were prepared with protein contents varying from 18 to 36 percent at 2 percent interval.

- The test feeds were analysed for the physico chemical characteristics. Stability of the pellet decreased with an increase of percentage of protein in the feed.

- With the increase of protein level in the test feeds the quantity of protein drawn from animal protein sources also increased and subsequently the protein drawn from plant protein sources decreased. Consequently the ratio between the protein and non-protein energy also decreased.

- Growth performance was better in the feed containing equal proportion of energy from proteins and carbohydrates.

- An inverse relation was observed between the rate of consumption and the protein level in the feed. The rate of production, feed conversion ratio, gross growth efficiency and protein efficiency ratio increased with an increase of protein level in the feed but beyond a protein level of 30 percent, these parameters showed a decrease. The maximum rate of production was observed at 30 percent protein level.

B The protein efficiency ratio increased and the feed conversion ratio decreased with an increase of protein energy ratio up to 85 tag/. kcal and beyond that the protein efficiency ratio and feed common ratio did not improve.
• All these observations indicate that 30 percent protein level is the optimum level for formulating feed for *M. malcolmsonii*.

• To find out the optimum pellet size suitable for rearing *M. malcolmsonii* of different sizes, isoproteinaceous feed pellets (30 percent) of eleven different diameters were prepared and tested against prawns of four different sizes (1.2 ± 0.2, 3.2 ± 0.2, 5.1 ± 0.1 and 7.1 ± 0.3 cm).

• The stability of these pellets increased with an increase of diameter of the pellets and the same trend was observed in relation to the sinking rate of the pellets.

• The rate of consumption increased with an increase of the pellet size and beyond the optimum size the rate of consumption decreased.

• The highest rate of consumption was observed among prawns of 1.2 ± 0.2 cm size fed on pellets of 1.7mm diameter and it was 2.23, 3.50 and 4.25mm diameter pellets for animals of 3.2 ± 0.2, 5.1 ± 0.1 and 7.1 ± 0.3 cm sizes respectively.

    *m* The higher the stability the more was the hardness of the pellets and it showed an influence over the rate of consumption, which was high in the pellets having a stability of 95.5 percent among prawns of 1.2 ± 0.2 cm size and 96.25, 97.25 and 97.5 percent for prawns of 3.2 ± 0.2, 5.1 ± 0.1 and 7.1 ± 0.3 cm sizes respectively.
and pellets with stability higher than this decreased the rate of consumption.

- The highest rate of production, feed conversion ratio, gross growth efficiency and protein efficiency ratio were observed among prawns of 1.2 ± 0.2 cm size fed on feed pellets containing a diameter range of 1.0 to 1.5 mm size. It was maximum among prawns of 3.2 ± 0.2, 5.1 ± 0.1 and 7.1 ± 0.3 cm sizes fed on pellets of 2.0 to 2.5, 3.0 to 3.5 and 4.0 to 4.5 mm diameter respectively.

- To estimate the optimum feeding regime to be followed for prawns of four different sizes, four feeds (feeds 22 to 25) were compounded and tested for the diameter and the stability and a 45-day feeding trial was conducted.

- The maximum rate of consumption, production, gross growth efficiency and protein efficiency ratio were observed among the animals fed four times a day in the case of 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.

The rate of consumption, production, feed conversion ratio, gross growth efficiency and protein efficiency ratio increased with an increase of feeding frequency but beyond the optimum feeding frequency these parameters did not change.
• Observation revealed that the smaller prawns need more frequent feeding than the larger ones and higher feeding frequency beyond the optimum has no advantage of growth and economy.

• In order to find out the ideal combination of locally available raw materials for the culture of *M. malcolmsonii* ten different feeds (feeds 26 to 35) were prepared and tested against *M. malcolmsonii* of 1.3 ± 0.3 cm (Experiment - 1).

• The highest percentage of growth was observed in feed 27, incorporated with prawn meal as the only animal protein source at 25 percent level and it was followed by feed 31 which contained 10 percent fishmeal and 10 percent prawnmeal in addition to other ingredients.

• The observation shows 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.

• Another set of feed were prepared incorporating greengram, *Phaseolus aureus*, a locally available legume as a vegetable protein source in the place of oil cakes to find out the suitability of the legume for the cultivation of *M. malcolmsonii*. It was subjected to various treatments like drying, soaking, autoclaving, roasting and germination to reduce the antinutritional factors and improve the quality of the meal.

• The 45-day feeding trials of *M. malcolmsonii* of 12 ± 0.4 cm showed the highest rate of consumption and production among organisms fed on feed containing autoclaved greengram and it was
followed by the feed containing germinated and roasted greengram. The growth performance of the animals fed on the feed containing raw and soaked greengram were similar to the control (Experiment - 2).

- The observations indicate that greengram can be used as a plant protein source for the cultivation of *M. malcolmsonii* in place of oil cakes.

- Though heat treatments like roasting and autoclaving improved the rate of growth in *M. malcolmsonii*, in order to standardise the time required for improving the quality of meal, all plant protein sources were subjected to both wet and dry heat treatment for two different timings and one control and four experimental feeds (feeds 42 to 46) were prepared and tested using *M. malcolmsonii* of 13 ± 0.3 cm for 45 days.

- The observation indicates that both dry and moist heat treatment, even at the minimum duration of treatment i.e. 15 minutes for autoclaving and till the materials turn to golden yellow in colour for roasting were found to improve the feed quality and in turn the rate of production (Experiment-3).