M.S.77. ANURADHA KRISHNAN–Studies on larval nutrition in the pearl oyster *Pinctada fucata* (Gould)–1987– Dr. K. Alagar Swamy

Larvae for the experiments were obtained from spawning of pearl oysters that were brought either from the pearl banks of the Gulf of Mannar or from the CMFRI pearl oyster farm. Spawning was mostly natural and in some cases induced by pH stimulation.

Results indicated that the density of larvae in the culture has an influence on growth and setting. Relatively poor growth and setting were observed at very low densities (1/ml and 3/ml) or high densities (8/ml and 10/ml). Density of 5 larvae/ml was seen to be optimum for larval rearing.

Maintaining larval density at 5/ml, two species of algae, namely *I. galbana* and *Pavlova (=Monochrysis) lutheri*, were independently fed to pearl oyster larvae at four increasing cell concentrations from 10 to 100 cells/μl. For both species, maximum growth was observed at the cell density of 25 cells/μl. With *I. galbana*, setting was maximum at 25 cells/μl and with P. lutheri at 10 cells/μl.

Good larval growth with *S. salina* and *T. gracilis*.

Based on the larval growth regression values (log μm per day) obtained for different diets, a food value index was prepared to rank the tested diets for nutritional value.

Estimation of filtration rate

The rate of filtration of algal cells by pearl oyster larvae was measured at four increasing cell concentrations of *I. galbana* between 10 and 100 cells/μl. It was observed that filtration rate increased with larval growth and decreased with higher cell concentration.

Two types of non-living diets, namely, freeze dried *I. galbana* and carrageenan bound microparticulate diet (CBMD) were evaluated for their nutritional potential to pearl oyster larvae. Freeze dried *I. galbana* was found to be a promising source of nutrition for the later stages of larval development and not for the earlier stages The response to CBMD was very poor and did not result in larval metamorphosis.

The increase in total organic matter from the D shape stage to the eyed umbo stage was largely in the form of protein and lipid and to a lesser extent in carbohydrate. With the onset of metamorphosis, levels of lipid, protein and carbohydrate were seen to decrease.

Consumption of algal cells was greater at the higher temperatures (28°C and 32°C). The influence of salinity in the range 26.0–38.1% on larval growth and setting was not notable. Within the pH range of 7.5–9.0, maximum growth and setting was observed at 8.1 (ambient pH).

Spat production increased when the antibiotic was added to the rearing medium. Aeration depressed growth rate when introduced during the D shape stage but enhanced growth and setting when introduced during the eyed umbo stage. The continuous flow ,system was beneficial in rearing post-umbo stages resulting in increased spat production.