

Fattening of Mud-crab *Scylla serrata* in Cages using Locally Available Animal by-products in a Brackish Water Pond

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Protein requirement for the people in Sri Lanka is mainly supplied by aquatic biota which includes fin-fish and shell fish. Marine and inland fisheries do not provide the required dietary protein for the people of the country. Therefore, it is essential to find alternatives to increase the production of animal food. Fattening of mud-crab *Scylla serrata* is important not only as a protein source but also as a source of foreign exchange. Therefore, the main objective of this study was to find the best cost-effective locally available animal waste to fatten mud-crab while considering the environmental issues caused by the culture process.

The study was conducted in a brackish water pond (400m²) which is partially connected to the Negombo estuary. Nine cages were used with a size of 60" x 32" x 24" (3x3 factorial design). Crabs with an initial weight of 150 ± 10g were randomly stocked. Three experiments were conducted: I. Feeding trial using different feeds, feeding rates and amounts of feed. II. Feeding trials using different stocking densities (3/4/5 crabs per cage). III. Effect of water flow (open and closed circulations) on the growth. Four types of feed were used: discarded fish, slaughterhouse fish, shrimp heads, and fish slaughter waste mixture. Feeding efficiency and survival rate were analyzed using a two way ANOVA. Physico-chemical parameters of water and soil samples and changes in abundance of benthic fauna were analyzed before and after the culture period.

The results showed that crabs fed with fish meal at 15% body weight twice per day showed the highest weight gain (120 ± 5g) within a 30 day time period, with a survival rate of 83%. Slaughter waste was not digested. A moderate stocking density of four crabs per cage was found to be the best. In closed pond systems crabs showed a weight gain of 30 ± 5g in 30 days while the open inter-tidal pond had the highest weight gain of 120 ± 5g during the same period. Soil organic content increased after the culture but recovered after 30 days. More importantly, increase in temperature was directly proportional to mean weight gain of the crabs in all the experiments. Shannon diversity indices (H') indicate a decrease in the abundance of benthic fauna after culture.

These findings show that the fattening of mud crab could be carried out successfully at low cost, using animal by-products as feed in an inter-tidal brackish water pond.