

SHRIMP FARMING PERFORMANCES AT PRESENT CULTURING
PROCESS AT KAWATHAMUNAI



BY

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VANTHAARUMOLAI,
CHENKALADY,

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ABSTRACT

Aquaculture is one of the most rapidly expanding activities which have become a major non traditional foreign exchange earner in Sri Lanka. It is important as a cheap source of protein in the diet of rural communities. As interaction between aquaculture and the environment involves many issues that fall into two categories; the output and consumption of products by the culture practices and the impact that these products have on the physical and biological environment.

One of the important negative effects of shrimp farming is the discharge of nutrient-laden pond water into common waterways and hence their eutrophication of these receiving waters. The nutrient and organic wastes influence the quality and quantity of effluent discharged from shrimp farms and the subsequent impact on the external environment. Therefore culture ponds of *Penaeus monodon* under semi-intensive system, with stocking density 150,000 PL/ha were studied for better understanding of the nature of the nutrient and toxic metabolite build-up in relation to the grow-out process.

Present study investigates the growth of shrimps, some selected physical parameters such as salinity, pH, temperature, dissolved oxygen, suspended solids and turbidity, the nutrient loading in terms of nitrate and phosphate, and toxic metabolites loading in terms of nitrite and ammonia from the three selected shrimp ponds culturing *Penaeus monodon*. Salinity varied between 10 ppt and 20 ppt. pH varied between 7.81 and 8.84. Dissolved oxygen varied between 4.0 ppm and 7.9 ppm. Suspended solid concentration varied between 1.67 mg/l and 94.67 mg/l. Turbidity (Secchi disc reading) varied between 35 cm and 68 cm. Nitrate concentration varied between 1.0 mg/l and 4.33 mg/l. Phosphate concentration varied between 0.18 mg/l and 0.73 mg/l. Nitrite concentration varied between 0.33 mg/l and 0.83 mg/l. Ammonia concentration varied between 0.26 mg/l and 3.84 mg/l.

The above mentioned water quality parameters were measured in two points of the lagoon, the common inlet point and the common outlet point. There were significant different between the two locations for each parameters. All the water quality parameters were high in the outlet point due to the release of shrimp farming effluents without any treatment.

The study shows that effluent water quality tend to deteriorate through the grow out period as feeding rates increase with shrimp size and biomass, which necessitate frequent water exchange. Study also shows that highest quantities and poorest quality of effluent are found during and before harvesting period.

It is apparent from the present study that improvements to water quality in the farming ponds are needed. One important strategy towards addressing this issue is the introduction of treatment systems for effluent and recirculating system to reuse the water. This would alone represent a significant step toward improving the water quality to an acceptable range with regard to both potential environmental impacts and for the future sustainability of the shrimp farming industry in the present study site.

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