B-29: Effect of water exchange rate on benthos, plankton and soil quality in giant tiger prawn (*Penaeus monodon*) cultured outdoor ponds

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Shrimp culture is among the most profitable industries in Sri Lanka. Its annual foreign exchange contribution is around Rs.457.6 million. With the increasing demand in the international market, production of high quality shrimps at low cost has become essential.

Water exchange influences the growth and quality of the shrimps. 20, 25 and 30% daily water exchange rates were the 3 treatments, allocated randomly, each having 2 replicates. Sampling was performed biweekly to determine growth of shrimps and other important parameters.

Growth of shrimps, plankton population, benthic production, total soil nitrogen, organic matter and soil Mg^{2+} content in the 3 treatments were not significantly different ($P>0.05$). However, soil Ca^{2+} ($r=0.99$) and K^{+} ($r=0.99$) concentrations were found to be correlated significantly ($P<0.05$) to water exchange rate. Two factor factorial R.C.B.D. was used for statistical analysis.

Since the enhanced water exchange rates do not have any significant effect on shrimp growth and pond environment, maintenance of daily water exchange rate around 20% appears to be sufficient and economical in this type of intensive culture systems.