

Water quality and bacterial populations in a tropical marine cage culture farm

ABSTRACT

A study was conducted to investigate fluctuations in different physical and chemical parameters, and bacterial populations in a tropical marine cage culture farm for one annual cycle. Samples were collected from the centre of the farm (station 1) and away from the cages (station 2). There were no significant differences ($P > 0.05$) in water quality parameters, such as temperature, salinity, dissolved oxygen, conductivity and pH between the two stations during the neap and spring tides. Nutrient concentrations and bacterial counts were slightly higher at station 1 than station 2, but the differences were not significant ($P > 0.05$). In general, nutrients and chlorophyll a concentrations in the study area were higher than those reported in the pristine marine environment. There were significant correlations ($P < 0.05$) between some nutrients (soluble reactive phosphorus, nitrite and nitrate) and bacterial counts. There were no significant differences ($P > 0.05$) in nutrient levels and bacterial populations between the neap and spring tides, probably because of the large number of farms operating in the shallow channel. The present study indicates that high organic loading from the fish farming activities could cause deterioration of the water quality in the cage-culture system as well as in the surrounding environment.