

The changes of water physic-chemical parameters during shrimp culture and their effects on algal bloom in shrimp farms

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Abstract

The aim of this study was to determine the effect of sediment and water physicochemical parameters changes (temperature, salinity, pH, nitrite, nitrate, phosphate, ammonia, turbidity and TOM) during the culture period and the effect of these changes on phytoplankton blooms in Goater Complex farms during 2020 (April to September). In order to conduct the study, water was sampled from the identified stations in different parts of the Goater Complex farms to study physicochemical factors and phytoplankton population every 14 days once during the culture period. In this study, phase two active farms were used as the experimental groups of the culturing environment and also the water used in the canals as experimental groups of the surrounding environment to measure the physicochemical factors of water and phytoplankton bloom. In order to investigate the relationship and correlation between changes in water physicochemical factors in different months in shrimp ponds, linear correlation test was used. In the results of this study, the highest amounts of water physicochemical factors such as nitrite, nitrate, phosphate and ammonia were observed and recorded in July, August and September at the same time with the presence of monsoon currents. In addition, algal blooms caused by spirulina, formidium, noctiloca and cyanococcus were observed in shrimp ponds, which often occurred in July, August and September, which shows the direct effect of high amounts of phosphate and other water physicochemical factors that affect the algal bloom of shrimp ponds. Also, a significant difference was observed in the amount of physical and chemical indicators of water in farms, water inlet and outlet channels ($p < 0.05$). The mean monthly changes of salinity, turbidity, color, nitrate, phosphate, ammonia and nitrite in the output channel and fields, respectively, 36.2, 37.2, 124.8, 11.93, 6.39, 1.88 and / 34 2 mg / L indicates that it is significantly higher than the input channel during the rearing period. Overall, it could be resulted that there is a direct relationship between weather changes, especially the presence of monsoon currents and changes in physical and chemical factors of water and increasing algal blooms.

Keywords: Gwatar, Climate change, Physicochemical factors, Algal blooms.