

Investigation of Microbial Dynamics Of Fish Farms Sediment by Real-Time PCR (Western Coast of Turkey)

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Aim of the study: Aquaculture has become one of the major industrial activities worldwide. On the other hand, organic enrichment of sediments influences microbial communities and biogeochemical cycles. . The aim of this study was monitoring the microbial dynamics (bacterial and archeal) of samples taken from two fish farm sediments at different seasons (spring and autumn).

Material and Methods: Six samples were collected from two fish farm sediments (Ildır Bay and Güllük Bay, located on the western coast of Turkey) in spring and autumn periods. DNA extraction was performed using Power Soil DNA isolation kit (Mo-bio, USA). All quantitative PCR amplifications were carried out with LightCycler 1.5 (Roche Diagnostics, Germany) and with TaqMan probe systems. Archeal (787F-1059R/ARC915F-TaqMan) and Bacterial (338F-805R/Bac516F-TaqMan) specific primers and probes set were used for quantification.

Results: Real-time PCR analysis indicated that the members of Archaea domain were more presence at all locations in the autumn ($\approx 10^4$ gene copies/gr) than in the spring ($\approx 10^2$ gene copies/gr). Similar to these results, the Bacterial population also showed an increase in the autumn. When the results compared regionally, Güllük region have the weakest microbial load ($\approx 10^2$ gene copies/gr), both in Archaeal and Bacterial, in the spring, whereas Ildır region have some sampling location that containing $\approx 10^4$ gene copies/gr. These changes were thought to be related to the physicochemical properties, current regime or organic enrichment of the sampling regions.

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Keywords; Fish farm; sediment; Quantitative-PCR; bacteria; archaea