

Water quality survey of the Gharehsou River in Ardabil in the range of rainbow trout farms

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Abstract

In this research, the water quality of Gharehsou River within the fish farms in the 4 stations including the upstream station (as a control station), the station between farms, the station after the last farms and downstream after 4 km away from the last fish farm, was surveyed every 45 days from the December 2015 to May 2016. The purpose of this study was to investigate parameters including water temperature (°C), dissolved oxygen (DO), electrical conductivity (EC), pH, alkalinity, ammonia, nitrate, nitrite, TDS and TSS at the desired stations. The results showed that the highest and lowest levels of ammonia in stations between farms and downstream were found $0.58 \pm 0.23 \text{ mg.l}^{-1}$ and $0.15 \pm 0.13 \text{ mg.l}^{-1}$, respectively, which was significantly differed ($p < 0.05$). Also, nitrite level at station last farms was $0.15 \pm 0.04 \text{ mg.l}^{-1}$ significantly higher than other stations ($p < 0.05$). In terms of sampling time, the maximum mean ammonia and nitrate content were obtained in January and May, respectively. Minimum alkalinity, EC and nitrite were observed in June, which had a significant difference with other months ($p < 0.05$). Based on statistical analysis PCA (principal component analysis), temperature, dissolved oxygen and alkalinity showed the greatest positive impact and pH had most negative impact. Also with increasing temperature, ammonium nitrate was increased; but on the contrary, increase the nitric acid in water to be associated with reduced temperature. According to correlation station with the results, most of the examined factors showed higher values in stations between farms and downstream. So aquaculture effluent in stations between farms showed the greatest impact on water quality.

Keywords: Physicochemical, Fish farm, Gharehsou, effluent, Water quality

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