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Abstract : Reservoir dams are critical to agriculture, industry, and the needs of humans and wildlife. This study evaluates the water quality of the Ghrib reservoir in north west of Algeria, using Irrigation Water Quality Index (IWQI), sodium absorption rates (SAR) and multivariate statistical methods (Clustering and principal component analysis). The study concerns the analysis of physical and chemical parameters (pH, EC, O₂, TUR, Ca, Mg, HCO₃, Na, K, BOD, DCO, Cl⁻, PO₄, SO₃, NH₄ et NO₃) which were measured at 12 selected points along the reservoir over 8 periods (dry and wet periods) using standard methods. Irrigation Water Quality Index values in the dam reservoir were found to be between 41 and 59, according to classifications for different water uses, values below 60 indicate that water is of poor quality for irrigation and treatment is recommended to make reservoir water more suitable for irrigation. The results of water analysis in our study area reveal the presence of acute pollution which is certainly caused by direct releases of either industrial or domestic origin, and we note that this pollution remains variable depending on the collection periods. Also, chloride-calcium and sulfate facies are the most dominant in sampling periods for reservoir water, resulting in poor water quality for irrigation. In addition, water is, therefore, highly mineralized and is likely to be suitable for irrigation of certain species (cucumbers...) that are well tolerant to salt and on well-drained and leached soils.

KEYWORDS : Ghrib reservoir ; IWQI ; SAR ; Physical and chemical parameters ; Pollution ; Water ; Irrigation

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