

The Assessment Groundwater Geochemistry of Some Wells in Rafsanjan Plain, Southeast of Iran

Authors : Milad Mirzaei Aminiyan, Abdolreza Akhgar, Farzad Mirzaei Aminiyan

Abstract : Water quality is the critical factor that influence on human health and quantity and quality of grain production in semi-humid and semi-arid area. Pistachio is a main crop that accounts for a considerable portion of Iranian agricultural exports. Give that pistachio tree is a tolerant type of tree to saline and alkaline soil and water conditions, but groundwater and irrigation water quality play important roles in main production this crop. For this purpose, 94 well water samples were taken from 25 wells and samples were analyzed. The results showed give that region's geological, climatic characteristics, statistical analysis, and based on dominant cations and anions in well water samples (piper diagram); four main types of water were found: Na-Cl, K-Cl, Na-SO₄, and K-SO₄. It seems that most wells in terms of water quality (salinity and alkalinity) and based on Wilcox diagram have critical status. The analysis suggested that more than eighty-seven percentage of the well water samples have high values of EC that these values are higher than into critical limit EC value for irrigation water, which may be due to the sandy soils in this area. Most groundwater were relatively unsuitable for irrigation but it could be used by application of correct management such as removing and reducing the ion concentrations of Cl⁻, SO₄²⁻, Na⁺ and total hardness in groundwater and also the concentrated deep groundwater was required treatment to reduce the salinity and sodium hazard. Given that irrigation water quality in this area was relatively unsuitable for most agriculture production but pistachio tree was adapted to this area conditions. The integrated management of groundwater for irrigation is the way to solve water quality issues not only in Rafsanjan area, but also in other arid and semi-arid areas.

Keywords : groundwater quality, irrigation water quality, salinity, alkalinity, Rafsanjan plain, pistachio

Conference Title : ICAEER 2015 : International Conference on Agricultural Economics and Environmental Research

Conference Location : Istanbul, Türkiye

Conference Dates : January 26-27, 2015