

Studying the relationship between sodium adsorption ratio and exchangeable sodium percentage, and some thermodynamic parameters in the affected and non-affected soils with salts in Dhi Qar Province, Southern Iraq

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University of Sumer, Iraq.2. Al- Mussaib Technical
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Technical University, Iraq.**Corresponding author:****Saba A. Al-Zubaidi****ABSTRACT:**

A laboratory experiment was conducted according to the Completely Randomized Design (CRD) to study the relationship between Sodium Adsorption Ratio (SAR) and Exchangeable Sodium Percentage (ESP) and some thermodynamic parameters in the affected and non-affected soils with salts in Dhi Qar Province of Southern Iraq. The study included the selection of 21 soil samples representing seven locations, three soil samples took from different places for each location. To achieve this study, some conventional and thermodynamic calculations were required. The results showed very high concentrations of soluble sodium in the soils affected with salts range 141-755 mmol cal.L⁻¹ compared to 0.03 mmol cal.L⁻¹ in the soils non-affected with salts. sodium formed a ratio ranged from (0.002-0.009 and 0.31-0.75) to the sum of positive ions in the normal soils affected by salts, respectively. In the calculation of the thermodynamic parameters for sodium status evaluation, the ionic effectiveness treatment of sodium in the soils ranged from 0.02-24.77 and in the soils affected with salts from 31.3-60.1. Ionic effectiveness values ranged from 0.8-873.2 mmol cal.L⁻¹ and 100-978 mmol cal.L⁻¹ in non-saline soils and soils affected with salts respectively.

Keywords:

SAR, ESP, Non-saline soils, Saline soils.