

Abstract

The study of the human and natural factors affecting irrigation water and soil results in temporal and spatial differences in the chemical qualities of the soil and water in Sooq Al-Sheoq as follows:

1. The rates of the PH are rather alkaline for most locations studied where the general average in August is found to be (8.7) and the highest rate is in the water of Al-Zeilial (7.8) which represents the region of rivers ends in August. All the rates do not exceed the allowed limits. As for the soil, the general average of PH reaches (4.8) in March where its highest values in the soil of rivers beds and uncultivated soils in August reach (6.8), the lowest is (5.7) for the soil of river beds planted with rice. The different factors result in differing rates where they go up on locations during August and down in other locations while they go up in March depending on the affecting factors.
2. The highest value of electric conductivity in August reaches (2.3) dcm/m for water samples. The highest concentration is in the water of Om Nakhla (3.69) dcm in August, the lowest is (2.2) in Euphrates at Al- Fadhalya. As for the connectivity concentrations of soil, the highest rate is in March (3.5) where some locations have high values in August and low ones in March.
3. The soluble total minerals: the highest rate is in August (2045) mg/l and the highest rate was recorded in Om Nakhla (2435)mg/l in August; the lowest is in the Euphrates at Al-Fadhlyia.
4. Sulphurs: its highest rate is (174.5) mg/l in March. Om Al-Tebol records the highest rate in August; the lowest is in the Euphrates at Al-Fadhlyia(74) which exceeds the allowed limits. As for the soil, the general rate reaches (413) mg/l in March. Human factors clearly increase the sulphur concentrations in the areas studied.
5. Phosphates: the highest rate of phosphates reaches (6.1)mg/l in August where natural factors increases their rates. The highest rate is recorded in Al-Asebiha due to drainage and agricultural activity, which increase their concentrations. Their highest concentrations in the soil reach (6.6) mg/l in March because of the shortage of rain.
6. Chloride: its concentrations increase in August because of natural factors reaching (972) mg/l. the highest rate is registered in brooks with low drainage. On the other hand, the chloride rates exceed the allowed limits. Its concentrations increase in the soil during March due to the shortage of rain.
7. Sodium: its rate increases in August where the general average is (397) mg/l. In march, high rates are recorded as well in the same locations. Its general average increases also in the soil during March reaching (354) mg/l especially in unplanted soils.
8. Calcium: the highest rate in March is (235) mg/l. it is worth mentioning that there is no significant difference between the two seasons. Its concentrations in the soil agree with its general average in water samples.
9. Magnesium: the high temperature and the agricultural activity result in the increase of magnesium concentration reaching (75.3) mg/l in August. The river ends record the highest concentrations in Om Nakhla (102) mg/l.

10.Potassium: its concentrations agree with the spatial and temporal rates of the above mentioned minerals where the general average reaches (117) mg/l in August. High calcium rates are recorded in the soil during March reaching (354) mg/l.

11.Carbons: the general average in March is (55) mg/l where its concentrations increase in the soil because of human factors (drainage, car washing). Its rates decrease in August because of irrigation.

12.Nitrates: the general average in March is (55) mg/l which is in agreement with the other chemical elements. These concentrations result from the natural factors and because the land was not planted during the winter, so these minerals increase in the soil.

13.Bicarbonates: the highest average in March is (227) mg/l in soil samples. It reaches (298) mg/l in such locations as car washing. Further, drainage affects the increase in bicarbonates concentrations.

14. Saltiness: its averages increase in August compared to March reaching (1.57) mg/l. it is obvious that saltiness increases southwards where it reaches (1.1) in Al-Fadhlya whereas it is (1.63) in Al-Tar as more water is consumed for agricultural and other purposes.

15. Heavy elements: very low rates of (lead, nickel, zinc, cadmium, chrome, and cobber) are recorded in the Euphrates and its brooks which make them within the allowed limits. But these elements have temporal disparity as some of them have high rates in summer and others increase in August because of human and natural factors. As for their concentrations in the soil, they do not exceed the allowed limits. These rates agree with their rates in the water. Some activities result in their increase in some locations. Their rates increase in March compared to August, a result that goes along with other elements concentrations in the soil.