



ENVIRONMENTAL EFFECTS OF DRAINAGE WATER REUSE FROM EL GHARBIA DRAIN.

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ABSTRACT

Drainage water reuse directly or mixed with canals water is a major of irrigation water management in agriculture. The main problem is the deterioration of water quality due to pollution from sewage and industrial wastes which reached. El Gharbia main drain is investigated to achieve the target of this study. Water samples were collected along the drain at fixed check points. Details study is carried out at the outfall of the drain at Hafeer Shehap Al Dean, samples (soil, water, plants and sediments) were collected and analyzed during four times of the year 2015/2016.

The results showed that:

1- Water samples along the drain:

A 82 % of the total collected samples have a total soluble salts less than 2000 mg/l and classified as "slight to moderate" grade. While 18 % more than 2000 mg/l and classified "severe" for irrigation. The adjust Sodium Adsorption Ratio values were classified as "slight to moderate" and "severe" grades. All macro, micro and heavy metals content in the drain water were below critical limits. Pathogenic indicators; Total, Fecal coli forms, Salmonella & Shigella and Parasites were found in high numbers, at check points. Total phenols, hydrocarbon, and oils & grease content were high values and exceed the critical limits.

2- Sediments:

- Content high concentration for all heavy metals in collected samples.

3- plants:

- The contents of macro, micro nutrients and heavy metals were in range of according to the food and Agriculture Organization.
- The contents of macro, micro nutrients and heavy metals content under study were varied and changed in amount according to type of plants and parts of plant under analysis.
- The concentrations of heavy metals decreased in the sequence as leafy vegetables > root vegetables > fruit vegetables. The ability of leafy vegetables to content and accumulate heavy metals was the highest than of root vegetables.
- pathogenic indicators of plants irrigated with Gharbia drain water were detected with Total coli forms and Facale coli forms.
- Bio-concentration ratio showed that each plant has specified capability to accumulated element in their tissue.

Key words: Drainage Water, heavy metals, pathogenic organic compounds, plant, Reuse, Soil,