شبكة المعلومات الجامعية

التوثيق الإلكتروني والميكروفيلم

بسم الله الرحمن الرحيم

HANAA ALY

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جامعة عين شمس

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ENVIRONMENTAL IMPACT EVALUATION FOR REUSING DRAINAGE WATER FOR SOME VEGETABLE CROPS PRODUCTION IN ARID LANDS

By

AYMAN RAGAB ABU EL ELA MOHAMED
B.Sc. Agric. Sci. (Land Reclamation) Cairo University. 2003
M. Sc. Agric. Sci. (Agriculture and Desert Areas Affected by Salinity)
Ain Shams University, 2018

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ABSTRACT

Ayman Ragab Abu El Ela Mohamed, Environmental Impact Evaluation for Reusing Drainage Water for Some Vegetable Crops Production in Arid Lands. Unpublished Ph.D. Sc. Thesis, Department of Agricultural Sciences, Arid Lands Agricultural Studies and Research Institute, Ain Shams University, 2021.

The present study measured the concentrations of heavy metals (Zn, Ni, Pb, Cu, Cr, and Cd) in soils as well as vegetables (faba bean, cabbage, onion, garlic, zucchini, capsicum, eggplant, potato, okra and green bean) irrigated with wastewater in the western part of Giza governorate, Egypt. Human health risks to consumers of these vegetables were performed. The study revealed the considerable variations in metal contents of water, soil and vegetables samples. Generally, wastewater of the study drains was not suitable for irrigation purpose according to the bacteriological guidelines. Almost all the physicochemical parameters and heavy metals concentrations of water and soil samples were compatible with the recommended permissible limits of irrigation and agricultural use, respectively. Vegetable species showed remarkable difference in metals concentrations of various plant portion، Zn showed highest tissue concentrations followed by Cu. Heavy metals concentrations in different edible portions decreased in a descending order as Zn > Cu > Pb > Ni > Cr > Cd with low translocation values (< 1) for studied vegetables except for faba bean. The health risk index (RI) for humans was low if edible portions from studied vegetables are consumed, in particular Cd, Cr, Pb, and Ni whose concentration values were relatively higher than the health based guidelines values. Considering the probable health risk associated with the consumption of contaminated vegetables, it is important to regularly monitor the levels of metals in wastewater, soils and vegetables in the studied area.

Kew words: Heavy metals; Risk assessment; Vegetables and Wastewater.

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