

CADMIUM LEVELS IN SOIL AND ITS CONTENT IN SOME VEGETABLES GROWN IN THE CENTRAL REGION OF SAUDI ARABIA

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ABSTRACT

The information regarding the status of cadmium (Cd) in the soils of the central region in Saudi Arabia is lacking. The lack of these informations will make the evaluation of Cd status in these soils and the grown plants in this region a difficult task. Therefore, the present study was initiated to investigate the levels of Cd naturally present in soils of Al-Kharj, Riyadh and Qasseem provinces and in the vegetables growing in these soils.

Data revealed that there were significant differences between the average values of total Cd content in the surface layer of the cultivated soils. The average values were 0.24; 0.23 and 0.18 mg kg⁻¹ for Al-Kharj, Riyadh and Qasseem provinces, respectively. On the other hand, these values in the uncultivated areas were 0.10; 0.21 and 0.17 mg kg⁻¹ for the same provinces, respectively.

As for the Cd content of the various vegetables grown in soils of the three provinces, the results indicated significant differences among the three provinces. Data showed a positive significant correlation between the Cd content in these soils and the vegetables growing in them ($r = 0.67$).

The total Cd content in the studied soils and the concentration of Cd in various vegetables plants sampled from these soils were well within the range of those reported for uncontaminated areas of the world.

Keywords: Cadmium, vegetables, soils.

INTRODUCTION

Increased interest about the contamination of soil and water resources with heavy metals has occurred in recent years. Adverse health effect consequent upon consumption of contaminated feed has also received much attention. Cadmium (Cd) among these heavy metals is considered to be the most hazardous due to its high phytoavailability and the ease of its transfer to the food chain. Cadmium naturally occurs in all soils in minute quantities, but can accumulate in agricultural soils from various sources, such as organic and inorganic fertilizers and atmospheric deposition (Alloway, 1995 and McLaughlin and Singh, 1999).

The agricultural land in the central region of Saudi Arabia is witnessing remarkable development and intensification of agricultural production, this is coupled by intensive use of chemical fertilizers which is considered as one of the main sources of addition of Cd to agricultural soils. Thus, the data of the present status of Cd in these soils are essential for assessment of any possible future accumulation of this element (Modaihsh *et al.*, 2001).