



Cadmium Contents of Soils, Durum, and Bread Wheats in Harran Plain, Southeast Turkey

Asuman Büyükkılıç (1), Ahmet Mermut (1), Angel Faz Cano (2), and Doria Carmona Garces (2)

(1) Harran University, Faculty of Agriculture, Department of Soil Science, 63040 Sanliurfa Turkey, (2) Sustainable Use, Management and Reclamation of Soil and Water Research Group, Agrarian Science and Technology Department, Technical University of Cartagena, Paseo Alfonso XIII, 52, 30203 Cartagena, Murcia, Spain

Turkey is growing significant amount of durum wheat (*Triticum turgidum durum* - (Desf.) Husn) which is widely used for making pasta, spaghetti, noodles etc. Objective of this study were to: 1) determine Cd concentrations of the soils, durum and bread wheats grown in the Harran plain, southeast Turkey and 2) evaluate this element in terms of food safety. Soil samples from the selected 16 profiles, grains, roots, and leaves of durum and bread wheats were taken for analyses. Total Cd contents of the soils were below the threshold values. The soils in the northern part of the plain have more than 0.2 ppm of Cd. Carbonate and clay contents are > 15% and 40% respectively and have substantial amounts of Fe-oxy-hydroxides. Three phosphorus fertilizer samples, frequently used in the area, had > 2 ppm of Cd. As expected, the amounts of Cd in bread wheat were lower than durum wheat. However, the Cd contents in durum wheat grains in the area studied were $< 50 \mu\text{g kg}^{-1}$ which is less than those in Canada ($> 100 \mu\text{g kg}^{-1}$) and similar to the drum grains from Italy. Some samples in Italy even had $71 \mu\text{g kg}^{-1}$. These were attributed to the presence of high amounts of carbonates, Fe-oxy-hydroxides, and clay in the soils we studied. In the surface soil, Zn contents were between 21.5 and 72.8 mg kg^{-1} . This could be another reason for lower contents of Cd in our durum wheat. Our study confirms that durum wheat grown in the Harran plain southeast Turkey has a better quality, therefore advantageous; in terms of food safety from the standpoint of Cd contents.