

## Heavy metals content in degraded agricultural soils of a mountain region related to soil properties

José Navarro-Pedreño (1), María Belén Almendro-Candel (1), Ignacio Gómez (1), Manuel M. Jordán (1), Jaime Bech (2), and Antonis Zorpas (3)

(1) Department of Agrochemistry and the Environment, Miguel Hernández University of Elche, Av. de la Universidad, s/n, 03202 Elche (Alicante), Spain, (2) Soil Science Laboratory, Faculty of Biology, University of Barcelona, Barcelona (Spain), (3) Cyprus Open University, Faculty of Pure and Applied Sciences, Environmental Conservation and Management, Lab of Chemical Engineering and Engineering Sustainability, P.O.Box 12794, 2252, Latsia, Nicosia, Cyprus.

Agriculture has been practiced for long time in Mediterranean regions. Intensive agriculture and irrigation have developed mainly in the valleys and coastal areas. In the mountainous areas, dry farming has been practiced for centuries. Soils have been fertilized using mainly organic amendments. Plants extracted nutrients and other elements like heavy metals presented in soils and agricultural practices modified soil properties that could favor the presence of heavy metals.

In this work, it has been checked the content of heavy metals in 100 agricultural soils samples of the NorthWest area of the province of Alicante (Spain) which has been long cultivated with cereals and olive trees, and now soils are abandoned and degraded because of the low agricultural yields.

European policy has the aim to improve the sustainable agriculture and recover landscapes of mountain regions. So that, it is important to check the state of the soils (Marques et al. 2007).

Soils samples (arable layer) were analyzed determining: pH (1:5, w/v, water extract), equivalent calcium carbonate content, organic matter by Walkley-Black method (Nelson and Sommers 1996), micronutrients (Cu, Fe, Mn, Zn) extracted with DTPA (Lindsay and Norvell, 1978) and measured by atomic absorption spectrometry, and total content of metals (Cd, Cr, Ni, Pb) measured in soil samples after microwave acid digestion (Moral et al. 1996), quantifying the content of metals by ICP analysis. The correlation between soil properties and metals.

The results indicated that pH and carbonates are the most important properties of these soils correlated with the metals (both micronutrients and heavy metals). The available micronutrients (all of them) are close correlated with the pH and carbonates in soils. Moreover, heavy metals like Pb and Ni are related to available Mn and Zn.

Keywords: pH, carbonates, heavy metals, abandoned soils.

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