

## Heavy metal content (Cd, Ni, Cr and Pb) in soil amendment with a low polluted biosolid

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The progressively higher water quality standards in Europe has led to the generation of large quantities of sewage sludge derived from wastewater treatment (Fytili and Zabaniotou 2008). Composting is an effective method to minimize these risks, as pathogens are biodegraded and heavy metals are stabilized as a result of organic matter transformations (Barker and Bryson 2002; Noble and Roberts 2004). Most of the studies about sewage sludge pollution are centred in medium and high polluted wastes. However, the aim of this study was to assess the effects on soil heavy metal content of a low polluted sewage sludge compost in order to identify an optimal application rate based in heavy metal concentration under a period of cultivation of a Mediterranean horticultural plant (*Cynara cardunculus*). The experiment was done between January to June: rainfall was 71 mm, the volume of water supplied every week was 10.5 mm, mean air temperatures was 14.2, 20.4 (maximum), and 9.2 [U+25E6] C (minimum). The soil was a clay-loam anthrosol (WRB 2006). The experimental plot (60 m<sup>2</sup>) was divided into five subplots with five treatments corresponding to 0, 2, 4, 6, and 8 kg compost/m<sup>2</sup>. Three top-soil (first 20 cm) samples from each treatment were taken (January, April and June) and these parameters were analysed: pH, electrical conductivity, organic matter and total content of heavy metals (microwave acid digestion followed by AAS-spectrometry determination). The results show that sewage sludge compost treatments increase the organic matter content and salinity (electrical conductivity of the soils) and diminish the pH. Cd and Ni total content in top-soil was affected and both slightly reduce their concentration. Pb and Cr show minor changes. In general, the application of this low polluted compost may affect the mobility of Cd and Ni due to the pH modification and the water added by irrigation along time but Pb and Cr remain their content in the top-soil.

### References

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