

Residual effects of metal contamination on the soil quality: a field survey in central Portugal

Ryunosuke Kikuchi (1,2) and Romeu Gerardo (3)

(1) CERNAS / Escola Superior Agraria de Coimbra, Coimbra, Portugal (kikuchi@esac.pt), (2) Faculty of Science & Technology, Ryukoku University, Otsu, Japan (kikuchi@rins.ryukoku.ac.jp), (3) SEGMAZ, Vagos, Portugal (romeu@segmaz.pt)

Agriculture is an important source of income and employment. But depletion and degradation of land challenge to producing safe food and other agricultural products to sustain livelihoods and meet the needs of urban populations. When developing or expanding an agricultural area, it becomes essential to assess the soil quality. Even if the present source of contamination is not observed, it is a worth subject to evaluate whether or not any negative effects of the past contamination still last. For this purpose, a field survey (2 ha) was carried: a zinc and lead mining site that was abandoned about 50 years ago was researched at Sanguinheiro (40°18'N and 8°21'W) in Central Portugal. The area is characterized by very steep slopes that are confining with a small stream. The obtained results show that (i) the Pb content in the site (165 mg/kg) is higher than that in the background (67.7 mg/kg); (ii) the Zn content of local vegetation (*Eucalyptus globulus*) in the post-mining site is 2.1 times that in the control site, and (iii) dead bare ground is observed in some parts of the site. There is a possibility that great amounts of Zn and Pb accumulate in tissues of local vegetation. Although mining activity ended 50 years ago, the contents of Pb and Zn in the sampled soil were comparatively high in the site with about a 75% slope. It is concluded that not only the present contamination but also the post-environmental stress should be assessed to properly develop an agricultural area in terms of securing agricultural products.