

An investigation on heavy metals (HMs), Pb, Zn and Cd pollution and accumulation in maize grown in arable soils along a lead and zinc slag heap in Yunnan, Southwest China was conducted using multivariate statistical methods. Calculation of the Nemerow pollution index revealed that all sampled soils were heavily polluted. The concentrations of Pb, Zn and Cd in the maize samples presented a decreasing trend from roots to shoots to seeds, except for Zn (roots > seeds > shoots), and the content of HMs in the maize roots was positively correlated with both soil total and extractable HMs. Arbuscular mycorrhizal fungi (AMF) and dark septate endophytes (DSE) intensively colonised in the maize roots, and their functional roles are discussed in the soils contaminated by HMs. The study results showed that intensive mining and smelting activities contributing to soil metal contamination present a high metal-pollution risk for crops grown.