# Phytoavailability of Lead for Two Radish Varieties in Lime and Organic Amendments Incorporated Acidic Soil

**Nawarathna H.A.I.M. and Attanayake C.P.***
Department of Soil Science,
Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka

Phytoavailability of lead (Pb) could be high in acidic soils and it can cause significant Pb transfer to humans, especially via root crops. Accumulation of Pb is dissimilar among different varieties. The objective of this study was to assess the effect of incorporation of poultry manure, cattle manure, municipal solid waste compost, and lime on phytoavailability of Pb in soil for two radish (*Raphanus sativus*) varieties (*i.e.*, Beeralu and Japan ball). A field experiment was conducted in an agricultural field located within a residential area in HawaEliya. The total Pb concentration in soil was 98-297 mg $kg^{1}$ and soil pH was 6.25. Organic amendments and lime were added at the rate of 2 $kgm^{-2}$ and 0.75 $kgm^{-2}$ respectively. Plants were harvested 56 days after seeding. The Pb concentrations in peeled-roots, peels and leaves were analyzed. None of the amendments significantly ($P<0.05$) reduced the Pb accumulation in roots or leaves. Lime showed the highest potential to reduce the phytoavailability of Pb for radish. It was less than 10-15% reduction compared to control. The Beeralu variety had a higher Pb concentration in the peeled-root and leaves compared to that in Japan Ball variety. The Pb concentration in the peels was lower in the Beeralu variety compared to the Japan Ball variety. The maximum daily Pb intake was 1.4 times higher than what is allowed by the CODEX safe limits when consuming the peeled-roots of the Beeralu variety. Consumption of Radish Leaves of both varieties and peeled-roots of Japan ball variety did not exceed the CODEX safety limit of Pb intake. Reduction of soil acidity and selection of variety with low Pb accumulation can reduce the phytoavailability of Pb in contaminated acidic soils.

**Keywords:** CODEX standards, Lead, Phytoavailability, Radish varieties

*chammiatt@agri.pdn.ac.lk