

African Journal of Agricultural Research

[AJAR Home](#)
[About AJAR](#)
[Submit Manuscripts](#)
[Instructions for Authors](#)
[Editors](#)
[Call For Paper](#)
[Archive](#)
[Email Alerts](#)
[Afr. J. Agric. Res.](#)
[Vol. 3 No. 11](#)
Viewing options:

- Abstract
- **Full text**
- [Reprint \(PDF\)](#) (322k)

Search Pubmed for articles by:

[Itanna F](#)
[Olsson M](#)
Other links:
[PubMed Citation](#)
[Related articles in PubMed](#)

African Journal of Agricultural Research Vol. 3 (11), pp. 797-807 November, 2008
 Available online at <http://www.academicjournals.org/AJAR>
 ISSN 1991-637X © 2008 Academic Journals

Full Length Research Paper

The fate and bioavailability of some trace elements applied to two vegetable farms in Addis Ababa

Fisseha Itanna^{1*}, Jörn Breuer² and Mats Olsson³

¹Department of Biology, Science Faculty, Addis Ababa University, P. O. Box 1176, Addis Ababa, Ethiopia.

²Federal Agency for Agricultural Chemistry, University of Hohenheim, D-70593 Stuttgart, Germany.

³Department of Soil and Environment (SLU), P. O. Box 7001, S-750 07 Uppsala, Sweden.

*Corresponding author. E-mail: fissehai@yahoo.com.

Accepted 24 October, 2008

Abstract

Metal (Cd, Cr, Cu, Hg, Ni, Pb and Zn) and metalloid (As) status of two urban farms in Ethiopia were determined using the European Community Bureau of Reference (BCR) modified sequential extraction method. Cr, Ni, and As at Kera and Ni at Kolfe increased with depth likely due to leaching. Although total Cr, Ni (at both farms) and Pb (at Kera) exceeded normal limits, the bioavailability of these elements was restricted. Most of the trace elements at Kera (As, Cr, Cu, Ni, and Zn) and Kolfe (As, Cd, Cu, Ni, and Zn) were in residual fractions followed by reducible fractions. Pb at both sites was largely found in reducible form. Oxidizable and acetic acid extractable fractions were generally the least in proportion. Oxidizable Cr, Cu and Pb at both sites were higher than their acetic acid extractable counterparts, while acetic

Related Journals

- [Journal of Cell & Animal Biology](#)
- [African Journal of Environmental Science & Technology](#)
- [Biotechnology & Molecular Biology Reviews](#)
- [African Journal of Biochemistry Research](#)
- [African Journal of Microbiology Research](#)

- [African Journal of Pure & Applied Chemistry](#)
- [African Journal of Food Science](#)
- [African Journal of Biotechnology](#)
- [African Journal of Pharmacy & Pharmacology](#)
- [African Journal of Plant Science](#)
- [Journal of Medicinal Plant Research](#)
- [International Journal of Physical Sciences](#)
- [Scientific Research and Essays](#)

acid extractable Cd (at Kera) and Ni and Zn at both sites, exceeded the respective oxidizable metals. Bioavailability and toxicity of metals are sometimes reduced this way through natural means. However, change in soil pH, oxidation/reduction reactions, or similar mechanisms could cause shift in metal bioavailability. Hence, regular monitoring of the soil conditions at the farms is recommended.

Key words: Bioavailability, leaching, sequential extraction, trace elements.

[Advertise on AJAR](#) | [Terms of Use](#) | [Privacy Policy](#) | [Help](#)

© Academic Journals 2002 - 2008