



## **Selection of the Methods of Soil Analysis for Phyto-available Arsenic**

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Arsenic (As) is a trace element of major public health concern. Many of As contaminated agricultural lands in the Republic of Korea (ROK) are located at the areas nearby abandoned mines. Therefore, management of contaminated agricultural lands is important for safe crop cultivation. In ROK, soils contaminated with As have managed according to the As concentration determined after aqua regia digestion (total As). Many soil scientists reported that management of As in soils by phyto-available As is more effective than that by total As for safety of the crop cultivation point-of-view since As concentration in crops has a significant correlation with phyto-available As. Therefore, this study was carried out to select method of soil analysis for phyto-available As. For that purpose, five extracting solutions (0.1M Ca(NO<sub>3</sub>), 0.1M (NH<sub>4</sub>)<sub>2</sub>HPO<sub>4</sub>), 0.5M EDTA, Mehlich 3, 0.5M NaHCO<sub>3</sub>) were examined with 35 soil samples used for cultivation of three crops (bean, red pepper, rice). Correlation analysis was conducted between phyto-available As concentrations in soils and As concentration in edible part of the crops. Results of the correlation analysis showed that phyto-available As concentrations in soils using Mehlich 3 solution and As concentrations in edible part of red pepper and rice were significantly correlated. For soils used for bean cultivation, Mehlich 3 ( $R^2=0.2328$ ,  $p<0.01$ ), EDTA ( $R^2=0.3289$ ,  $p<0.001$ ), NaHCO<sub>3</sub> ( $R^2=0.2191$ ,  $p<0.01$ ) solutions were significant. Therefore, Mehlich 3 solution has potential to extract phyto-available As from the soils contaminated with As.

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