Trace Elements Uptake in Brassica rapa chinensis Cultivated in Ultrabasic (Oxisol) and Ultisol Soils, North Borneo

ABSTRACT

The study aims to investigate the soil physico-chemical properties and trace elements uptake of *Brassica rapa chinensis* plants cultivated in ultrabasic (oxisol) and ultisoil soil of Ranau, North Borneo, Malaysia by inductively coupled plasma-optical emission spectrometry (ICP-OES). This study can contribute to propose a more sustainable soil management practice. All selected trace elements bioavailability in ultrabasic soil was significantly higher than ultisols except for Ca and Cd. There was no significant amount of difference in soil pH (slightly acidic) and electrical conductivity (slightly saline) between these soil types. However, a significant amount of difference between the percentage of soil moisture and organic matter between ultrabasic and ultisol soils was observed. These might contribute to the uptake of elements into the studied plant. The *B. rapa chinensis* is a hyperaccumulator of Cd and Pb for both type of soils. The *B. rapa chinensis* is an accumulator of As when grown in ultrabasic soil, while an accumulator of Co when grown in ultisol soil. Although Pb was not detected in ultisol soil as compared to ultrabasic soil, the concentration of Pb in plants cultivated in ultisol soil had exceeded the maximum permissible limit of Malaysia Food Regulation 1985. Soil amendment in frequently use agriculture sites needs to be conducted such as the addition of organic matter to reduce transfers of trace elements from soil to plants that can pose toxicity risk.