

In-situ immobilization of lead using different source of phosphate amendments for the organic production of misai kucing (*Orthosiphon stamineus*)

ABSTRACT

Sustainable organic herbal production requires utilization of bio-waste materials as plant nutrient sources due to its economical aspect and would ensure continuous productivity. The usage of organic wastes in organic farming system (OFS) as fertilizers and soil amendments should be monitored as the accumulation of heavy metals has been reported in several studies. Glasshouse study has been conducted to assess the effectiveness of Pb immobilization due to chicken manure application using different sources of phosphate materials; bone meal (BM), Egyptian rock phosphate (ERP) and triple super phosphate (TSP). From the fractionation of glasshouse study, the percentage of exchangeable fraction of Pb was reduced with application of P-amendments with the highest of 20.2% of reduction recorded for 2 t/ha application of TSP. This is followed by reduction in exchangeable fraction for others treatments: 2 t/ha of BM (4.1%), 4 t/ha of BM (5.1%), 1 t/ha of ERP (8.1%) and 2 t/ha of ERP at 17.6%. These treatments were recorded as being able to stabilize the Pb as indicated in the percentage reduction of phyto available pools into a more stable form of residual pool.

Keyword: Soil amendments; Egyptian phosphate rock; Bone meal; Sequential extraction study