

PHOSPHATE UPTAKE BY FLORA ON *EPPAWALA* ROCK PHOSPHATE DEPOSIT

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Application phosphate fertilizers excessively result phosphorus (P) enriched soils; thus, it has become a pollutant for many global ecosystems. Phytoremediation or plant mediated P mining is an ecological remedy which is well achieved using candidate plants growing on naturally phosphorus enriched habitats. *Eppawala* rock phosphate (ERP) deposit has inherently high content of phosphorus (28% to 42% P₂O₅) and is a habitat to a diverse flora. This study hypothesized that the plants species grow naturally on ERP deposit have acclimatized to uptake substantially high phosphorus. Eleven candidate plant species compared for total plant leaf P content from ERP deposited and from *Kandy*; a non-phosphorus enriched habitat. Total and available P was measured for soils collected from these two locations. Mean total leaf P content of plant species on ERP deposit ranged between 8.45 – 24.86 mgg⁻¹, while in *Kandy* it ranged between 0.63 – 5.14 mgg⁻¹. Soil available P content in ERP deposit ranged between 0.176 – 0.353 mgg⁻¹; in *Kandy*, it was minimum and ranged between 0.028 – 0.072 mgg⁻¹. The correlation between plant P content and soil available P content was 0.43 ($p=0.039$) in *Eppawala* and 0.30 ($p=0.161$) in *Kandy*. The rate of uptake of P by flora was similar ($p=0.07$) in both locations, despite higher rate uptake in *Eppawala*. Three candidate flora species were compared for phosphorus up taking ability with a greenhouse pot experiment, by providing soils from ERP deposit using planting materials collected from both locations. Mean plant P uptake *Trianthema portulacastum* (*Sarana*), *Mimosa pudica* (*Nidikumba*), *Tridax procumbens* (*Kurunegala desi*) were not significantly different ($p>0.05$) for two locations, despite quantitatively high P in flora from *Kandy*. The selected flora did not have special adaptations to uptake P from P enriched soils, hence these candidate species from any habitat are useful for phytoremediation process.

Keywords: Available phosphorus, *Eppawala* rock phosphate deposit, Phytoremediation