B-49 Comparison of different production grades of Eppawela rock phosphate with imported rock phosphate

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Due to low solubility of commercially available Eppawela rock phosphate (CERP) compared to imported rock phosphate (IRP). attempts are being made

to upgrade the ERP either by mechanical separation of more soluble chloro-fluoro apatite fraction (UERP) or selectively mining primary apatites (SERP) by manual picking up. The objective of the present study was to compare the efficiency of CERP, and UERP with IRP in respect of enhancing P availability in soils.

A greenhouse incubation study was carried out by mixing 1-1.3 g of each rock phosphate based on the citric acid soluble P fraction with 250 g soils (3 different soils). Another set of rock phosphates was incubated with the same amounts of soil but adding 4 g cowdung also. Available P in each soil was determined after 7 months by the following methods: (1) 0.5 M $NaHCO_3$ at pH 8.5, (2) 2.5% acetic acid (HAc) and (3) water (H_2O) extraction.

$NaHCO_3$-P fraction in CERP as well as IRP treatments increased by 78% and that is SERP treatment by 31% over the control. In the UERP treatment, $NaHCO_3$-P fraction did not significantly increase. HAc-P fraction in CERP treatment increased by 928%, 729%, 743% and 424% in CERP, UERP, IRP and SERP treatments over the control respectively. The H_2O-P fraction significantly increased only in UERP (320%) and IRP (400%) treatments.

Although cowdung alone increased $NaHCO_3$-P fraction by 320%, HAc-P fraction by 63% and H_2O-P fraction by 830%, it did not significantly increase the available P fractons of soil + cowdung + rock phosphate treatments with respect to the above 3 methods. The results suggest that both CERP and UERP are comparable to IRP in respect of enhancing available P in soil, but SERP is inferior to both CERP and UERP in the above respect.