

Potential use of naturally occurring sulphuric acid to beneficiate poorly soluble phosphate from Eppawala, Sri Lanka

Kapila Dahanayake,^{1,2} Atula Senaratne,^{1,3} S.M.N.D. Subasinghe² & A. Liyanaarachchi²

¹Department of Geology, University of Peradeniya, Peradeniya, Sri Lanka; ²Earth Sciences Division, Institute of Fundamental Studies, Kandy, Sri Lanka; ³Kandy District Water Supply and Sanitation Project (FINNIDA), Kandy, Sri Lanka

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Abstract

A 29 000 yr old high-sulphur peat deposit occurs in the western district of Colombo, Sri Lanka. This permanently submerged deposit has several pyrite-rich layers in 8 to 10 m sequences and is connected to the open ocean. Sea water intrudes to the peat deposit during tidal movements. Villagers have excavated the peat to form islands which serve as foundations for their dwellings. The areas around these peat-rich man-made islands are inundated daily due to tidal movements. The interstitial waters of these tidal zones indicate low pH (2 to 5) and high Eh and are rich in sulphuric acid.

Selected samples from the poorly soluble phosphate deposit at Eppawala were left buried in the sulphate-rich zones for fixed periods of time. Some phosphate samples when retrieved from the peat deposit showed four-fold increases of solubility. Preliminary agronomic experiments to grow paddy in P-deficient soils with the beneficiated phosphate fertilizer have given favourable results.