PARTIAL ACIDULATION STUDIES ON EPPAWELA APATITE

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Eppawela apatite has not been recommended for direct application to short term crops such as paddy due to its low available phosphorus content. Its direct application even for tea and rubber plantations is limited. Therefore, it is of interest to investigate the conversion of the rock phosphate to more soluble forms. In the present study partial acidulation of Eppawela apatite with sulphuric acid has been investigated.

Powdered rock phosphate samples were treated with sulphuric acid of different strengths at various ratios, mixed vigorously and allowed to cure. The water soluble 2% citric acid soluble and total P_2O_5 contents of the products were determined by the vanadomolybdate method.

Optimum concentration of sulphuric acid for partial acidulation was found to be 65-70% while the optimum weight ratio for PARP-50 was 10 Ap: $3H_2SO_4$ (100% basis). The available P_2O_5 content and the cost of the fertilizer product increase with increase in the extent of acidulation. The optimum curing period was found to be 3-4 weeks, which is less than for SSP production. 50% acidulated product (PAPR-50) contains ~25% total and ~17% available P_2O_5, (2% citric acid soluble) of which ~11% is water soluble.

On account of the large saving due to the reduction of total acid requirement and due to the presence of reasonably high available phosphorus content of the product, PARP-50 appears to be a potentially useful and economical P-fertilizers for Sri Lanka, especially in view of the fact that sulphuric acid is presently produced in Sri Lanka

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