B-56: Solubility of Eppawala Rock Phosphate as influenced by mixing with Muthurajawela peat

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Low solubility of Eppawala rock phosphate limits its use as a phosphate fertilizer. It is used mainly for perennial crops. Preliminary studies have indicated the potential of using Muthurajawela peat to increase the solubility of phosphate rock. In this study the effect on solubility of Eppawala phosphate when it is mixed in varying proportions with Muthurajawela peat, was investigated.

A laboratory incubation experiment was conducted using Eppawala primary apatite crytals and peat from Muthurajawela, both ground to less than 50 μm size. Apatite (E) and peat(M) was mixed in the following proportions by weight of E:M as 1:0.2, 1:0.4, 1:0.6, 1:0.8, 1:1, 1:2, 1:3, 1:4 and 1:5. Unmixed samples of apatite and peat were used as controls. The well mixed samples were incubated in containers at room temperature under moist conditions. Two replicates at each treatment were analysed for water soluble P content and pH after 10, 16, 20 and 34 days respectively of incubation.

Water soluble P content in all treatments increased with time and reached a peak value that decreased subsequently due to re- precipitation. Higher water soluble P contents were observed at all time periods, in all apatite-peat mixtures as compared to apatite control. The maximum solubility was observed when apatite was mixed with peat in the range of proportions(E:M) 1:0.6 - 1:1. The observations strongly suggest the potential use of Muthurajawela peat in appreciably low quantities to increase the effectiveness of Eppawala apatite as a phosphate fertilizer.

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