B-64 Some characteristics of acid sulphate soils of Nilwala river basin, Matara

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Acid sulphate soils are remarkably acidic (pH 2.0 - 3.5) on drainage and are found mainly in brackish water environments which had been formerly under mangrove vegetation in coastal plains. In Sri Lanka, this soil can be found mostly in ill-drained lands of the low-country wet zone coastal plain of Nilwala river basin, Matara. This study was conducted on 3 acid sulphate soils sampled from the areas of Lenaduwa, Kotawila and Watagedera of the Nilwala river basin. A non-acid sulphate soil sample was also collected as the control sample, from Unella area of the Nilwala river basin.

The experiment was to study the properties of these soils, like the phosphorus fixation capacity in comparison with a normal soil sample. Important soil chemical and physical properties were determined. The phosphorus fixation studies were conducted to estimate the degree of phosphorus fixation, and to determine how the phosphorus fixation behaves in each soil sample with increase of phosphorus concentration of added solution (from 10 ppm up to 100 ppm). As an amelioration method the lime requirement was determined for these soils to increase the pH level by unit.

The pH of the acid sulphate soil samples is in the range 2.5 to 3.5. The nutritional status nitrogen, phosphorus and cation exchange capacity is comparatively lower, while exchangeable iron, electrical conductivity, organic matter content is comparatively higher in the acid sulphate soil samples, Phosphorus fixation capacity of the 3 acid sulphate soil samples is higher than the control soil sample, at the 1% level of significance. The phosphorus fixation capacity of these acid sulphate soils are similar. Phosphorus fixation capacity increases with the increasing concentrations of added phosphorous and ultimately reaches a plateau. The amelioration of these acid sulphate soils, about 4-6 t/ha $CaCO_3$ would be required to increase the pH by unit.

The acid sulphate soils in the Nilwala river basin are relatively infertile and the low phosphorus availability and higher fixation is a serious problem in these soils.