

**CHARACTERIZATION OF SOILS AT TANK BED, BUND AND THE  
COMMAND AREA OF AN ANCIENT VILLAGE TANK IN  
ANURADHAPURA**

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Sri Lanka is well known for its hydraulic civilization where colonies heavily depended on water resources including natural streams and constructed tanks. Ancient inscriptions reveal that people used special soil types to fill tank bunds and were compacted using animal power. Hence this study was conducted to investigate the composition of soils in tank bund, bed and command area of an ancient abandoned village tank, located at archeological excavation site at Rajarata University of Sri Lanka, Mihinthale. Soil samples were drawn from different depths of excavated soil pits on tank bed, bund and command area. Samples were analysed separately for chemical and physical properties. The soil profile of command area showed unique characteristics of the great soil group Reddish Brown Earth, indicating no alteration has taken place other than farming during past centuries. In contrast, the soil properties of tank bund were completely different from other two locations and exhibited layers with different compositions indicating artificial filling and compaction. The soil profile of tank bed showed deposition of sediments in large extents and, that may be a major reason to abandonment of the tank. The average bulk density of soil in tank bund gradually increased with the depth. The lowest bulk density of 1.8 g/cm<sup>3</sup> was observed in the uppermost layer (0-50 cm) and the maximum bulk density of 2.2 g/cm<sup>3</sup> was observed in the deepest layer (100-170 cm). Varying bulk density values demarcated soil layers which had been subjected to different levels of compaction. Total phosphorus content at all three locations showed similar trend of decreasing from shallow to deeper layers. The highest total phosphorus value of 2.7 g/kg of soil was observed in the top soil layer of tank bed indicating deposition of clay particles with sediment attached phosphorus. Similar to phosphorus, top layers of all three locations had the highest level of organic matter content compared to the deeper layers. Results of the study concluded that, soil properties varies with the location and the depth, reflecting different anthropogenic activities taken place at those locations.

**Keywords:** Phosphorus, Siltation, Soil bulk density, Soil compaction

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