SPATIAL VARIABILTY OF SOIL FERTILITY CHARACTERISTICS AT THE KALINGA ELA IN SEWAGAMA AGRARIAN SERVICE CENTER IN THE PARAKRAMA SAMUDRA IRRIGATION SCHEME IN POLONNARUWA

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Cultivation for a long period of time and adopting mismanagement practices for soils have resulted in depletion of fertility of rice soils. Therefore, a study was carried out to identify soil related constraints and to develop a database for the formulation and implementation of mitigation options in the Parakrama Samudra irrigation scheme in Polonnaruwa district. Selected paddy field is in Kalinga Ela in Sewagama Agrarian Service center (ASC) owned by twelve farm families with total extent of 30ha and these fields are fed by FC_5 and FC_6 irrigation field channels.

A systematic sampling was done in these fields and sampling points were recorded by Global Positioning System (GPS). Depth to hardpan was measured during the sampling. Fifty three samples were collected from the area and analyzed for soil pH, EC, available P, exchangeable K, Zn and soil Organic Matter content. Thematic maps were prepared for all the parameters measured using Geographical Information System (GIS) software.

Depth to the hardpan occupies more than 20cm. pH (1:2.5) and EC, (1:5) ranged from 6.5-8.1 and 0.05- 0.3 dS/m respectively and the active acidity was low. Exchangeable K content was low (<78mg K/kg) in major parts and Zn level was medium (1-4mg

Zn/kg). Available P (Olsen) ranged from 7-60mg P/kg with occupying medium levels (10-24 mg P/kg) in major parts. The soil Organic Matter content ranged from 0.4-3.8%.

The results indicated that the amounts of each parameter in the top soil are spatially varied. Some isolated pockets especially in the lower parts of the site had high salinity and there was a potential for development as well. Soil fertility in this system is also generally poor and therefore, suitable measures have to be implemented to improve the soil conditions in affected areas identified by the thematic maps.