# SPATIAL VARIATION OF SOME SOIL FERTILITY PARAMETERS IN RICE (*Oryza sativa*) GROWN SOIL OF KARAPOLA IRRIGATION SCHEME

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Recently, considerable gap has been observed between the potential yield and realized yield of rice at the farmer managed conditions. Several factors could be the reasons to above condition and the imbalance of soil nutrition may be one of the main reasons when the soil fertility is concerned. Since study was conducted to identifying the spatial variability of soil fertility, the reconnaissance survey was conducted in the commanding area of Karapola tank in Thamankaduwa GS division in Polonnaruwa district during the onset of the Yala season 2008. Sampling points were identified using a 1:10,000 scale composite blocking out map. The geographic positions were recorded using a GPS (Global Positioning System) tool. Sampling was done at both top and sub soil layers in the 45 sampling points. In each sampling point, sample was taken from 0-15 cm and 15-30 cm depths. Soil were collected from 8- 10 places to have a composite sample. Both top and sub soils kept separately. Samples were pre-treated and analyzed for bulk density, texture, soil pH, electrical conductivity, available P, exchangeable K and soil organic matter. Geographical Information System (GIS) was used to map the spatial variability of soil fertility.

Most of the area covering high pH at top (5.85 to >7.5) and sub soils (6.7). Electrical conductivity of the top soil is largely covered from 0.007 to 0.027 dS/m. Sub soils have >0.02 dS/m. Although they indicate low salinity, salinity would be developed with the time because of the low rainfall and high temperature. Soil P and K contents were low than the recommendation for rice (<10 ppm and <78ppm) in almost all area. Maximum P content in both top soil and sub soil was 1.23 ppm. Maximum levels of K content of top and sub soil were 65 ppm and 58 ppm respectively. Soil organic matter had varied spatially and distinctly observed in top soil and sub soil layers. The texture of most of the area was silty and silty clay loam. The bulk density also varies from 1.5 g/cm3 to 1.7 g/cm3.  According to results soil fertility status of the commanding area of the Karapola tank, is not optimum to the production of rice to achieve the demand. Therefore need to adopt new site specific recommendations and proper soil management practices to minimize the development of salinity and to increase the fertility of the soil.

*Key words*:  Rice, Soil fertility, Spatial variability, GPS, GIS maps