IDENTIFICATION OF PROBLEMS OF SOILS IN ABANDONED LANDS AT DIVISIONAL SECRETARIAT, MATARA

BY

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Abstract

Soil is one of the most important natural resource available to the people of the world. A very large proportion of labour force is dependent on soil /land to earn living. The problems of soil impose growth stress to rice leading to low yields or even complete crop failure. Among these, the most serious problem for rice is stress due to salinity, alkalinity, Iron toxity, and ions deficiencies.

The present work aims to identify, the problems of soil in paddy lands, uplands and quality of ground water in Matara divisional secretariat of southern province and prepare maps based on the salinity, alkalinity and acidity levels of the study area using GIS technology. An extensive soil survey was conducted to collect soil samples throughout the GN divisions of Matara Divisional secretariat .The sampling was done with manual soil augar. Electrical conductivity and pH of soil and water samples were determined in different depths..

Field sampling data are attributed in GIS environment of Arc view 9.1. To create salinity distribution maps, surface interpolation Inverse Distance Weighting (IDW) method developed by Environmental Systems Research Institute Inc(1992-2000) was used.

Based on results, the electrical conductivity of paddy lands and upland soil in study area are less than 2 mS /cm.

According to the Irrigation Department at Tudawa and Kekanadura,230.79mm, 359.1mm and 66.6 mm rainfall were reported during the sampling period of August, September and October 2010.. There may be a significant impact from rainfall to the electrical conductivity of soil in paddy lands and uplands. In this study, severe symptoms of salinity is not

identified. Probably due to the rainfall during the sampling period salinity conditions would not have shown.

The highest value for pH in paddy lands was recorded at Walpola(G25). It is over 8.88 . The lowerst pH value of 4.9 is at Kanaththegoda South(G38). The value of pH 4.93 was recorded at walgama North(G2) and Kanaththegoda North(G40). So these paddy lands are in acidic conditions. pH value of upland soil samples in study area varies 4.67 to 8.99. The highest value of pH was recorded at Weliweriya East(G27).pH value in deeper layer of Weliweriya East(G27) is higher when it compared with the surface soil. This area is very close to Nilwala river. pH value of Walgama south(G8) is 8.54. At Walgama North (G2), Eduwa-Maduruduwa(G32) and Madiha West (G6) pH value was less than 5. These soils are under strongly acidic conditions.

Based on the results obtained through laboratory analysis, the soil can be preliminary classified as non saline, acidic and alkaline.

Electrical conductivity of ground water in the most of the wells in study area are within the Sri Lankan Standards for drinking water except the wells marked as G44 (Meddawatta south), G30 (Weragampita) and G52 (Gandarawatta). Electrical conductivity of water of above mentioned wells are greater than standard value for drinking water.