

Identifying and Mapping of Salt-Affected Lands in Welipatanwila and Nonagama Grama Niladhari Divisions of Hambanthota District, Sri Lanka.

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Abstract.

Soil salinity is one of the main environmental problems affecting extensive areas of land in both developed and developing countries. It changes the fertile land to unproductive land, which ultimately results in the economic loss. In Sri Lanka, salinity problems have been reported in the dry and semi-dry zone districts including Hambanthota. Therefore, identification of salt-affected lands and their various salinity levels are important for land use planning and restoration of salt-affected lands. A study was carried out in the Welipatanwila and the Nonagama grama niladhari (GN) divisions situated in Ambalanthota Divisional Secretariat Division in Hambantota district. The main objective of this study was identifying and mapping salt-affected land by using Geographical Information System (GIS). Specific objective was identification and demarcation of soil salinity according to EC and pH measurement, mapping soil salinity levels and pH Levels using GIS techniques. Salt-affected lands were identified and demarcated into different categories according to the salinity levels using GIS. After the sampling was done with an iron auger, Electrical Conductivity and pH of the samples were determined. The Inverse Distance Weighted (IDW) interpolation technique in ArcView 10.1 software was performed to prepare spatial distribution maps. According to the results of EC, the coastal area was highly salinized, where salinity is $>16 \text{ dsm}^{-1}$. The salinity levels of 99% of the lands under paddy cultivation were $4-8 \text{ dsm}^{-1}$ and $8-16 \text{ dsm}^{-1}$, respectively. The total land area of these GN divisions is 5.75 km^2 . According to the results of pH, percentage of land area with slightly alkaline 0.17%, moderately alkaline 3.65%, strongly alkaline 52.17% and Very strongly alkaline 44.17% have distributed at the soil depth of 0-30cm. According to this information, it is essential to follow proper reclamation methods immediately to reduce the salinity levels before it becomes a severe problem.

Keywords: Electronic Conductivity, GIS, pH, Soil Salinity

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