Vol. 42, No. 2, pp 154-163, 2014
Indian Journal of Soil Conservation
Online URL:http://indianjournals.com/ijor.aspx?target=ijor:ijsc&type=home

Assessment of some soil physical indicators in severely eroded lands of southern Karnataka

K. Rajan[1], A. Natarajan[2], K.S. Anil Kumar[2], R.C. Gowda[3] and A. Abdul Haris[4]

[1]Central Soil and Water Conservation Research and Training Institute, Research Centre, Udhagamandalam-643004, Tamil Nadu; [2]National Bureau of Soil Survey and Land Use Planning, RC, Bangalore-560024, Karnataka; [3]Department of Soil Science and Agricultural Chemistry, GKVK, UAS, Bangalore-560065, Karnataka; [4]ICAR Research Complex for Eastern Region, Patna-800 014.
[1]E-mail: krajanars@gmail.com

ARTICLE INFO

Article history :
Received : April, 2013
Revised : February, 2014
Accepted : April, 2014

Key words :
Land degradation,
Lateritic soil,
Soil erosion,
Soil physical indicators

ABSTRACT

Water erosion is the major type of land degradation in Karnataka affecting 30.9% geographical area in the state in which Kolar is the most severely affected district in Southern Karnataka. Remote sensing technique was used to identify the hot spots. Seven profiles were opened in two transects, one near Jankamakote village (named as JKT with five profiles) and another one at Bhaktarahalli village (named as BHT with two profiles) and investigated the impact of water erosion on soil physical indicators. Pedon 2 of JKT under natural scrub forest recorded highest infiltration rate and Pedon-3 recorded the lowest infiltration rate because the soil was crusted and compacted. Highest bulk density (1.7 Mg m^{-3}) was observed in Pedon 4 in JKT. The texture of surface horizons in all the pedons were sandy clay or sandy clay loam. Available soil water in different Pedons varied from 67.4 to 288.4 mm. Pedon- 4 of JKT retained only 67.4 mm water because of severe erosion, shallow depth and higher bulk density. Pedon-1 of BHT retained maximum water (132.1 mm) compared to Pedon-2 (96.1 mm).The highest amount of micro-aggregates observed under natural forest soil and the least was in severely eroded lands. Porosity of the soil in different Pedons varied from 33.6 to 44.7%. Clay dispersion in different Pedons ranged from 2.9 to 14.4%. Clay dispersion was highest in the lowland soil (Pedon-5). The differences in soil physical qualities at various degrees are attributed to the impact of soil erosion coupled with incorrect land use. Soil and water conservation measures are highly needed in sloping areas to restore the soil physical quality.