



Vol. 13, No. 2, pp. 139-147 (2013)
Journal of Agricultural Physics
 ISSN 0973-032X
<http://www.agrophysics.in>



Research Article

Soil Properties under Different Land Use Systems in Parts of Chambal Region of Rajasthan

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ABSTRACT

A study examined the dynamics of soil physical and chemical properties under different land use systems in parts of Chambal region of Rajasthan. Soils were sampled at surface (0-15cm) layer under (i) irrigated sorghum/soybean-wheat rotation for over 20 years, (ii) ten-years-old *Leucaena leucocephala* plantation, (iii) grasslands for >15 years with dominant spp of *Hetropogan contortus* and *Dichanthium annulatum*, (iv) over 20-years-old undisturbed forest of *Prosopis juliflora* and shrubs and (v) twelve-years-old *Acacia senegal* plantation. Correlation matrix of 14 soil attributes representing soil physical and chemical properties resulted in a significant correlation ($P < 0.05$) in 30 out of the 91 soil attribute pairs. Clear relationships among textural component, mean weight diameter (MWD), and soil organic carbon (SOC) were recorded, indicating role of SOC in aggregate formation under different land use systems. Further, among land use systems, grass land showed larger MWD followed by *Leucaena leucocephala* and mixed forest lands. The SOC, available nitrogen (Av-N), available phosphorous (Av-P), available potassium (Av-P) and cation exchange capacity (CEC) were higher in natural vegetation compared to other land cover. Therefore, trees along with grasses should be encouraged in ravenous land of Chambal region to maintain soil nutrient status for ecological sustainability in line with the changing landscape in the area.