



## Soil organic Carbon Stock under Different Land Use Systems in Mountainous Ecosystem

**Bhalendra Singh Rajput, D. R. Bhardwaj<sup>1</sup>, K. P. Dwivedi<sup>2</sup> and Dileep Kumar<sup>3</sup>**

*Department of Agronomy (Agroforestry), Banaras Hindu University, RGSC, Barkachha-231 001, India*

<sup>1</sup>*Department of Silviculture and Agroforestry, Dr Y. S. Parmar University of Horticulture and Forestry, Nauni-173 230, India*

<sup>2</sup>*Department of Forestry, KVK, Panna, JNKVV, Jabalpur-488 001, India*

<sup>3</sup>*Department of Soil Science and Agricultural Chemistry, Banaras Hindu University, Varanasi-221 005, India*

*E-mail: bhlendrasrajput@gmail.com*

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**Abstract:** Soil physico-chemical property revealed maximum bulk density ( $1.25 \text{ g cm}^{-3}$ ) in the agriculture land use system and least in the forest land use system ( $0.97 \text{ g cm}^{-3}$ ). The bulk density recorded at the upper soil layer (0-20 cm) was significantly lower than the deeper soil layer (20-40 cm). Maximum soil organic carbon (2.50%) was found in the forest land use system and least in agriculture land use system (0.68%). The soil organic carbon also enhanced significantly with the ascending altitudinal ranges. Forest land use system displayed the maximum value of soil organic carbon stock ( $49.04 \text{ t ha}^{-1}$ ) and least in agriculture land use system ( $16.94 \text{ t ha}^{-1}$ ). In the altitudinal range, the total soil organic carbon stock increased with increasing altitudinal range. Soil organic carbon stock in 0-20 cm in layer was significantly higher than that of lower layer. Maximum soil organic carbon stock (0-40 cm layer) was recorded in forest land use system ( $98.08 \text{ t ha}^{-1}$ ), which was followed by agri-horticultural ( $41.05 \text{ t ha}^{-1}$ ) and horticultural system ( $39.16 \text{ t ha}^{-1}$ ).

**Key Words:** Altitudinal gradient, Bulk density, Carbon stocks, Land use systems, Soil layer

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