Comparative Study of Earthworm Population and Depth Distribution in Two Different Land Use Systems of Kumaun Himalaya, Uttarakhand, India

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Abstract: The present study deals with the population and depth distribution of earthworms (Annelida: Oligochaeta) in two different land-use systems (Orchards and cultivated lands) of Uttarakhand, India (Altitude 1400 m. a. s. l. Latitude 29°29′41″N Longitude 79°31′07″E). The present study was conducted to comprehend Earthworm diversity and land management in selected study sites of Kumaun Region, Uttarakhand India. The earthworms are well-known soil ecosystem engineers and very docile soil dwellers. They play a vital role in various pedological activities including soil health improvement, decomposition of organic matter, changes in porosity, water infiltration; soil microbial activity, and soil reclamation. The earthworms were collected by hand sorting method inducting catch and release practice, few mature worms were processed and preserved for the Morphometric identification and segregated based on soil depth and their maturity. Soil pH, temperature and earthworm weight was measured on-site; worms were washed and preserved in 10% formalin. Density and biomass recorded during the investigation ranged from $0.1 \, m^2$ to $91.0 \, m^2$ and $5 \, gm^2$ to $15 \, gm^2$ respectively. In Agriculture, land worm density ranged from $1.0 \, m^2$ to $91.0 \, m^2$ and in the Orchards worm density range was $5.0 \, m^2$ to $37 \, m^2$. In Cultivated land Maximum worm density was recorded at Padampuri and in Orchards at Pahadpani. Minimum worm density was recorded at Churigarh. In 0-10 cm minimum biomass, the range is $5 \, gm^2$ in July and February, and in 10-20 cm maximum biomass, the range is $15 \, gm^2$ in July.

Keywords: Earthworms, Population dynamics, Land use system, Soil Ecosystem