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Impact of different land use systems on soil quality in northwest Himalayan region

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ABSTRACT

The important soil quality indicators were investigated under different land use systems namely, sal forest, agroforestry, rainfed cropland and irrigated cropland to provide base line data for future research in lower north western Himalayan region. The soil properties such as soil depth, texture, organic carbon, total N, available P, available K, CEC and soil pH were investigated for each land use system to assess relative soil quality index (RSQI).

The study revealed that there were significant differences in soil quality parameters under different land use systems. The study further revealed that soil quality index (SQI) values varied from 337 in sal forest to 257 in rainfed cropland in Dungakhet village indicating the superiority of forest land use system in terms of maintaining greater SQI than other land-use systems. Similar trend was also observed in the other site of the study area. Analysis of data on RSQI revealed that the soil quality index for rainfed cropland was 23.74% lower in Dungakhet and 19.88% lower in Pasauli than the reference sal forest. In general, intensive tillage practices have degraded most of the important soil quality indicators. Therefore, reducing the intensive tillage practices and use of integrated inorganic and organic fertilizers could replenish the degraded soil quality for sustainable agricultural production in the study area.