^{137}Cs – a potential environmental marker for assessing erosion-induced soil organic carbon loss in India

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The use of Cesium-137 (^{137}Cs) as a potential environmental marker was examined for estimating soil erosion induced carbon losses on slopping agricultural land. Depth-wise incremental soil samples were taken from uneroded reference sites and four levels of cultivated slopping lands representing different erosion phase in Doon valley region of India. Comparing the ^{137}Cs inventories for eroded sites with the reference inventory, the erosion rates were computed. The estimated erosion rates were then compared with the actual measured values of erosion at each erosion phase. Since soil erosion preferentially removes the finer soil particles, these results were used to assess erosion induced loss of OC. The result indicated that erosion in different phases relocate 137 kg C ha^{-1} in slightly eroded plots to 384 kg C ha^{-1} in severely eroded plots which in turn contributes to 27 to 77 kg C ha^{-1} the atmosphere as net source of C respectively.

Keywords: ^{137}Cs technology, soil erosion, soil erosion induced C-loss, soil conservation, slopping agricultural land.