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Prioritization and field validation of erosion risk areas for combating land degradation in North Western Himalayas

V.N. Sharda[a], Debashis Mandal[b,*]

[a] ICAR, Pusa, New Delhi -110012, India
[b] Indian Institute of Soil and Water Conservation, 218, Kaulagarh Road, Dehradun-248 195, (Uttarakhand), India

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ABSTRACT

Appropriate soil conservation practices are essentially required in Indian Himalayan region to prevent degradation of natural resources. Thus erosion priority risk areas need to be identified to efficiently plan and execute conservation programmes. This study envisages to develop a strategy based upon the concept of partial area treatment by classifying erosion risk areas and prioritizing them upon the basis of existing erosion rates with targeted soil loss limits (T-value). The hypothesis is that highest priority for conservation action should go to such areas where the difference between potential erosion rate and the targeted limit is maximum so that available financial resources are efficiently utilized. The analysis indicated that about 25% of the total land area (TLA) in the north-western Himalayan region falls under severe or very severe erosion risk categories, especially where steeply sloping lands are under cultivation or overgrazed for decades. Only about 13% of TLA has T-value of $> 10\ Mg\ ha^{-1}\ yr^{-1}$ while about 30% area of the area is less prone to soil erosion. Within the region, Uttarakhand state has highest erosion risk area (58%) followed by Himachal Pradesh (48.5%). The concept of prioritization of erosion risk areas and their treatment with appropriate conservation measures was validated with the field data collected from two representative watersheds in the Himalayan region. The present approach can be easily extrapolated to other agro-climatic regions of the country to develop conservation master plans for efficient utilization of limited financial resources on sustainable basis.