MODELING RISK OF SOIL EROSION IN SIMLY WATERSHED, POTHWAR REGION

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2014

ABSTRACT

Soil erosion is indicating as a critical device for assessment of soil loss procedures and elaboration of soil erosion risk maps, which are valuable references for arranging future exercises, thus diminishing current erosion impacts and additionally forestalling declining scenarios. Soil erosion is a major problem effecting agriculture and water resource development in the pothwar region of Pakistan. The main objective of this study is to map the areas exposed to water erosion risks in the Simly dam watershed. The results of the study reveal an average rate of about 14 tons/ha/yr soil erosion in the Simly watershed. The very low risk zone (0 - 1 tons/ha/yr) possesses the maximum coverage i.e about 41% while the very high risk zone (> 100 tons/ha/yr) the minimum coverage i.e 1.2% in the watershed. The agricultural land indicated erosion at an average rate of about 120.16 tons/ha/yr while rangeland at an average rate of about 27.51 tons/ha/yr. The soil erosion was found maximum under steep slopes (> 30 deg) followed by gentle slopes (5-15 deg). The percentage coverage of different scenarios was helpful for evaluating the risk of soil erosion i.e In scenario 1, all the scrub forest is assumed to be converted into range land, so in this case the soil erosion increases to about 70.7% from the base landuse of 2013. In scenario 2 the all the rangeland is assumed to be converted into agriculture land so the agricultural land is increased to about 11% under this scenario. In scenario 3, all the rangeland of base landuse of 2013 is assumed to be converted into scrub forest (afforestation case). The soil risk indicated a decrease of about 16.4% from that of base landuse in this scenario. The findings of study can provide base for planners and decision makers to organize better soil and water conservation plans for agriculture and water resource development in the target area in future.

ACKNOWLEDGEMENTS

I am really grateful for those persons who helped me a lot and provided me possibility to complete this master thesis: To my supervisor, Assistant Professor, Muhammad Khubaib Abuzar, Department of Earth and Environmental Science, Bahria University, Islamabad who guided me, gave me constructive suggestions during the whole process and improving the report and helped me solve problems carefully and patiently through the whole thesis work as I wished and believing in my capabilities.

My sincere appreciation also goes to my Co-supervisor Scientific Officer Dr. Mohammad Arshad Ashraf (Principal Scientific Officer at Climate Change, Alternate Energy and Water Resource Institute (CAEWRI), National Agricultural Research Center (NARC) Islamabad) for his cooperation and valuable suggestions in executing this project. I really thanks to him for giving me a head start in this task by guiding me and support.

I am also grateful to Assistant professor Asif Javed, Department of Earth and Environmental Sciences, Bahria University, Islamabad to review my thesis and furnish me with fruitful suggestions and feedback and my gratitude also goes to Dr. Muhammad Zafar, Head of Earth and Environmental Sciences Department, Bahria University, Islamabad for his moral support and encouragement towards my research work.

Whenever I thought this would never reach an endpoint especially thanks to my loving father, mother, brother and sister for their generous support, prayers and encouragement. I would like to acknowledge Javeria Akbar, Samiya Ghazal who deserves to be thanked for being there for supporting me, prayed for me and especially thanks to my dear friend Sunaina Abbas for helping me and advising me in different components of this task and mostly giving me much needed moral support in stressful times throughout the research time period

ABRREVIATIONS

BGI	Bagnouls-Gaussen aridity Index
CORINE	Coordination of Information on the Environment
DEM	Digital Elevation Model
ETM	Enhanced Thematic Mapper
GIS	Geographic information system
GPS	Global Positioning
IDW	Inverse Distance Weighted
LCTA	Land Condition Trend Analysis
LULC	Landuse and Landcover
MFI	Modified Fournier Index
MODIS	Moderate resolution imaging spectroradiometer
MUSLE	Modified Universal Loss Equation
NDVI	Normalized Difference Vegetation Index
PMD	Pakistan Meteorological Department
RS	Remote sensing
RUSLE	Revised Universal Soil Loss Equation
USLE	Universal Soil Loss Equation
UTM	Universal Transverse Mercator
WAPDA	Water and Power development authority

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