

## Land degradation assessment in the southern dry lands of Khyber Pakhtunkhwa: A case study in Pezu and Tank region of Dera Ismail Khan District, Khyber Pukhtunkhwa

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This paper explores the extent of land degradation in Pezu and Tank region which is geologically characterized as a foredeep basin formed due to Main Frontal Thrust. Overtime it has filled up with silty clay, sand and gravel forming two different types of landforms: (a) piedmont deposits in the west and the centre of the basin, and (b) floodplain deposits of the Indus River. The recent alluvial fans formed in the foothills of the mountains surrounding the basin consist of gravel and boulders with intercalations of clay. The dominant drainage direction is from northwest to southeast. Most of the streams in the study area are ephemeral in nature.

Various factors, like vegetation cover, soil cover, precipitation, potential evapotranspiration, soil texture, desertification potential, land forms and land use attributes were used to identify the land degradation problems in each soil geomorphologic unit. Soil geomorphological units observed in the study area were recent alluvial fans in the foothills of Marwat Range, recent piedmont plain characterized by sandy outwash derived from Bhattani and Marwat Ranges in north-northwest, and from Cretaceous shales of Sulaiman Range in the west. Sub-recent piedmont plain characterized by loamy sands and old piedmont plain characterized by silt loam type soils are subjected to annual and biannual torrent floods. Soil orders observed in the study area were Entisols and Aridisols characteristic of arid and semi arid regions of the world. Soil sealing and crusting and soil cracking were observed as the most predominant features of the top soils in the area. Other characteristics of the soils include low organic matter content and high infiltration rates. Soil drainage varies from excessively drained in the recent piedmont plains to moderately drained in other units. The prime land use attribute recorded in the area is Rainfed fallow agriculture associated with poor quality grazing. Soils are also subject to rill, gully and sheet erosion of varying degrees. Sparse vegetation, erratic rainfall patterns and high potential evapotranspiration, scarcity of water and high potential for desertification add up to the existing land degradation problems of the study area. Agroforestry techniques, afforestation, no tillage agriculture techniques and mulching are recommended for the improvement of land and combating land degradation.

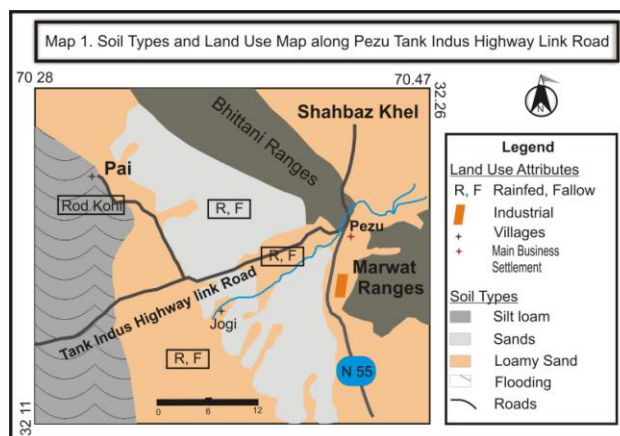


Fig. 1. Map of the study area.