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Assessment of land degradation hazards, Jamui district India using IRS P6 LISS-III multi-temporal satellite data

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Asian region is under high pressure to supply required food for rapidly increasing population. This, together with harsh climatic conditions and changes in land use accelerates land degradation process, which eventually leads to yield reduction. Soil erosion is one of the mode of land degradation and serious problem in granitic terrains of Semi-arid regions. This accounts the loss of fertile soil through detachment and transportation from one place and deposition to another place resulting in decreased soil fertility and reduced crop yields as well as sedimentation of rivers and reservoirs. IRSP6 LISS-III satellite data of three different season viz. Khrif, rabi and summer data in conjunction of with Survey of India toposheets and subsequent ground truth has been used for assessment of land degradation using onscreen visual interpretation. Based on severity of degradation the area is mapped into sheet erosion, rill erosion, gully erosion, ravenous erosion, seasonal waterlogging and rock out crops. The complex degradation problems having more than one degradation processes were appropriately represented in the mapping unit as combination. In order to understand the associated land use and feasibility of reclamination of degraded lands different landforms are identified along with land use level 1 classification. It was observed that 23.2 % of the total area (3044.5 km2) of the district is under sheet erosion followed by rill erosion 33.5 %, gully erosion 13.3% and ravenous erosion 0.4%. Highly degraded area, rock out crops is associated with higher elements of slope and barren areas accounts for 2.0%. The seasonal waterlogging is associated with lower elements of slope in depression where there is no facility for water to drain out through surface or sub-surface drainage and affecting agricultural activities which occupy 0.90% area in the district. Around 26.8 % area of the Jamui district is depicted as not affected due to degradation process due to its lower slopes and good vegetation cover on surface.