

REMOTE SENSING AND GIS IN IDENTIFICATION OF SOIL CONSTRAINTS FOR SUSTAINABLE DEVELOPMENT IN PALI DISTRICT, RAJASTHAN

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Abstract

Soil is an integral part of eco-system nurturing the biological system. Sustainable management of soil resources based on the consideration of constraints is the key to check land degradation, water erosion and maintain soil fertility and productivity of biological system. Remote sensing and GIS technology has been used for identification of soil constraints in resources potential of Pali district. The Pali district is located in the south western part of the state covering 12383 Sq. Km. area. The district comes in arid climate with mean annual rainfall of 472 mm. The land forms occurring in the disdriect are alluvial plain and plain with scattered gravely / stony uplands in central part. IRS LISS-III FCC images were interpreted for soil constraints using physiography soil approach, verified through field traverses and samples were analysed in Soil Testing laboratory. IRS LISS-III FCC images of salt affected soil series of Kharchi, Sojat, Pali and Dhabar appear in bright white to light grey tone, smooth texture with white mottles. These were also verified during ground truth and soil analysis for salinity (EC 1.2 to 3.41 dsm-1) and sodicity (pH 9.4 to 9.76 and ESP 16.23 to 34.4). Similarly on the LISS-III FCC, constraints due to water erosion of Jajiwal, Rajela, Vijayapura and Bant soil series (0 to 22 cm. depth, pH 7.8 to 8.1, EC 0.5 to 0.9 dsm-1, ESP 1 to 2.8) were apparent in light gray to whitish tone, intercepted by medium grey streaks indicating streams and exposed sub-soil. The constraints due to shallow depth associated with rock out crops and hilly areas of Delwara, Chopasani, Goriya and Lavera (depth 0-15 cm. pH 7.6 to 8.0, EC. 0.25 to 0.45 dsm-1, ESP 1.5 to 3.5)series appeared in greenish grey tone and coarse texture. There was close relationship between image characteristics, field observation and analytical data.