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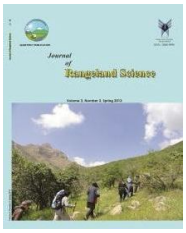

Full Length Article:

Mapping Soil Organic Carbon Using IRS-AWIFS Satellite Imagery (Case Study: Dehaghan Rangeland, Isfahan, IRAN)

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Abstract. Soil organic matter has positive consequences for the quality and productivity of soil and also environment, agricultural and biological sustainability and conservation of biodiversity and soil. Organic matter plays an important role in the physical and chemical processes of soil and thus, it is of a great effect on the spectral characteristics of soil. This study was done in order to develop the mapping surface of soil Organic Carbon (OC) of various land uses, particularly rangelands using remote sensing technology in Dehaghan in the south of Isfahan. The data of IRS-P6 and AWIFS satellites with 49 ground control points and accuracy less than 0.3 pixels were recorded. Stratified random sampling method was used. Soil samples were collected from the depth of 0-15 cm at each point. Bulk density of soil samples was determined according to Hunk method and OC% was computed by Walky-Black method. For the preparation of land use map and False Color Composite (FCC), the supervised classification was conducted using maximum likelihood algorithm and Optimized Index Factor (OIF). In order to map the surface soil OC, the multivariate regression model was fitted using band 2 (red band) as the dependent variable. Red band had a relationship with surface soil OC in the study area. Relationship of the red band and surface soil OC content was negative. IRS-P6 and AWIFS satellite images according to the cover of spectral and spatial resolution were considered as a useful method for the preparation of land use map and the map of surface soil OC levels in the study area.

Key words: AWIFS, Soil organic carbon, Modeling