

عنوان مقاله:

Estimation of species diversity of trees and shrubs using ETM+ sensor data (Case study of forests in Qalajeh (Kermanshah province)

محل انتشار:

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خلاصه مقاله:

The use of remote sensing techniques as a suitable solution to estimate the levels of species diversity is of high importance for the sustainable management of forests. In order to investigate the potential of using sensor data from Landsat 7 ETM+ to estimate species diversity in the Zagros forests, digital data related to the August 7, 2002 from forests in the Qalajeh Kermanshah Province were analyzed. To this end, 114 sample plots were created using a systematic method. The plots had the dimensions 60 × 60 m and were positioned using a GPS device. The number of features, species, DBH and crown diameter in two directions, North-South and West-East harvest, were recorded. The Shannon-Wiener species diversity index per sample plot was calculated. After testing for normalization using the Kolmogorov–Smirnov test, the Shannon-Wiener index was used as the dependent variable, and spectral values from original and synthetic bands from different processing on the ETM+ data were used as the independent variables. The Pearson correlation was used to select the best bands among 40 major and artificial bands, and three-bands (ETM4, NDVI and MSAVI2) were selected. To analyze the relationship between species diversity and these bands, the best subset regression was used. The results showed that the combination of linear regression, in which ETM4, NDVI and MSAVI2 were set as the independent variables, compared to other bands and compounds that were used for species, are better able to estimate the tree and shrub diversities ($R_{adj2}=0.327$). The results of this study indicate that ETM+ sensor data has a relatively low ability to estimate species diversity of trees and shrubs in the study area that was analyzed.

کلمات کلیدی:

ETM+, regression model, species diversity, Zagros, Qalajeh

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