

Rangeland Monitoring by Computerized Technologies

Authors : H. Arzani, Z. Arzani

Abstract : Every piece of rangeland has a different set of physical and biological characteristics. This requires the manager to synthesis various information for regular monitoring to define changes trend to get wright decision for sustainable management. So range managers need to use computerized technologies to monitor rangeland, and select. The best management practices. There are four examples of computerized technologies that can benefit sustainable management: (1) Photographic method for cover measurement: The method was tested in different vegetation communities in semi humid and arid regions. Interpretation of pictures of quadrats was done using Arc View software. Data analysis was done by SPSS software using paired t test. Based on the results, generally, photographic method can be used to measure ground cover in most vegetation communities. (2) GPS application for corresponding ground samples and satellite pixels: In two provinces of Tehran and Markazi, six reference points were selected and in each point, eight GPS models were tested. Significant relation among GPS model, time and location with accuracy of estimated coordinates was found. After selection of suitable method, in Markazi province coordinates of plots along four transects in each 6 sites of rangelands was recorded. The best time of GPS application was in the morning hours, Etrex Vista had less error than other models, and a significant relation among GPS model, time and location with accuracy of estimated coordinates was found. (3) Application of satellite data for rangeland monitoring: Focusing on the long term variation of vegetation parameters such as vegetation cover and production is essential. Our study in grass and shrub lands showed that there were significant correlations between quantitative vegetation characteristics and satellite data. So it is possible to monitor rangeland vegetation using digital data for sustainable utilization. (4) Rangeland suitability classification with GIS: Range suitability assessment can facilitate sustainable management planning. Three sub-models of sensitivity to erosion, water suitability and forage production out puts were entered to final range suitability classification model. GIS was facilitate classification of range suitability and produced suitability maps for sheep grazing. Generally digital computers assist range managers to interpret, modify, calibrate or integrating information for correct management.

Keywords : computer, GPS, GIS, remote sensing, photographic method, monitoring, rangeland ecosystem, management, suitability, sheep grazing

Conference Title : ICBB 2015 : International Conference on Bioinformatics and Biomedicine

Conference Location : Istanbul, Turkey

Conference Dates : May 21-22, 2015