

Abstract

In this study, Landsat, TM data was used to produce vegetation canopy and plant production map in Taftan Ranges. To achieve this goal, vegetation indices provided by digital data layer by TM were used. To study the correlation between vegetation indices by satellite data layer and vegetation canopy and plant production on the ground, plant cover data in the field was collected from 40 sites evenly distributed over the entire study area. The vegetation canopy and plant production was estimated by simple linear regression between field sampling and vegetation indices by satellite data layer. Vegetation cover crown models were produced for different indices and vegetation maps were produced using each index model. Results showed that CTVI, IPVI, LAI, MSAVI1, MASAVI2, NDVI, NDVIab, NRV, SAVI1 and TNDVI indexes had the highest correlation with canopy and CTVI index was suggested for canopy percentage mapping. Using CTVI model, canopy was classified in 11 classes: <5%, 5-10%, 10-15%, 15-20%, 20-25%, 25-30%, 30-35%, 35-40%, 40-45%, 45-50% and 50%<. The Results showed that areas with 20-25% canopy dominant in the region. Also PVI, PVI1, TNDVI, NRR, RA, RVI, IPVI, NDVI, NDVIab and NRV indexes had the highest correlation with plant production and NRR index was suggested for plant production mapping. Using NRR model, plant production was classified in 11 classes: <5 kg/ha, 5-10 kg/ha, 10-15 kg/ha, 15-20 kg/ha, 20-25 kg/ha, 25-30 kg/ha, 30-35 kg/ha, 35-40 kg/ha, 40-45 kg/ha, 45-50 kg/ha and 50 kg/ha<. The Results showed that areas with 20-25 kg/ha plant production dominant in the region. This study was repeated in 4 major vegetation type. The results showed the defining characteristics of each type effective on vegetation indices ability in the assessment the vegetation canopy and Chlorophyll, this quality, and Environmental factors such as Rain and Altitude have the greatest impact on performance indicators.

Keyword: Satellite data, Vegetation index, canopy, Taftan.



University of Zabol
Graduate school
Faculty of Water and Soil
Department of Rang and watershed

**The Thesis Submitted for the Degree of M.Sc inthe field of
Range Management**

Estimation of Canopy and Production in Taftan Ranges Using Sattelite Data

Supervisors:
Dr.A. Fakhireh

Advisor:
En.S.Noori

By:
Masood Rigi

June 2013