

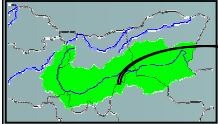
Some Result of Spectral Reflectance of Vegetation-Soil Associations in Kherlen river basin for Under RAISE Project

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INTRODUCTION

The objective of this research is to determine spectral reflectance of soil-vegetation systems, vegetation biomass of pastureland and to define NDVI value and to define the correlation between NDVI and plant - biomass. In this paper we included results of ground measurement. In this paper we included results of ground measurement, conducted in Mongenmoryt, Baganuur, Kherlenbayan-Ulaan, Jargalkhaan, Darkhan and Ondor-Khaan sites in the Kherlen river basin.



Kherlen river basin

MEASUREMENT AND DATA ANALYSIS

Spectrophotometer and spectroradiometer/Field spec.Pro used for the spectral reflectance measurement by three channels from 0.4 nm to 0.7 nm and multi channels from 0.25 nm to 2.5 nm. Biomass of vegetation, height of grasses and vegetation coverage were measured in test area.

Ratio RNIR/Rred Reflectance of vegetation Normalized difference vegetation index (NDVI) NDVI is defined as: $NDVI = \frac{xi(channel2) - xi(channel1)}{xi(channel2) + xi(channel1)}$ Where: xi - digital numbers of particular wavelength channel data with respect to vegetation

Regression analyses were carried Linear function : $Y=a+bx$

Where: Y-is the biomass and; X-is the NDVI; a, b regression coefficients

RESULTS

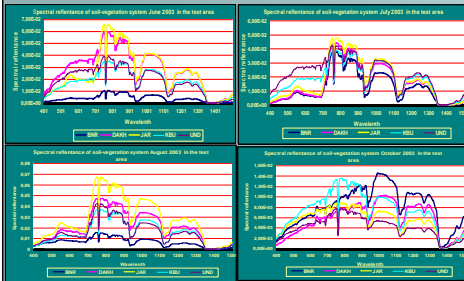


Figure.1 Spectral reflectance of Vegetation-Soil associations /from June to Oct, 2003/

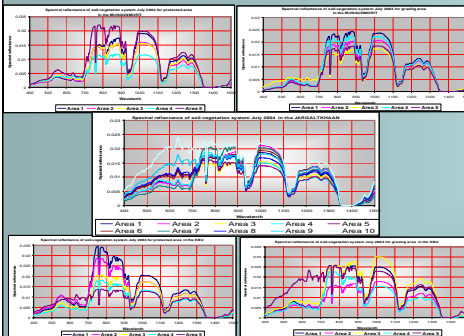


Figure2. Spectral reflectance of Vegetation-Soil associations /July, 2004/

From Figure 1 and Figure 2 spectral reflectance of soil-vegetation associations of green band is higher than that of red and blue bands. As the growing plants turn green in color the chlorophyll in the leaves absorb the red radiation and at the same time increase the blue reflectance. It is required for photosynthesis process. From the spectral reflectance of soil-vegetation system figure, due to the moisture that is contained in the plant there is a steep decline in 1.35-1.4 mkm wavelength.

Estimated the vegetation biomass changes by ground measurement in the Kherlen river basin.

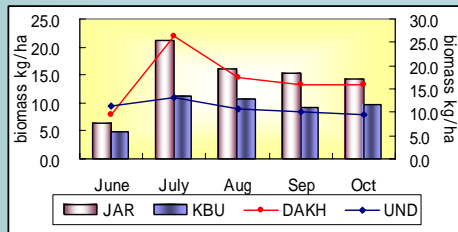


Figure 4. Dynamic of vegetation biomass in kherlen river basin /from June to Oct, 2003/

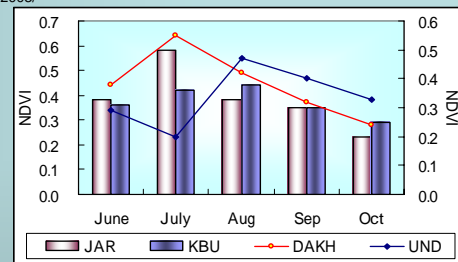


Figure 5. Changes of NDVI in Kherlen river basin /From June to Oct 2003/

Figure 4 and 5, show that peak of vegetation biomass reaches in July at all sites and derived NDVI values also follow the pattern of the ground survey measurement.

The linear model to describe the relationship between vegetation biomass and NDVI in the test area.

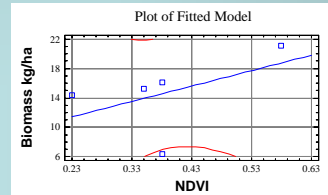


Figure 5. Plot of fitted model in the Jargalkhaan site

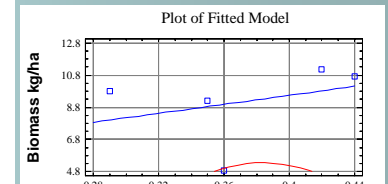


Figure 6. Plot of fitted model in the Kherlenbayanulaan site

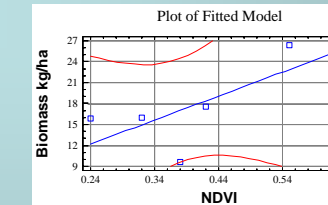


Figure 5. Plot of fitted model in the Darkhan site

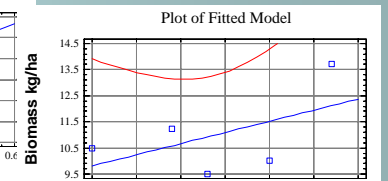


Figure 5. Plot of fitted model in the Undurkhaan site

Table 1. Derived regression equations between biomass and NDVI values

Sites	Equation of the models	Correlation coefficient
Jargalkhaan	$Biomass = 6.57915 + 20.9918 \cdot NDVI$	0.49
Kherlenbayan Ulaan	$Biomass = 6.57915 + 20.9918 \cdot NDVI$	0.43
Darkhan	$Biomass = 6.57915 + 20.9918 \cdot NDVI$	0.66
Undurkhaan	$Biomass = 6.57915 + 20.9918 \cdot NDVI$	0.53