Pasture biomass estimation using remote sensing technology

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Abstract: Information of pasture amount is important to help nomadic herders' management in Mongolia. In this study, combining ground vegetation sampling and in situ spectroradiometer measurements indicated that the green pasture amount can be estimated to a satisfactory level of accuracy using NDVI values. Further study demonstrated that in situ spectral measurements agreed well with high-resolution image data properly corrected for atmospheric attenuation, and cross-validated MODIS NDVI with a corresponding FORMOSAT-2 NDVI dataset (24 by 24 km) in Bornuur district, our test area in north-central Mongolia. Results signaled that correlation coefficient between the corresponding NDVI values to be 1.03 with a R-square 0.53 (n = 9457). After excluding forest cover, which is the only obvious non-pasture land cover in much of Mongolian territory, we estimated that the average pasture amount to be approximately 1.25 ton/ha in Bornuur district (77,087 ha), Tuv Province in the summer 2009.

Keywords: pasture biomass, NDVI, satellite image