

Testing the Effects of Vegetation Indices for Crop Type Classification Using RapidEye Imagery

Mustafa Ustuner and Fusun Balik Sanli (Turkey)

Key words: Geoinformation/GI; Remote sensing; Agriculture

SUMMARY

Many spectral vegetation indices by the combination of spectral bands have been developed and widely used in remote sensing for the environmental monitoring and assessment such as agriculture, vegetation and forestry. Sustainable management of the agriculture is the one of the key factor for the country's economy. Remotely sensed images information about the earth surface in temporal and spatial domain therefore are in efficient use for the monitoring and management of agricultural areas. Image classification is commonly performed to derive thematic information from the images therefore it has a great attention by remote sensing scientist to develop new classification methods. There are several factors affecting the accuracy of image classification such as training data and spectral bands. Moreover the integration of ancillary data can improve the image classification accuracy. In this study, three different vegetation indices of RapidEye imagery for the study area located in Turkey have been used image classification as additional band and the effects of these additional bands on classification accuracy has been investigated. The Normalized Difference Vegetation Index (NDVI), the Green Normalized Difference Vegetation Index (GNDVI), and the Normalized Difference Red Edge Index (NDRE) are the three vegetation indices used in this study. Support Vector Machines (SVM) and Maximum Likelihood Classification (MLC) have been implemented here as classifiers. Classified images have been assessed using overall classification accuracy and Kappa coefficient. Results demonstrated that the use of these additional bands increase the classification accuracy for the SVM classification, however decrease the classification accuracy for MLC