Abstract

Nitrogen is essential factor in monitoring growth of the crops. Nitrogen content differs from one crop to crop. Crops like soybean and corn are capable of fixing more nitrogen content compared to other crops. Hyperspectral images can be used to study variation of nitrogen content in different crops. Indian pines data set collected from Airborne invisible/infrared imaging spectrometer (AVIRIS) sensor is used the study. The image was segmented using existing ground truth data for three different type of crops corn, wheat and soybean. The paper focus on study of variation of spectral indices in three different crops namely corn, wheat and soybean. The nitrogen based spectral indices red edge index (Clred edge), chlorophyll green (Clgreen), red edge Position (REP) was taken for the study. Since crops like soybean and corn are capable of fixing more nitrogen content they exhibit higher spectral values. The red edge index (Clred edge) and chlorophyll green (Clgreen) exhibited higher values in soybean and corn when compared with wheat. Red edge position (REP) exhibit still higher values in crop soybean and corn. Hence spectral indices can be used to study variations of nitrogen in three different set of crops.
References

1. J.G.P.W Clevers and L.Kooistra ,"Using hyperspectral spectral remote sensing data for retrieving total canopy chlorophyll an nitrogen content”.
2. Xiuliang Jin, Zhenhai Li, Haikuan Feng, Xingang Xu, and Guijun Yang" Newly Combined Spectral Indices"
5. Silvia Valero, Pietro Ceccato, Walter E.Baethgen , and JocelynChanussot"identification of agricultural crops in early stages using remote sensing images “.
6. Hrishikesh Tamhankar, Lori Mann Bruce, Brien Henry, David Shaw“Detection of moisture stress effects on plants using hyperspectral data”
7. xujun ye,a,b, jinmeng lia, kenshi sakaib, tiejun zhaob “estimation and visualizaion of nitrogen content in citrus canopy using hyperspectral imagery”.
10. .Mathew A.Lee,Member,IEEE,Yanbo Huang,Haibo Yao,Member,IEEE,Steven J.Thomson Lori Mann Bruce,"Determining the effects of storage on cotton and soybean leaf samples for hyperspectral analysis"
11. .Nicholas C Coops,Marie E martin and scott V Ollinger," Prediction of Eucalypt Foliage Nitrogen Content From Satellite-Derived Hyper spectral Data".
14. Xiuliang Jin, Zhenhai Li, Haikuan Feng, Xingang Xu, and Guijun Yang" Newly Combined Spectral Indices"
15. YanboHuang,Haibo Yaob,FengZhaoc,andKrishnaReddy “detection of crop herbicide injury through plant “.

Index Terms

Computer Science  Image Processing
Keywords

Hyper spectral, spectrometer, Imaging, dataset.