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ADVANCED SEARCH

Jowar (Sorghum) Crop Health Assessment Using Hyperspectral Data

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Abstract:
An assessment of the Jowar (Sorghum) crop health plays an important role in smart agriculture farming. As precision farming is essential for good quality of production and proper management of farming. By using hyperspectral remote sensing data, it allows to properly predict, analyze and identify the object on the surface of the earth and monitoring the health status of crop. Field experiment conducted during the kharif season in 2018 in farmland of Jalna region, Maharashtra, India. This study focuses on the spectral reflectance of Jowar (Sorghum)crop. In this we used the variety Maldandi Jowar leaf samples. We had taken total 80 to 90 % of leaves were healthy and 10 to 20 % of leaves were unhealthy (Disease /Dry). The leaves were defected due to the rust disease and due to water content. So to capture the spectral reflectance of healthy and disease leaves of Jowar crop those samples was taken into laboratory for the reflectance measurement under the observation and control condition. The ASD FieldSpec4 data wavelength range from 350nm–2500nm and Pika-L wavelength range from 400nm–1000nm, hyperspectral remote sensing data is being used while measuring the spectral reflectance of both healthy and unhealthy leaves samples. Biochemical property is performed by extracting chlorophyll content and moisture content of Jowar (Sorghum) crop. Different vegetation indices in also used like NDVI, PSSR, CRI, ARI, WI so on. For Accuracy assessment Naive Bayes, Random Forest, SVM algorithm is applied whereas SVM gives a good result which is 98.37 percent as comparing to other algorithm like Random Forest which is 97.7 percent and Naive Bayes 64.13 percent.