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Select Theme	: Disruptive technologies and innovations
Endorsement email	:
Keyword 1	: Satellite technology and remote sensing
Keyword 2	: Precision agriculture
Keyword 3	:
Title of Entry	: Hyperspectral Remote Sensing of Leaf Folder and Brown Plant Hopper Damage on Rice
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Leaf Folder (LF), Cnaphalocrocis medinalis (Guenee) (Lepidoptera: Pyralidae) and brown plant hopper (BPH), Nilaparvata lugens (Stal) (Hemiptera: Delphacidae) are the major pests on rice in India and other rice growing countries. Changing climate, particularly rainfall and temperature causing severe outbreaks of these pests in the past few years. Timely assessment of pest incidence and damage is crucial for initiating pest control measures. Traditionally field damage is detected and assessed by field scouts through regular surveys. However, it is laborious, time consuming often prone to errors. Recent advances in the field of remote sensing offer scope to assess damage levels of different pests using spectral reflectance characters which are unique to the damage. Rice plants with varying levels of damage symptoms of LF and BPH were sampled from farmers fields located at several locations in India. Spectral reflectance was recorded using hand held hyperspectral radiometer (350 to 2500 nm). Correlation and multinomial logistic regression (MLR) were performed to identify sensitive bands specific to LF and BPH. Principle component analysis (PCA) was performed to identify optimum band combinations which were used to build MLR models. Model outputs were validated using independent data sets across locations. Spectral reflectance at bands 540, 670, 760, 1454 and 1784 nm were found sensitive to BPH, while they were at 390, 675, 780, 1130 and 1560 nm for LF. Using reflectance values at these sensitive bands in MLR, new set of hyperspectral indices were identified for BPH and LF damage. Classification accuracy of the models showed promising results. The percent correct classification was in the range of 38 to 76 for LF and 52 to 72 for BPH. The new set of hyperspectral indices developed in this study would be useful in remotely assessing damage of LF and BPH using air or space borne platforms. Results of this study are useful for future applications in the field of area-wide pest damage assessment using remote sensing.

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