

Detection of BPH (brown planthopper) sheath blight in rice farming using multispectral remote sensing

ABSTRACT

Sustainable pest controlling method is essential in producing rice, one of the most important food staples worldwide, which is globally under concern of either farmers or consumers. Infestation of rice plant hopper such as brown planthopper (BPH) (*Nilaparvata lugens*) is one of the most notable risks in rice yield in tropical areas especially in Asia. In order to use visible and infrared images to detect stress in rice production caused by BPH infestation, several remote sensing techniques have been developed. Initial recognition of pest infestation by means of remote sensing will (1) decrease food production costs, (2) limit environmental hazards, and (3) enhance natural pest control before the problem spreads, for precision farming procedures. In this paper, detection of sheath blight was examined using SPOT (Satellite Pour l'Observation de la Terre)-5 images as the main data. Analyses were undertaken using ENVI (Environment for Visualizing Images) 4.8 and SPSS software. As a result, there was variety for the images of both early and late growing seasons. Specific image indices, such as RVI14, SDI14 and SDI24, proved better association for detecting healthy plants from diseased ones. These sorts of indices could be recognized as a valued indicator for developing techniques in order to detect the sheath blight of rice by means of remote sensing.

Keyword: Brown planthopper (BPH); Pest control; Sheath blight; Multispectral remote sensing