A review of neural networks in plant disease detection using hyperspectral data

ABSTRACT

This paper reviews advanced Neural Network (NN) techniques available to process hyperspectral data, with a special emphasis on plant disease detection. Firstly, we provide a review on NN mechanism, types, models, and classifiers that use different algorithms to process hyperspectral data. Then we highlight the current state of imaging and non-imaging hyperspectral data for early disease detection. The hybridization of NN-hyperspectral approach has emerged as a powerful tool for disease detection and diagnosis. Spectral Disease Index (SDI) is the ratio of different spectral bands of pure disease spectra. Subsequently, we introduce NN techniques for rapid development of SDI. We also highlight current challenges and future trends of hyperspectral data.