

A review of visible and near-infrared (Vis-NIR) spectroscopy application in plant stress detection

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ABSTRACT

Health monitoring in plants is vital for agricultural sustainability. Currently, the number of techniques able to detect plant stress and disease at an early stage is limited. Prevention of diseases and stress, while the plants are still in an asymptomatic stage could lead to better crop management in agricultural industries. This review focuses on the applications of visible and near-infrared (Vis-NIR) spectroscopy in disease detection and the implications of stress in various species of plants. It is a rapid and non-destructive technique that doesn't require or requires only minimal sample processing before measurements and data analysis. The visible and near-infrared region can detect almost all functional groups and compounds making it a promising tool for data analysis. A brief overview of the methods used and the absorption bands in the Vis-NIR range related to plant disease and stress will be discussed. The comprehensive review of the application of the visible and near-infrared range regions according to different types of disease and stress including the methods used for the data analysis is being addressed.

KEYWORDS

Aquaphotomics; Non-destructive; Plant disease; Plant stress; Vis-NIR spectroscopy

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