Geospatial technologies for detection and monitoring of Ganoderma basal stem rot infection in oil palm plantations: a review on sensors and techniques

ABSTRACT

Basal stem rot (BSR) is a type of disease that induces oil palm death within a short span of the appearance of symptoms. BSR early detection would facilitate to curb this by adopting appropriate strategies. In this paper, a systematic review was undertaken to demonstrate the need for authentic health condition monitoring of oil palm plantations. The currently used remotely sensed (RS) techniques for BSR detection and classification were reviewed. Several kinds of RS techniques were exerted for BSR detection and its severity classification up to four levels. It was identified that applied geospatial technologies, including multispectral and hyperspectral remote sensing, terrestrial laser scanning, spatial maps, tomography images, intelligent e-nose and Microfocus X-ray fluorescence, were capable of distinguishing infected oil palms from the non-infected ones. Furthermore, some of them are able to categorize BSR severity level up to four levels as well as of its early detection.