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HYPERSPECTRAL PROPERTIES OF DATE PALM TREES (PHOENIX DACTYLIFERA L)

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Abstract

The goal of this study was to classify Date Palm varieties based on hyperspectral signature technology since it is difficult to identify the Date Palm cultivars without fruits. It will also help to obtain the hyperspectral signature for different types of date palm trees. Moreover, to determine the wavelength fingerprint of each cultivar and to recommend the best classification protocol to differentiate among different cultivars based on spectral signature. Utilizes Hyperspectral imaging technology precisely on the leaves of different Date Palm cultivars thus facilitating identification of date palm cultivars without the fruits and make spatial classification. Hyperspectral benefits enable to detect mixtures of materials within same pixel, enabling to identify specific materials with high degree of accuracy, get some measure of relative abundance based on depth of absorption features and, to produce quantitative (rather than qualitative) results. For treatments, we tested six cultivars of date palm trees which are Barhi, Khadrawi, Khenaizi, Khalas, Fard and Helali. We tested ten samples for each cultivar from tissue culture to be in the same age and identical conditions (control). And then, we used the RGB Analysis for the samples. As for tissue culture samples, the overall results indicate that, each cultivar of date palm tree has different spectral signature.

Keywords: Phoenix dactylifera; hyperspectral imaging.