

SPECTRAL REFLECTANCE OF DATE PALM TREES AND RELATIONSHIP TO YIELD AND N-FERTILIZATION

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ABSTRACT

Date palm (*Phoenix dactylifera*) occupies the top of the fruit crops list in Saudi Arabia. The total cultivated area by date palm in the Kingdom is about 106.960 hectares, which comprised about 71.98% of the total fruit crops cultivated area. A better cultivation management could be achieved through precision farming applications, which imply the use of remote sensing and geographic information systems (GIS) techniques.

Remote sensing technologies provide an important tool to aid site-specific management of cultivated crops. Moreover, it has the potential to provide real-time analysis of the attributes of a growing condition that can assist in making timely management decisions. Normalized difference vegetation index (NDVI) derived from IKONOS imagery data for two growing seasons of the date palm trees were used to study of NDVI distribution pattern over the field of study area and its relationships to Nitrogen fertilizer and fruit yield.

Preliminary results showed that the correlation of NDVI with fruit yield was moderately significant ($r^2 = 0.58$). The spatial variations of Nitrogen fertilizer was less homogenous over the study field and can be manageable by incorporating remotely sensed data into future application of precision agriculture of date palm trees cultivation.