

Title: A novel methodology for using digital cameras to calculate spectral parameters

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A novel methodology for using digital cameras to calculate spectral parameters: Nitrogen and phosphorus, two of the most vital nutrients required for plant growth, should be present in 4:1 ratio. However, the current scenario for India sees a ratio of 24:1. This is due to over fertilization of the fields. Precision agriculture can lead to better yield, reduced expenditure on fertilizers, and thus greater outputs for the farmer. The laboratory methods, used for soil analysis are too tedious and time-consuming. The proposed solution entails the use of digital cameras for calculating spectral parameters like NDVI (Normalized Difference Vegetation Index), which can help determine the nitrogen concentration in leaves. Albeit, digital cameras have been used in the past, a new methodology has been proposed, with arguments explaining, why the earlier findings via digital cameras were erroneous in nature. The proposed methodological implementation of digital cameras has been compared with Greenseeker's Handheld Crop Sensor for determining the value of NDVI. Statistical analysis revealed a non-significant difference (t= -0.348) in the mean values calculated by the two devices; evidently, the performance of the proposed methodology is at par and can be used for determination of NDVI. Also, the pilot implementation of the model cost 40 times less than the Greenseeker's Handheld Crop Sensor, hence catering to the important demand of economically viable alternatives for soil testing analysis.

Biography

Ekdeep Singh Lubana is currently pursuing his Bachelor of Technology in Electronics and Communication Engineering, from Indian Institute of Technology, Roorkee.

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