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Remote Sensing Applications in Crop Monitoring Across North Africa

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Abstract

Remote sensing technology has been increasingly applied in agriculture for monitoring crop health and productivity across different regions. A comprehensive search strategy was employed using databases such as Google Scholar and Web of Science. Studies published between and were included, with a focus on studies that utilised remote sensing data to assess crop health. Remote sensing applications have shown significant accuracy in identifying crop stress conditions across different soil types and growing seasons, achieving an average classification accuracy of 85% with a standard deviation of ±5%. This study identified the use of multispectral imagery as particularly effective for early detection of water-stressed crops. Remote sensing offers a robust toolset for monitoring crop health in Nigeria, enabling timely interventions to enhance agricultural productivity and resource management. Further research should explore integration with local climate data and socioeconomic factors to improve model accuracy across diverse farming contexts. The empirical specification follows $Y = \vec{\beta}_{0+\beta} \, p \, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *North African, Remote Sensing, Crop Monitoring, GIS, Image Analysis, Precision Agriculture, Geostatistics*

ABSTRACT-ONLY PUBLICATION

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