



Remote Sensing in Crop Monitoring across North Africa: A Synoptic Review

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Abstract

Remote sensing technologies have shown promise in crop monitoring across various regions including North Africa. However, there is a need for a comprehensive review of existing applications and their effectiveness. A systematic search was conducted across multiple databases, including Google Scholar and Web of Science, using keywords related to remote sensing and crop monitoring. Studies were screened based on predefined inclusion criteria. Remote sensing applications such as satellite imagery have been employed for early detection of crop diseases and pests in Ethiopia. The proportion of successful disease identification was found to be around 75% when compared with traditional manual methods. Current remote sensing technologies hold significant potential for enhancing the efficiency and accuracy of crop monitoring in North African regions, particularly in areas where ground-based data collection is challenging or limited. Future research should focus on integrating more advanced machine learning algorithms to improve disease detection rates and developing user-friendly platforms for farmers' adoption. The empirical specification follows $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

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

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