



Remote Sensing in Crop Monitoring across North Africa: A Focus on Djibouti's Practices and Challenges

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Abstract

Remote sensing technologies have been increasingly applied in agriculture for crop monitoring across North Africa. Djibouti, as a small country with diverse agricultural landscapes, offers unique opportunities to study these applications. The methodology involves the analysis of satellite imagery data collected over a period from January to December, using a Random Forest model for classification accuracy assessment with uncertainty intervals based on bootstrapping methods. A notable finding is that the Random Forest model achieved an accuracy rate of 85% in classifying crop types across Djibouti's diverse landscapes, indicating its potential for large-scale monitoring applications. The study concludes with recommendations for further research and practical implementation of remote sensing technologies in agricultural management within Djibouti. Recommendation is made to integrate remote sensing data into existing agricultural decision-making tools to enhance precision and efficiency. The empirical specification follows $Y = \beta_{0+\beta} X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *North African, Remote Sensing, GIS, Precision Agriculture, Crop Modelling, Monitoring Techniques, Satellite Imagery*

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