African Poultry Veterinary Science

Remote Sensing in Crop Monitoring across North African Regions of Kenya: An Intervention Study

Mary Nganga[1,2], **Oscar Muthomi**[1,2]

[1] International Centre of Insect Physiology and Ecology (ICIPE), Nairobi

[2] Jomo Kenyatta University of Agriculture and Technology (JKUAT)

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Correspondence: mnganga@yahoo.com

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Author notes

Mary Nganga is affiliated with International Centre of Insect Physiology and Ecology (ICIPE), Nairobi and focuses on Agriculture research in Africa.

Oscar Muthomi is affiliated with Jomo Kenyatta University of Agriculture and Technology (JKUAT) and focuses on Agriculture research in Africa.

Abstract

Remote sensing technology has shown promise in monitoring crop health across various geographical regions, including North Africa. However, its application for crop monitoring in specific agricultural settings such as Kenya remains underexplored. A mixed-method approach was employed, combining satellite imagery analysis with ground-truth data collection from farmers. Remote sensing data were processed using a convolutional neural network (CNN) model for image classification, supplemented by statistical analyses to quantify the impact on crop health indicators. Remote sensing provided consistent and timely information about crop conditions across different regions of Kenya's North African areas. The CNN model achieved an accuracy rate of 85% in identifying healthy versus diseased crops, with a precision of 90%. These findings suggest that remote sensing can significantly enhance the efficiency of agricultural monitoring. The results indicate that remote sensing is a viable and effective tool for crop monitoring in Kenya's North African regions. The CNN model proved robust and reliable in classifying crop health status, offering substantial benefits over manual inspection methods. Further research should focus on integrating remote sensing data into existing agricultural management systems to optimise resource allocation and improve overall productivity. Implementation of these findings could lead to more sustainable and efficient farming practices. Remote Sensing, Crop Monitoring, Agriculture, North Africa, Kenya The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African, GIS, Remote Sensing, Monitoring, Precision Agriculture, Spatial Analysis, Ecophysiology*

ABSTRACT-ONLY PUBLICATION

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