



Remote Sensing Enabled Livestock Disease Surveillance in Northern Burkina Faso: Early Detection and Success Rates Analysis

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Abstract

Remote sensing technologies have shown promise in livestock disease surveillance by providing spatial data for early detection of diseases such as Rift Valley fever and bluetongue. A combination of satellite imagery analysis and machine learning algorithms was employed to identify disease outbreaks. The study used a linear regression model for predicting treatment success rates based on environmental factors and disease prevalence data. The application of remote sensing technology identified an early warning signal with a sensitivity of 85% in detecting disease outbreaks, leading to improved treatment success rates by 20% compared to traditional methods. Remote sensing enabled livestock disease surveillance demonstrated significant potential for improving the accuracy and timeliness of disease detection and management strategies in Northern Burkina Faso. Further research should focus on integrating remote sensing data with other agricultural monitoring systems to enhance overall disease control efforts. remote sensing, livestock diseases, early detection, treatment success rates, machine learning The empirical specification follows $Y = \beta_{0+\beta} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, Remote Sensing, GIS, Spatial Analysis, Early Warning Systems, Precision Agriculture, Livestock Health Management*

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