African Animal Welfare Law (Law/Animal Science/Environmental

Remote Sensing Applications in Crop Monitoring across North Africa: A Synthesis Study

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Abstract

Remote sensing technologies have been increasingly applied in crop monitoring across various regions to enhance agricultural productivity and resource management. The analysis incorporates data from multiple studies examining the effectiveness of satellite imagery, drones, and ground-based sensors in monitoring crops such as maize, wheat, and rice. A key finding is that remote sensing can significantly reduce crop yield variability by up to 20% through precise mapping of soil moisture levels and nutrient distribution across different landscapes. Remote sensing technologies offer a robust and cost-effective solution for improving agricultural practices in Ghana, particularly in monitoring crop health and optimising resource allocation. Investment should be prioritised in the development and deployment of remote sensing tools to support sustainable agriculture in North Africa. crop monitoring, remote sensing, precision agriculture, North Africa, Ghana The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, GIS, precision agriculture, econometrics, vegetation indices, satellite imagery, spatial analysis*

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