



GPS-Informed Models for Enhancing Crop Growth Monitoring Among Ethiopian Highland Smallholder Women Farmers

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Abstract

Recent advancements in GPS technology have enabled more precise monitoring of crop growth among smallholder farmers in Ethiopia's highlands. A mixed-methods approach was employed, integrating GPS data with field observations to model crop growth trajectories over time. The analysis revealed a significant positive correlation ($r = 0.85$) between daily GPS-sampled soil moisture levels and subsequent plant yield increases in tested plots. GPS-informed models offer a robust tool for improving smallholder farmers' crop management practices, particularly among women farmers in the Ethiopian Highlands. Further research should focus on scaling up these models to larger geographic areas and incorporating additional climate data for enhanced predictive accuracy. Crop Growth Monitoring, GPS Technology, Smallholder Women Farmers, Ethiopian Highlands

Keywords: *Geographic, Highlands, GPS, GIS, Precision Agriculture, Remote Sensing, Women Farmers*

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