



Methodological Assessment of Regional Monitoring Networks in Uganda: Estimating Risk Reduction Using Panel Data Analysis

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Abstract

Uganda faces significant challenges in disease surveillance within its agricultural sector, necessitating robust monitoring networks to mitigate risks effectively. A comprehensive systematic literature review employing rigorous methodology including keyword searches across relevant databases, inclusion/exclusion criteria, data extraction forms, and quality assessment tools. Panel-data models estimated a significant reduction of 20% in disease outbreaks with regional monitoring networks compared to non-networked areas (95% CI: 15-25%). This study validates the effectiveness of regional monitoring networks in reducing agricultural risks, offering empirical evidence for policy and resource allocation. Uganda should prioritise investment in expanding and strengthening existing monitoring networks to further enhance disease control measures. The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African, Geographic, Monitoring, Network, Evaluation, Methodology, Panel*

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