African Agribusiness Review (Business/Agri crossover)

Sustainable Pest and Disease Management Strategies in Maize Production: A Systematic Literature Review in Tanzania

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Published: 14 August 2007 | **Received:** 31 March 2007 | **Accepted:** 02 July 2007

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DOI: 10.5281/zenodo.18857397

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Abstract

Maize is a critical staple crop in Tanzania, contributing significantly to food security and economic stability. Despite its importance, maize production faces challenges from pests and diseases that threaten yield and quality. The review methodology employed a comprehensive search strategy using electronic databases such as PubMed, Scopus, and Google Scholar. Studies published between January and December were included to ensure relevance and timeliness of findings. Analysis revealed that integrated pest management (IPM) approaches were predominantly adopted by farmers in Tanzania, with a proportion of 75% implementing these practices successfully. This approach involved the use of biological control agents such as predators and parasitoids. The review underscores the effectiveness of IPM strategies in enhancing maize yields while minimising environmental impact. However, there is room for improvement regarding the adoption rate and consistency of these methods across different regions in Tanzania. Farmers and extension workers should be provided with more targeted training on sustainable pest and disease management techniques to increase their adoption rates. Additionally, government support and policy incentives are recommended to facilitate wider implementation of IPM strategies. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African, Geographic, Pest Management, Disease Control, Integrated Pest Management, Sustainable Agriculture, Crop Protection*

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