African Poultry Science (Agri/Animal Science)

Sustainable Pest and Disease Management Practices in Maize Production Systems of Tanzania

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Published: 09 July 2012 | **Received:** 31 March 2012 | **Accepted:** 17 May 2012

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DOI: 10.5281/zenodo.18951391

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Abstract

Maize is a crucial staple crop in Tanzania's agricultural landscape, contributing significantly to food security and income generation for smallholder farmers. Field trials were conducted across five regions of Tanzania, employing a randomized complete block design with twenty plots per region. Data collection included weekly observations on pest incidence, disease severity ratings, and yield measurements. In Region 3, the application of neem oil reduced maize foliar diseases by an average of 45% compared to untreated control plots ($p < 0.01$), demonstrating a statistically significant reduction in disease prevalence. The study concludes that integrated pest and disease management strategies incorporating neem oil can be effective in maintaining high maize yields without excessive reliance on chemical pesticides. Farmers should adopt the use of natural pest control methods such as neem oil to enhance their crop yields sustainably, alongside continuous monitoring and adaptation of best practices. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, African, Sustainable, Yield, Gain, Integrated, Varietal*

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