



Sustainable Pest and Disease Management Practices in Maize Production within Tanzanian Agriculture: An Intervention Study

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Abstract

Maize is a critical staple crop in Tanzanian agriculture, facing significant pest and disease challenges that threaten yield stability. A randomized controlled trial was conducted in two Tanzanian regions, where IPM techniques were applied compared to conventional farming methods. Data collected included yield measurements, pest incidence rates, and disease severity scores over a period of three years. There was a statistically significant decrease ($p < 0.05$) in maize pest infestations by 30% (95% confidence interval: -25 to -36%) compared to conventional methods, with no notable adverse effects on yield stability. The study confirms the efficacy of IPM practices in enhancing maize productivity while mitigating environmental degradation and disease spread. Policy makers should encourage adoption of IPM strategies through targeted training programmes and financial incentives for smallholder farmers.

Keywords: *Sustainable Agriculture, Maize Production, Pest Management, Disease Control, Integrated Crop Management, Agroecology, Randomized Controlled Trial*

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