

**ADOPTION OF SUSTAINABLE BAMBOO FARMING TO MITIGATE THE  
EFFECTS OF SOIL DEGRADATION AND TO IMPROVE LIVELIHOOD IN  
KINALE, KIAMBU COUNTY, KENYA**

**BY**

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**A Research Thesis Submitted in Partial Fulfilment of the Requirements for the  
Degree of Master of Environmental Studies and Community Development in  
the School of Agriculture and Environmental Sciences of Kenyatta  
University.**

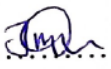
**NOVEMBER 2023**



## DECLARATION

### Declaration by Candidate

This thesis is my original work and has not been presented for a degree in any other university or any other award.

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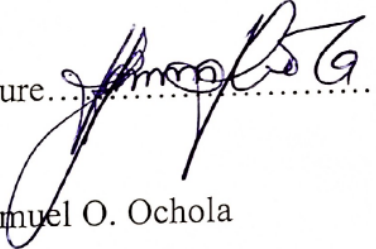
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### Declaration by Supervisors

We confirm that this thesis was carried out by the candidate under our supervision.

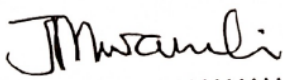
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## ABSTRACT

Bamboo is a perennial flowering plant with a distinctive life cycle: many bamboo species remain in the vegetative phase for decades, followed by mass synchronous flowering and subsequent death. Bamboos are grasses (*Poaceae*) that are widespread in tropical and subtropical regions with the potential to increase forests cover owing to their morphological fast growth. This study aimed at i.) identifying the level of use in sustainable bamboo farming curbing effects of soil degradation, ii.) evaluating the level of community awareness on bamboo farming and its environmental benefits, and iii.) assessing the importance of Bamboo as non-wood plant to sustain and improve community livelihoods. A semi-structured questionnaire was administered to 192 respondents within Kinale region, Kiambu County during a survey to gather information on bamboo farming and its impacts in curbing soil degradation. The data was analyzed on IBM<sup>®</sup> Statistical Package for Social Sciences (SPSS), Version 21. Results showed that 56.2% of the respondents in Kinale region Kiambu County were involved in bamboo farming whereby the odds were about twice (1.821, 95% CI, Lower limit =1.11; Upper limit=2.997) as great as the odds of their counterparts. Among respondents involved in bamboo farming, the highest variance of 35.8%, 29.4% and 21.33% were from respondents that considered bamboo as a sustainable alternative to trees, aware of deforestation and degradation and bamboo farming for income generation, respectively. A respondent considering bamboo as a suitable alternative to trees was twice more likely to be involved in bamboo farming [Exp (B)= 1.963, 95% CI: 0.179, 7.307; p=0.032] whereas that who considered bamboo for income generation, was thrice [Exp (B)= 3.058, 95% CI: 0.433, 2.005; p=0.025]. Bamboo farming awareness was through Agricultural Extension Officers, Community Based Organizations and Non-governmental Organizations (NGOs) as reported by 46.9%, 40.1% and 13%, respectively. Majority of 83.4% practice bamboo farming for monetary benefits compared to 16.6% that is for environmental benefits. Notably, 43.2% of the respondents reported environmental improvement associated with bamboo farming. Among the bamboo farming products, posts, chairs and baskets were reported by the majority of 30.9%, 27.2% and 20.2% of the respondents, respectively. A K-mean analysis revealed two clusters based on variables environmental-related and economic sustainability livelihood-related. In the first cluster, both variables: a sustainable alternative to trees and Land improvement or reclamation had a significant impact on its aggregation. However, in the second cluster, variables: bamboo as a source of income, household size and literacy level had a significant impact on its aggregation whereas variable: main source of income has none. The majority of 77.8% of the respondents involved in bamboo farming were in Ksh. > 2,000 - < 8,000 earning categories. Therefore, the study had shown the potential of bamboo farming in mitigating soil degradation, sustain and improve community livelihoods.