Tropentag, September 10-12, 2025, hybrid conference

"Reconcile land system changes
with planetary health"

Horticultural diversity upon a home gardening intervention in rural kenya: an exploratory cluster-analysis

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Abstract

Introduction: Climate change impacts food security in rural Kenya, where livelihoods are closely tied to local food production systems. Home gardens are promoted as a climate change adaptation strategy due to their potential contributions to horticultural diversity and thus, dietary diversification and resilience. This study aimed at characterising horticultural diversity of farming households upon a home gardening intervention in Siaya county, Kenya.

Methods: From 300 households, socio-demographic information were collected through interviews and garden inventories were obtained over a period of 13 months. Horticultural diversity was operationalized using species richness, evenness, Shannon-Wiener index, and Simpson index. These indices were subjected to an exploratory cluster analysis, and households were categorised accordingly. We calculated the distributions of socio-demographic characteristics by cluster, and compared them by parametric tests.

Results: In this study population, most household heads were female (66 %), the median age was 29 years, and 66 % had elementary education. In their gardens, 22 horticultural crops species from 12 plant families were planted, which mostly were used for consumption. The gardens had mean species richness of 7 (range: 6, 8), Shannon-Wiener Index of 1.51 (range: 1.27, 1.67), Simpson Index of 0.73 (range: 0.64, 0.79) and Evenness Index of 0.79 (range: 0.65, 0.85). The cluster analysis yielded two distinct clusters: Cluster 1 was characterised by high evenness, lower species richness and diversity. Cluster 2 showed high species richness and diversity, yet low evenness.

Female-headed households (74 %), farming as the main occupation (64 %), and attendance to all training sessions (68 %) were more frequent in Cluster 2 with higher diversity than in Cluster 1 with lower diversity ($p < 0.05$).

Conclusion: In this study population, there are differences in horticultural diversity upon a home gardening intervention, which appear to be related to gender, experience, and compliance. This information is relevant to understand the role of horticultural diversity upon home gardening interventions as a means to improve dietary diversification and resilience.

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Keywords: Adatation, climate change, Home gardening, Horticultural diversity, Resilience, Western Kenya