



Tropentag, September 14-16, 2022, hybrid conference

“Can agroecological farming feed the world?
Farmers’ and academia’s views”

Productivity in diverse production systems: insights from the Elgon highland agroecosystems of Uganda

CHRISTINE ARWATA ALUM¹, HUSSEIN LUSWAGA²

¹*Independent Consultant, Uganda*

²*University of Dodoma, Biology, Tanzania*

Abstract

The Elgon highland agroecosystems are characterised by diverse production systems, including livestock, perennial and annual crops. This therefore plays a major role in contributing towards food and nutrition security. However, increasing population densities in the area, reflected in the low cultivable area per household, is still a challenge in implementing sustainable production practices. To increase farm output, for subsistence and commercial purposes, agricultural strategies focus on conventional agriculture necessitating the use of fertilisers and pesticides. Farming households therefore operate under limited production alternatives from which they can choose probable possibilities. Alternative systems such as polycultures, and the use of local resources such as manure and mulches have not been emphasised in agricultural policies, yet they could be productive and contribute to sustainable agroecosystems. This study therefore compared farm productivity in smallholder farms from different production systems. The study focused on annual and perennial production systems. These production systems included both monoculture and polyculture. In the annual production systems, the crops included maize and beans, because the crops are the main food security crops. In the perennial production systems, coffee and bananas were of major focus because they contribute highly to household cash income. So the study seeks to understand to what extent food security is penalized to farmers who prefer agro-ecology production approaches as compared to conventional practices. Preliminary analysis shows that perennial polyculture production systems, involving a mixture of coffee and bananas are more labour saving as compared to coffee monoculture production systems. Less production time was also realised in the annual production systems where maize was intercropped with beans, when compared to beans in monoculture production systems, indicating a high returns per unit of farm labour. Agricultural policy strategies that aim to increase diversity in production systems could help to promote better use of resources, giving better yields, and thus, food secure households. Incorporating perennials in these systems also, contributes to soil protection through soil cover, hence supporting agroecosystem sustainability.

Keywords: Agroecosystems, Elgon highland, farm productivity, polyculture