Tropentag, September 11-13, 2024, hybrid conference

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Sustainable innovations in food production: Evaluating the environmental and socio-economic impact of dry tilapia fish

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Abstract

Within the framework of the HealthyFoodAfrica project, we have identified and piloted innovative approaches aimed at promoting sustainable and nutritious food production, encompassing food processing, safety, packaging, and agri-business models. Among these innovations, Koobi (dry tilapia fish) in oil is particularly promising. In this study, we focus on assessing its sustainability profile and exploring opportunities to promote its consumption within the context of a healthy and sustainable diet. Our objective is to provide fresh insights into the potential of improving local food security, nutrition, and livelihoods in Ghana and, by extension, across Africa. Using the life cycle assessment framework, we conducted an cradle-to-gate environmental assessment of Koobi in oil with a functional unit of 500g. Additionally, a socio-economic assessment was conducted, using a 5-point reference scale approach to evaluate the positive and negative performance of value-chain actors across various social topics. Our assessment integrated both primary and secondary data sources. Preliminary findings for the environmental assessment reveal that the bottle used for packaging Koobi in oil, produced the most global warming impact, and for the socoio-economic assessments, several key impact categories including "fair salary", "freedom of association and bargaining rights", "corruption", "safe living conditions", and "contribution to economic development", exhibited negative performance concerning workers and local community members stakeholders. Furthermore, our study highlights the complexities of global supply chain, considering certain materials (such as tank) for fish farming are imported. This emphasises the importance of adopting a more inclusive and context-sensitive approach to sustainability assessments, advocating for meaningful stakeholder engagement to address local social challenges effectively. In conclusion, our research not only contributes to the understanding of environmental and socio-economic sustainability in small-scale food production but also emphasises the importance of tailored assessments in diverse contexts. By fostering collaboration with local stakeholders, we can pave the way for more equitable and sustainable development trajectories in sub-Saharan Africa and beyond.

Keywords: Agrifood, environmental life cycle assessment, fish

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