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"Solidarity in a competing world — fair use of resources"

Complex Systems - Simple Solutions? The Importance of Social Context for Sustainable Intensification.

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Abstract

Smallholder farming systems in northern Ghana exhibit low adoption rates of measures for sustainable intensification (SI). Measures are only meaningful if they match with people's livelihood strategies, gender roles and human capital (knowledge, habits). Smallholder systems are complex 'businesses' where intra-household differences in roles, objectives and power positions strongly influence farm management decisions and therewith the adoption behaviour. For the Africa RISING project, we investigated smallholder farm and farmer diversity in northern Ghana with the aim to better understand technology adoption for SI. We generated and combined statistical and participatory typologies to capture local smallholder diversity. We then collected bio-economic information of each farm type to describe and explain the current system as well as to evaluate and explore alternatives for SI using the whole farm model Farm DESIGN. The whole farm modelling was performed at household level since the farm household forms a strong unit of agricultural production, with tight interdependencies in decision making, exchanging and sharing resources like land, tools, labour, capital, inputs (fertilisers, seeds) and outputs (food, income). However, different fields, crops and livestock types are typically managed by different household members with different individual objectives and hence different interests and viewpoints on 'improved farm technologies'. In our interviews, we hence went beyond the usual consultation of a single 'representative' household member by interviewing all members with 'own' fields. We found that technologies for SI had different impacts and received different evaluations by the different household types and household members. The combination of whole-farm modelling and social contextualisation revealed that technologies such as a systematic integration of maize and legumes seem technically simple and economically promising, but are difficult to implement if the crops are traditionally grown by different household members and on different fields. We further identified the need to distinguish between technologies and techniques: While technologies are more technical (inputs, machinery) techniques are more managerial (behaviour change) making them differently attractive and feasible for low and high resource endowed farm types. Analyzing the social context of measures for SI significantly improved our understanding of challenges and opportunities for SI in smallholder systems in northern Ghana.

Keywords: Farmer and farm typology, gender, Ghana, intra-household differences, smallholder, sustainable intensification, technology adoption, whole farm model Farm DESIGN

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