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“Filling gaps and removing traps  
for sustainable resource management”

## Exploring Smallholder Farm Decisions through Typologies and Serious Gaming

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### Abstract

While scientists and businesses keep developing ingenious technical ‘solutions’ for agricultural challenges in development contexts, technology adoption by smallholder farmers remains low. It seems as if scientists and farmers hold a different understanding of the problem, of the solution or about the enabling environment for technology adoption. In order to better understand how farm-level decisions come about, this study explores dynamics of land allocation decisions among smallholder farm households in Northern Ghana, using typologies and serious gaming. We employed a statistical farm and a participatory farmer typology, which revealed differences in farm resource endowment and in individual farm-related interests and constraints respectively. We then developed a closed, experimental serious game to determine the power-backing of individual interests as well as negotiation dynamics in order to explain how divergent individual interests may translate into household-level decisions. The serious game simulated the process of a household-level negotiation on land allocation between a male household head, a wife and the eldest son of a hypothetical medium resource endowed farm household. Contrary to the general local cultural narrative, we found that the wife and the son had a significant influence on the household-level decision outcome. The household-level outcome was, furthermore, more profitable as well as agro-biologically and nutritionally more diverse and productive as compared to the household heads’ individual suggestion. Our finding highlights that the integration of diverse perspectives led to a robust ‘solution’, supported by all stakeholders. Scientist and businesses may hence improve the identification of problems and solutions by means of participatory and gender transformative approaches. Concerning the negotiation process, power was found to be exerted, withheld or overruled and it seemed as if, even when power was withheld or overruled, it still had an importance in time and across decision-domains — a feature of complex rather than linear systems. One has to consider that non-adoption of a technology might be the best choice for a farmer, given his or her interests, priorities and understanding of whole-systems consequences. In conclusion, scientists and businesses may provide better farmer support when acknowledging household-level decision-making dynamics as the core enabling environment for any proposed change.

**Keywords:** Land allocation, northern Ghana, participatory typology, power dynamics