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INDIGENOUS SOIL MAPPING AT A SITE VULNERABLE TO CLIMATE CHANGE

Case study of Piisi village in the Upper West Region of Ghana

Master Thesis

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Abstract

West Africa is experiencing a period of declining rainfall and a shift in rainfall regime since the 1970s. The Upper West Region of Ghana has shown to be a region extremely prone to climate change. Increasing agro biodiversity is seen as a chance to reduce risk of crop failure and increase food security. Fast adoption of innovations is necessary since the majority of people depend on subsistence farming. Top down approaches have failed and extensions services are vanishing in the region. Therefore farmers need to be enabled to evaluate innovations themselves which is why a participatory approach was followed in this study. The major aim of this study is to establish methodological steps towards an easier and more sustainable introduction of agro biodiversity. To work out local concepts of the environment three local soil maps were produced in this study as well as a scientific soil map of Piisi according to WRB (2006). Precision of the local soil maps vary considerably depending on the methods used to create them. The laboratory results of the five reference profiles show that nutrients availability is very low throughout the village. Indicating that difference in soil fertility as the farmers perceive it is mainly dependant on physical properties namely available water capacity and effective root spacing. Correlation of the WRB map with the local map is moderate whereas differences can be reasonably explained. As a result of the findings of this study it is recommended to conduct indigenous soil mapping during field surveys and cross check results during transects with key farmers and a final group discussion. Indigenous soil mapping is considered a necessary first step towards the development of a local evaluation system it.

To develop a local evaluation system it is recommended to use direct observation and participation of researchers at field work to facilitate insight into the farmers' tacit knowledge. Researchers can help to externalize this knowledge to establish a shared foundation of discussion which will help to clarify contradictions, answer open questions and increase the understanding of local farming practices. This is also seen as a way to form and strengthen the farmer

scientist team which is needed to develop sustainable innovations using the expert knowledge of both farmers and scientists.