

"FARMERS INNOVATE OUT OF CURIOSITY, COINCIDENCE OR NECESSITY"**In which region did you do your research, how long did you stay there, and why did you choose this region?**

My PhD research was on the identification, determinants, and welfare impacts of farmers' innovations in rural Ghana. From August 2012 to May 2013, I conducted my field research in the Upper East region of Ghana, which is one of the selected areas for implementing the core research program of WASCAL (West African Science Service Center of Climate Change and Adapted Land Use). Moreover, Upper East is a rural region with a high population density, low food security, limited infrastructural services, and increasing challenges such as climate change and soil infertility. This is the kind of challenging environment where one expects to find many local innovations. My research started with identifying promising innovations by farmers. I therefore assisted my tutor, Tobias Wünscher, in implementing an innovation contest throughout the region between August and November 2012. In the contest, farmers competed by presenting their independently developed innovations. The top three innovators were awarded prizes during the National Farmers Day celebration. I also collected survey data from 409 farm households in three districts in the region (Kassena Nankana East, Kassena Nankana West, and Bongo), which I used to analyze the drivers and impacts of farmers' innovations.

**Why were you interested in farmers' innovations, and what exactly were you looking at?**

Research institutions have developed numerous technologies that are disseminated to farmers for adoption. However, many of these technologies are not adopted by smallholders because, among other things, there are difficulties with accessing them, there are high costs, and the technologies often do not fit local conditions. However, some farmers are very creative and have developed their own locally-adapted innovations to address the challenges they face. Nevertheless, the scientific literature on agricultural innovations focuses primarily on the innovations developed by researchers, while those developed by farmers are often neglected or under-valued. So my research, in contrast to existing studies, looks at innovations developed by farmers themselves. I also examined whether such innovations can play a role in improving the livelihoods of

rural farm households, and how to strengthen farmers' capacities for generating more of such innovations.

How are farmers' innovations related to climate change?

Most of the identified farmer innovations are yield-related. Furthermore, these innovations are locally adapted and can help to cushion the effects of climate change. Some farmers' innovations also emerge directly in response to environmental shocks. One of the main findings of my study is that farmers who develop innovations are more resilient to climate shocks than those who do not.

What makes farmers innovative and in what way do farmers' innovations contribute (or not) to households' welfare?

Farmers innovate either out of curiosity, by coincidence or driven by the need to increase production and solve problems. I also found that the Farmer Field Fora (FFF) program, which is being implemented by Ghana's Ministry of Food and Agriculture, helps to build the capacity of farmers to innovate. The FFF is a platform for innovations and mutual learning among agricultural stakeholders, particularly farmers, agricultural extension services agents, and researchers. I analyzed the effects that farmers' innovations have on a number of household welfare indicators. I discovered that farmers' innovations play an essential role in farmers' households and innovations can significantly improve the income and consumption expenditure of the innovators. In addition, innovations contribute to increasing food security in the innovative households because these spend more on food consumption, and therewith reduce the length of the hungry season.

What were your most exciting findings?

One of the most interesting findings of my research is that farmers do not only adopt but also generate innovations. Farmers' innovations may emerge by coincidence, but can also be induced through capacity building programs such as those provided by the FFF. Also, farmers' innovations can complement the innovations developed by public and private research institutions in addressing the challenges farmers face and in reducing rural poverty. Finally, the opportunity to win prizes through a contest can serve as an incentive for farmers to reveal their innovations instead of keeping them a secret.

The interview was conducted by Jelana Vajen, ZEF.

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