



Tropentag, September 16-18, 2015, Berlin, Germany

“Management of land use systems for enhanced food security:
conflicts, controversies and resolutions”

Mapping Urban Agriculture in West African Cities: Spatial Extent & Temporal Dynamics

HANNA KARG¹, JOHANNES SCHLESINGER¹, LEA BARTELS¹, AXEL W. DRESCHER¹, GEORGE
NYARKO², ANDREAS BUERKERT³

¹*University of Freiburg, Dept. of Environmental Social Sciences and Geography; Physical Geography, Germany*

²*University for Development Studies, Fac. of Agronomy, Ghana*

³*University of Kassel, Organic Plant Production and Agroecosystems Research in the Tropics and Sub-tropics, Germany*

Abstract

In recent years, urban and peri-urban agriculture have gained increasing attention worldwide. Urban farming contributes to food security and income generation for urban dwellers and to greener cities. On the other hand, urban agriculture faces challenges, such as polluted irrigation water and land insecurity, particularly in developing countries.

In the West African cities of Tamale (Ghana) and Ouagadougou (Burkina Faso), urban farmers benefit from available urban water sources and provide the urban population with irrigated vegetables during the dry season, while in rural areas rain-fed farming systems dominate. The seasonal climatic variations add to the already high spatial and temporal diversity of urban agricultural land use in these cities.

In order to get a comprehensive picture of the spatial extent of urban crop production in Tamale and Ouagadougou, agricultural land was mapped at various spatial scales and in different seasons and years. The study draws on a set of data sources and methods to account for highly diversified land uses spanning the two cities, ranging from in-situ mapping and the use of an unmanned aerial vehicle to the classification of high and medium resolution satellite imagery.

Preliminary results show that urban cultivation patterns change considerably in terms of the area, location and crop mix of cultivated patches across seasons. Water availability (both abundance and scarcity) is a major explanatory factor for these changes. In Tamale staple crop production is vital in the rainy season, both in open space sites and backyards, while in Ouagadougou such rain-fed agriculture is limited to a few open contiguous areas. In the dry season, highly commercialised production of a variety of leafy vegetables, mostly traditional (e.g. different types of Amaranths, *Amaranthus* spp.) but also exotic (e.g. Lettuce, *Lactuca sativa*), takes place generally along streams and around reservoirs in both cities.

We have used GIS data to show the particular spaces and times that are important for people to grow crops and generate income in each city. Such comprehensive assessments reflecting the complex spatio-temporal dynamics should therefore be used to better inform city planners.

Keywords: GIS, GlobE, remote sensing, urban and peri-urban agriculture (UPA), UrbanFoodPlus