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Research Paper

The role of backyard farms in two West African urban landscapes

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ABSTRACT

Urban and peri-urban agriculture (UPA) is a well-researched landscape component, but there is a need to extend the quantitative database on West Africa as well as to explain how UPA contributes to food systems differently across locations. We therefore performed a quantitative survey of Tamale, Ghana, and Ouagadougou, Burkina Faso, using a spatially randomised sampling frame to identify farms in peri-urban villages, open-space farming zones and isolated spaces. This was complemented with focus group discussion data. After preliminary analysis, further interviews were performed to explain trends observed. Rainy season production dominated in both cities. In Ouagadougou, commercial production was concentrated in open-space farming sites, whereas in Tamale it was more dispersed, with isolated space farms playing an unexpectedly important market role. This was attributed to Tamale's recent rapid expansion, combined with more relaxed planning implementation and a permissive legislative context. In both cities, leafy vegetables were important commercial crops. Irrigation and soil fertility management were areas where resource use efficiency could be improved. Untreated well water was a major irrigation source in Ouagadougou, as was potable water in Tamale, raising queries over sustainability. Inorganic fertiliser use was more common in Tamale than Ouagadougou, and the opposite was the case for compost and manure, ascribed to the existence of manure markets in Ouagadougou. Urban agriculture's contribution to urban food systems is thus shaped by its historical and geographical context. Attention to planning trajectories, irrigation and soil fertility management issues could help it contribute further.

1. Introduction

Urban and peri-urban agriculture (UPA) plays a unique and important role in urban food systems. Farmers use spaces in urban and peri-urban landscapes to provide themselves and others with food, whilst gaining income from sales (Dubbeling, Canton Campbell, Hoekstra, & van Veenhuizen, 2009). The opportunities and risks presented by UPA provide important considerations for planners and policy makers. It enjoys good access to inputs, including agrochemicals, organic wastes (Lee-Smith, 2013) and municipal and wastewater supplies (Tixier & Bon, 2006). Relatively affluent output markets demand a wide range of goods (Mawoisa, Aubry, & Le Bail, 2011). Yet it also competes with other urban land uses and industries for resources such as land, water and crop residues (Naab, Dinye, & Kasanga, 2013) and consumers and city authorities express health concerns over waste reuse (Mougeot, 2000). Some settings have legislative barriers (Cissé, Gueye Ndèye, & Sy, 2005) and resource use efficiencies are often low.

There is an abundance of academic and 'grey' literature on UPA as a general phenomenon. Yet the factors above interact to shape UPA in diverse ways across landscapes. Backyard gardening may exist alongside opportunistic cropping on interstitial spaces. Meanwhile, several farmers may cultivate simultaneously on contiguous fields within larger, open-space, tracts of land (Drechsel et al. 2006). Peri-urban settlements can resemble rural villages, but have access to urban markets, meeting Mougeot's (2000) definition of UPA. This paper focuses on food crop farming, a common form in the study area (an exploration of livestock production in the study cities appears in Roessler et al. (2016)), but UPA can also include livestock raising, agroforestry, ornamental horticulture and mixed production systems. These forms manifest to varying extents between locations, and their functions within urban livelihoods vary.

Papers on African UPA have hitherto mainly focused on open-space farming sites, characterising them as the locus of commercial production (Drechsel, Graefe, Sonou, & Cofie, 2006; Memon and Lee-Smith, 1993). This emphasis reflects the current policy and advocacy drive towards African agricultural commercialisation (Wiggins, Argwings-

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Kodhek, & Leavy, 2011), and the inability of remote-sensing approaches to collect data on smaller plots (Thebo, Drechsel, & Lambin, 2014). Brinkmann et al. (2012) therefore advocate work examining urban farms of all sizes more closely. East African studies have achieved this (Kutiwa, Boon, & Devuyst, 2010; Mwangi, 1995; Schlesinger, 2013) but the need remains for detailed ground-level quantitative data on West Africa.

Our study therefore augments the West African urban agriculture database by conducting a mixed-methods investigation of crop farming in Ouagadougou, Burkina Faso and Tamale, Ghana. To capture details on as many farm types as possible, we performed a quantitative survey, collecting data within three broadly defined zones. We sampled farms within contiguous open spaces, as well as identifying residential areas where we sampled what we called 'isolated space and backyard farmers'. Moustier and Danso (2006) define the latter as 'urban residents who farm around their homes'. We also included peri-urban villages.

Section 1.1 details relevant environmental and historical elements of our study site. Following the methods, we use these details in Sections 3.1–3.5 to explain broad trends of agricultural practice. Section 3.6 explains differences in prevalence, function and form of isolated and backyard farms between cities, especially in terms of commercialisation. This paper's original contribution is this use of qualitative information to contextualise randomised survey data within historical trajectories of urban landscape planning and development, less common in contemporary analysis of UPA. Our conclusion elicits implications for future research and planning agendas.

1.1. Regional agricultural context

Located in central Burkina Faso, Ouagadougou, founded in the 15th century, is the national capital and the seat of the Mossi kingdom (Balima, 1995). Tamale, the capital of Ghana's Northern region, is the largest city in the Dagomba kingdom, although not the traditional seat. These cities are in the Sudan and Guinea savanna agroecological zones respectively, both having monomodal rainfall (Fig. 1).

West African agriculture traditionally comprises rainfed household cultivation of staples, such as maize, sorghum and yam (Al-Hassan & Poulton, 2009), accompanied by marketable legumes, such as groundnut, and small quantities of vegetables. Historically, women largely provided condiments and prepared food, while men cultivated staples (Nchanji & Bellwood-Howard, 2016).

Such traditional, seasonal farming is predominantly rural. However, farmers also establish perennial cultivation in backyards and open spaces within urban landscapes. Simultaneously, accelerating urbanisation decreases land availability in the study cities (Addo, 2010). An analysis of farm size is therefore relevant, alongside evaluation of how far farmers maintain traditional rainfed farming patterns and crop mixes. A focus on irrigation is also warranted. Both study cities prioritise household as opposed to agricultural use of potable water. Yet these uses compete, as neither city has a major river. Ouagadougou's higher water table facilitates widespread well-digging, whereas in Tamale dugouts are used alongside municipal piped water. Floodplains exist alongside reservoirs, such as the three barrages spanning central Ouagadougou and the patchwork of smaller dugouts scattered around Tamale.

Farmers may produce rainy season staples in such spaces, alongside irrigated market vegetables in both rainy and dry seasons. In these cities with catering industries, markets have developed for exotic species such as cabbage and carrot, alongside traditional leaves such as amaranth, and vegetables such as onions used in both traditional and modern dishes. These markets involve gender-defined roles, with male farmers trading to female marketers (Clark, 2010), and proximity to them shapes the commercial nature of UPA (Kutiwa et al., 2010).

This marketing theme resonates in an era when commercialisation tops agricultural policy agendas, for example in the Comprehensive African Agricultural Development Plan (CAADP) of the African Union's New Partnership for Africa's Development. Although UPA is less explicitly mentioned in contemporary Ghanaian and Burkinabé agricultural policy, the 'value chain' concept valorised by CAADP permeates current approaches, linking commercial cropping to market input provision. Although subsidies are contentious, Burkina and Ghana's subsidy programmes have been in place since 2007 and 2008 respectively. Seed remains similarly controversial (Bornstein, 2014).

Land is probably the most contentious urban agricultural resource. The Ghanaian and Burkinabé governments encourage formal titling,

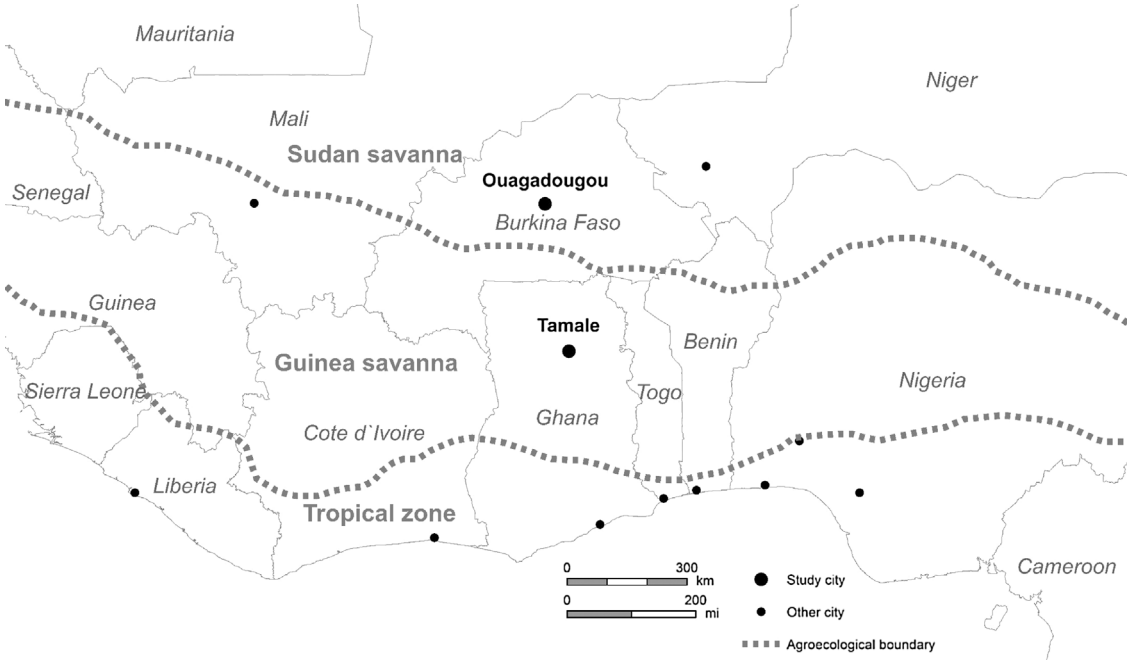

Fig. 1. Annotated map of the study site.
Source: Compiled from White (1983), FAO (1983) and d-maps.com (2017).