



Mapping and characterising the urban agricultural landscape of two intermediate-sized Ghanaian cities



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ABSTRACT

Extending beyond previous research biases towards large cities or analyses based largely on one type of urban agriculture (UA) (such as market gardening, or home gardening), this research aimed to investigate all forms of UA within two intermediate-sized Ghanaian cities (Techiman and Tamale). Where was being farmed? For whom, and why? The paper considers how findings compare to Ghana's larger cities, and possible implications for theory and for planning. Methods included remote sensing, field mapping, interviews and a 1000-household per city questionnaire. The most common reason for farming was food supplementation. This was often via staple foods, particularly maize, rather than the leafy vegetables common in larger cities' market gardening. Farming was predominantly via home gardening, particularly for the better off. The larger city of Tamale also sustained organised irrigated-vegetable market gardens.

Findings suggest a picture not dissimilar to Ghana's larger cities but with greater prevalence of home gardening, and a dominance of staple foods rather than perishable or high value crops. A compelling finding, which has received less attention in the literature, is the extent of, and roles played by, what this study refers to as 'institutional land. Both Ghanaian Ministry of Food and Agriculture's policy framing, and market crisis theorising, of the drivers and role of UA were not found to be an accurate reflection of Techiman and Tamale's UA. Rather than being a localised survival activity of the poor or marginalised, of recent migrants, or of predominantly women, these cities contained a large scale and diverse spatiality of UA mainly for non-poor and non-migrants' supplementation of their staple food larder. Results emphasise the context-specific nature of a city's urban agriculture, and underline the need for researchers and UA advocates to be specific about the form of UA under the microscope when making claims for 'an urban agriculture'.

1. Introduction

Urban agriculture (UA) is claimed to have grown in scale and importance since the 1970s (Hampwaye, 2013; Mougeot, Chapter 1 in Egziabehar et al. (1994)), though not without debate (Hamilton et al., 2014). Attempts at global assessment of *urban* cropland estimated 67.4 Mha or 5.9% of the world's irrigated and rain fed croplands to be within urban areas (Thebo et al., 2014). Hamilton et al.'s (2014) review of developing country UA estimates 266 million households engaged in some way in urban *crop* production (29 million households in Africa). Such figures suggest a not insignificant UA activity, but both the Hamilton and Thebo papers acknowledge their resolution of spatial analysis excludes home gardens or "small, spatially dispersed areas of urban croplands" (ibid, p8), as well as excluding animal-husbandry. They both call for comprehensive local surveys to contextualise UA's extent and role. In addition to this need to understand the scale of UA locally, changing demographic trends (Maxwell, 1999), as well as the

effects of the 2007–08 food price riots and global financial crisis (Bush, 2010; Prain et al., 2010), may have rendered studies from the 1990s/early 2000s out-dated. Additionally, much of the research undertaken on urban or *peri*-urban agriculture has focused on capitals and large cities—a "metro-bias" (Thornton, 2008) or on a single type of UA (such as only investigating market gardening of high-value vegetables; or only home gardening). Such exclusionary focus on just one UA form, or on larger cities, may unintentionally misrepresent UA. Research in larger cities may also be less pertinent given that the greatest development pressure in coming decades is predicted to be in secondary cities (Cohen, 2004; De Bon et al., 2010; Satterthwaite et al., 2010). Indeed such secondary or intermediate-sized cities (defined in this research as roughly 100,000–500,000 inhabitants) are thought to be more representative of where the world's urban population actually lives (Satterthwaite et al., 2010). In terms of theory, until relatively recently the urban agriculture literature tended to bifurcate across two schools of thought when attempting to explain why farming within cities occurs

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and persists (described in more detail in Section 1.1). One set of framing viewed UA as an expression of market failures or livelihood crisis. The other, in contrast, presented UA as arising from opportunities offered by the proximate urban market. Recent research has become more nuanced but see Ellis and Sumberg (1998), Battersby (2013), Masvaure (2016), and Frayne et al. (2016) for analysis of this difference in theorising urban agriculture.

This paper began its' journey with readings from both sides of this debate, and a concern that neither type of theory framing could be well-applied to a range of UA in a particular place, while being aware that this may be neither possible nor desirable. This limitation in the UA research, I feel, is partly because studies tend to exclusively zoom-in on only one or two types of UA (e.g. home gardens, or market gardening), or in one particular location (public open spaces), or for one particular group of people (farmer associations, or households), and to focus mainly upon capital cities with large and growing populations. I admit however that I was probably more influenced, at the start of this research, by understandings of UA as a survival strategy of the poor. My overall research questions are thus informed by this theoretical debate and designed to allow reflection on the implications of these city-specific findings for theory. My approach is more inductive rather than deductive (Lincoln et al., 2011) as I aimed to investigate the broadest spectrum of urban agriculture possible with the mix of methods used, in the specific social context of these two smaller Ghanaian cities. Such a research approach avoids the large-city bias, and exclusionary practitioner, single land type or farm system foci. In line with this research approach, perhaps more common to qualitative research (Lincoln et al., 2011), I therefore did not firmly pre-determine a theoretical "side" but rather grounded my research question in what could be found in my study sites: the observations, people's descriptions of their activities and motivations. Thus my research questions were simply: where is agriculture being practiced in these smaller cities? Who is farming these sites, and why? I do not claim the study nor its findings to be statistically replicable (Sandelowski, 1995; Lincoln et al., 2011) to all intermediate cities of Ghana, or of Sub-Saharan Africa, though the method, analysis and resulting insights may have transferable implications (Morse et al., 2002) for other sites where the relations around land, urban life, food and farming might be similar.

The next section of the paper provides a brief overview of urban agricultural research and theorising. The specificities of the Ghanaian context are then described and the characteristics of UA in Ghana's largest two cities are outlined. This is followed by a description of the materials and methods. My mixed methodology of remote-sensing of urban land, in-field survey, semi-structured interviews with urban farmers and key respondents, and a questionnaire survey of 2047 urban households (both farm and non-farm households) was complementary. The remote-sensing and in-field survey allowed identification of the institutional lands under agriculture in these cities, which the household survey alone would not have picked up. The mapping component alone could not have addressed the questions of who or why. Analysis and discussion are structured by the research questions around the characteristics of the farmed land found, and the function of the urban agriculture (for whom and why). In the discussion I consider how the findings from the specific social context of these two intermediate cities compare to studies of urban agriculture in Ghana's larger cities of Kumasi and Accra. I also return to reflect briefly on possible implications for theory and for urban planning. The compelling finding of the extent of, and diverse roles played by, institutional land is discussed and deserves follow-up investigation. At the end of the paper I conclude that Techiman and Tamale's patterns and functions of urban agriculture are not so dissimilar to Ghana's larger cities, but seem to contain a greater prevalence of home gardening, a dominance of rain fed staple crop production, and are most commonly motivated by household food supplementation, rather than survivalist, concerns.

1.1. Urban agriculture

It is necessary to describe and define urban agriculture since there has been imprecision or disagreement regarding what constitutes UA, and a lack of consensus regarding its role (Dubbeling et al., 2010; Zezza and Tasciotti, 2010; van Veenhuizen and Danso, 2007). It is not possible to cover this debate in detail. Suffice to say that lack of consistency of definition leads to difficulty assessing the true scale, and hinders comparability of studies (Thebo et al., 2014). For this research, practicality of definition was of concern i.e., what could be mapped and identified remotely and from in-field survey. Thus aspects related to the post-harvest food supply chain such as processing, distribution, or marketing were excluded. Urban agriculture, in this study therefore, (following Quon, 1999) refers to: the growth of food crops (including staple crops, fruit and vegetables), or cash crops (such as coffee, tea, sugarcane) or other agricultural products (such as textile, rope, fuelwood), or the practice of animal husbandry (including for meat, milk, fish, poultry), at all levels from subsistence to commercial, within the city area.¹ It may be illegal or legal, planned or unplanned, on public or private land, and the produce may remain in the city or be transported outside.

Urban agriculture has been documented around the world (Egziabher et al., 1994; De Bon et al., 2010; Taylor and Lovell 2012) and indeed is not a new phenomenon (Hampway, 2013). The significance for food security, income generation, nutritional intake or business opportunity is debated however, and very context-dependent (Zezza and Tasciotti, 2010; Hovrorka 2004; Frayne et al., 2014). UA in the African city context, although it is a source of food production, is also a way of overcoming the accessibility, affordability barriers to food and nutrition security (de Zeeuw and Drechsel, 2015). UA is purported to contribute to better nutritional and health status (Dixon et al., 2007), though this is debated. Families with access to food through UA have been found, in some studies, to have better nutritional diversity (Maxwell et al., 2000; Prain 2010; Zezza and Tasciotti, 2010). Studies of urban African households documented between 20 and 50% being involved in UA, depending on country (Orsini et al., 2013). Two sister projects to this research, also in intermediate-sized cities, found 16 and 22% of urban households in Tamale and Techiman (Ghana) respectively (Ayerakwa 2017), and 17% of Kenyan households in Thika and Kisumu involved in UA (Omondi et al., 2017).

The practice of urban agriculture has been theorised by Marxists and political economists as being a result of market failures to provide food and employment for urban inhabitants (Maxwell 1999; McClintock 2010). When UA first attracted research interest it was often portrayed in this way (motivated by survival needs) or as a transitory expression of rural behaviours prior to immigrant assimilation into appropriate city living (Drakakis-Smith et al., 1995; Mougeot, 2006; Drechsel and Dongus, 2010) but this is still claimed in some contexts (Masvaure, 2016; Bryld, 2003; Smart et al., 2015). Agriculture in African cities has been read by some as a sign of poverty: a 2010 analysis of urban households that practiced agriculture (regardless of farm location) across 15 countries concluded that agriculture "is an activity in which the poor are disproportionately represented", most significantly in Africa (Zezza and Tasciotti, 2010, p. 271). Other types and motivations for UA encompassing an accumulative potential for wealthier urbanites, and a "means of consolidation" (Bryld, 2003, p80) for the better off may be recognised by these framings. Nevertheless, it was commonly concluded that the majority of urban farmers were "engaged in cultivation as a means of survival" (ibid) further pinpointing practitioners as poor and/or marginalised.

Other research, however, has tended to focus more upon the market gardening type of urban farming. Such studies posit that city food

¹ "land which is administratively and legally zoned for urban uses" (Mbiba in Quon, 1999, p63).

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