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Characteristics of urban agricultural farming practices and spatial nature of production systems in the city of Nairobi, Kenya

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Abstract

Within the urban environment, urban agriculture faces myriad of challenges ranging from type of practices employed, through to production systems, to quality and safety of produce. An investigation was done to characterise urban agricultural farming practices and spatial nature of production systems within Nairobi city in the period between August 2013 and December 2013. The target was the active urban farmers identified through purposive sampling with the help of agricultural extension officers. Data was collected using sensitisation workshops, interviews, semi-structured questionnaires and observations. The most common crops among active urban agriculture practitioners in order of prevalence were exotic leafy vegetables, fruit vegetables, herbs and spices while cereals and pulses are the least common. About 30% of surveyed farmers had plot sizes of between 0.125 to 0.25 acres. With respect to yield, over 65% of the farmers identified production technologies and space as the most critical issues affecting crop yields and wanted a review of urban and peri-urban agricultural policy. About nine different production technologies were identified over the eight study districts most of which were directed towards space optimisation. The most common were green house tunnels, multi-storey garden, moist gardening and micro gardens.

Key words: By-laws, production techniques, source of inputs, space, urban farmer

Résumé

Dans le milieu urbain, l'agriculture urbaine est confrontée à la myriade de défis allant de type de pratiques employées, par le biais de systèmes de production, la qualité et la sécurité des produits. Une enquête a été effectuée pour caractériser les pratiques agricoles des agriculteurs urbains et la nature spatiale des systèmes de production dans la ville de Nairobi dans la période comprise entre août 2013 et décembre 2013. La cible était les agriculteurs urbains actifs identifiés par un échantillonnage raisonné avec l'aide des agents de vulgarisation agricole. Les données ont été recueillies à l'aide d'ateliers de sensibilisation, des interviews, des questionnaires semi-structurés et des observations. Les cultures les plus communes chez les praticiens de l'agriculture urbaine actifs afin de prévalence étaient des légumes exotiques à feuilles, fruits végétaux, les herbes et épices en céréales et légumineuses sont le moins fréquent. Environ 30% des agriculteurs interrogés avaient la taille des parcelles

allant de 0,125 à 0,25 demi hectares. En ce qui concerne la production, plus de 65% des agriculteurs ont identifiés les technologies de production et de l'espace que les questions les plus cruciales qui affectent les rendements des cultures et voulaient une révision de la politique agricole urbaine et périurbaine. Environ neuf différentes technologies de production ont été identifiées au cours de l'étude de huit districts dont la plupart ont été dirigés vers l'optimisation de l'espace. Les plus fréquents étaient les tunnels de serre, les jardins multi-étages, le jardinage humide et les micros jardins.

Mots clés: les règlements, les techniques de production, la source des intrants, l'espace, l'agriculteur urbain

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Literature summary

A key concern of urban agriculture is the risk of pathogen and heavy metal contamination to consumers due to the high dependency of production systems on the large amount of cheaply available organic wastes and waste water materials (Khai *et al*., 2007; de Neergaard *et al*., 2009) and lack of a clear policy regarding the practice and planned management of urban agriculture in most African cities (Ezedinma and Chukuezi, 1999; Olofin and Tanko, 2003; Wakuru and Drescher, 2008). Despite pressure from various competing land uses within the urban environment, agriculture continues to be prevalent in most sub-saharan cities. In Nairobi city for example, 44% of respondents who rented land for urban agriculture were in the urban area compared to 13% in the peri-urban area (Pasquini *et al*., 2009). Although the legal status of urban agriculture is largely unclear (Wakuru and Drescher, 2008), it is important to evaluate its position from the context of production systems and overall urban planning and management. This paper addresses two specific objectives of this study; to determine the characteristics of farming practices among urban – periurban agriculture (UPA) practitioners and to establish the spatial distribution of production systems along the urbanisation continuum.

Study description

The target population for this study was the active urban farming households within Nairobi County. Farmers were purposively sampled with the help of the Ministry of Agriculture District Agricultural Officers and the Divisional Agricultural Extension Officers among the eight districts. Data was collected using a structured questionnaire administered through face-to-face interviews, supplemented with field observations and informal discussions. A total of 95 farmers were interviewed and a Global Positioning Systems (GPS) receiver used to map respondents' farms. The information gathered during the field survey included the respondents' socio-economic characteristics, land tenure, production systems in use and techniques, urban farming practices and sources of inputs, farm waste management and farmer's perception on space and planning for urban and peri-urban agriculture. Data was analyzed by descriptive statistics and chi-square tests were performed. Variables were compared between districts for any significant difference and between urban and peri-urban districts.

Research application

With regard to farm practices, manure sources were identified as organic garbage, livestock slaughterhouse waste and sewage sludge and even industrial solid waste. Sources of irrigation water were, piped domestic water, sewer lines, polluted stream water, shallow wells, waste water and roof catchment tanks. The main irrigation methods were bucket, furrow and drip. Agricultural waste management and handling methods included, livestock feed, burning, composting, recycling, exchange, sale or throwing away. The main challenges identified by the UPA practitioners were water scarcity, city by-laws, space, vandalism, loaming livestock,

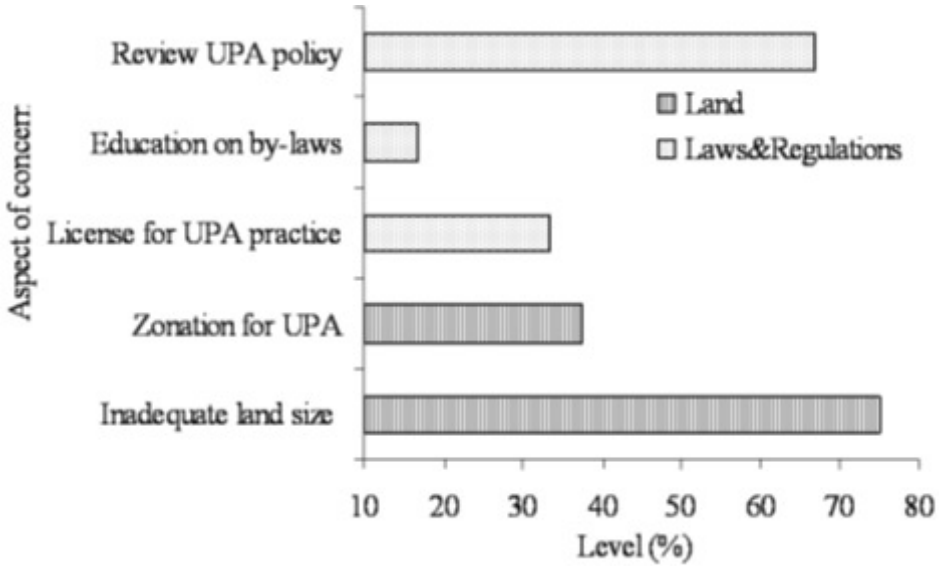

Figure 1. Main issues of concern to urban farmers.

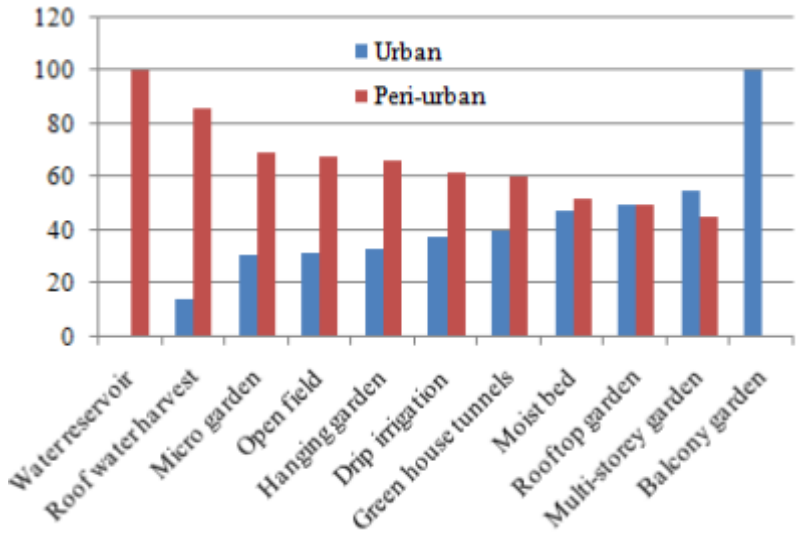

Figure 2. Main issues of concern to urban farmers.

wildlife and lack of adequate capital (Fig. 1). About ten different production systems were classified out of which multistorey and moist gardening were the most equally distributed in urban and peri-urban districts at the rate of about 45% to 50%. Greenhouse usage was more prevalent in peri-urban districts than the urban districts as was open field production (Fig. 2). Balcony gardens were most popular in urban districts and with farmers with multiple enterprises. More than 65% of respondents identified the status of urban and peri-urban agricultural policy as their key issue of concern thus reiterating the need of developing a policy that recognizes and regulates UPA practices in Nairobi city.

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