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The Structure and Function of Urban and Peri-Urban Gardens in Khartoum, The Republic of the Sudan

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Abstract

Little is known of its agricultural potential and level of ecological sustainability of urban and peri-urban agriculture (UPA) along the River Nile at Khartoum, the capital city of the Republic of the Sudan. This land use system leads to intensive vegetation in an otherwise arid city landscape and contributes to urban food security. Understanding the role of UPA has increasing importance in Sub-Saharan Africa where it is predicted that more than 50 % of the population will live in urban areas by 2020, with urban population growing from 294 million in 2000 to 724 million in 2030.

The study comprised 120 gardens, covering 160 ha at 3 locations. Tuti Island, where production of lime (*Citrus aurantiifolia* (L.) Swingle) was widespread, had the lowest crop species diversity with a mean species richness of 1.7 and a Shannon index of 0.4. Shambat, where leafy vegetables were common, had higher crop diversity levels with a mean species richness of 4.4 and Shannon index of 1.2. Peri-urban El Halfaya, which was the only location where spices and condiments were produced, had a species richness of 3.7 and a Shannon index of 1.0. The survey identified 84 species from 35 plant families, of which 47 were utilised as crops predominantly for commercial production of fruits, vegetables, spices and condiments, grains, and fodder crops. Hierarchical cluster analysis revealed 4 garden groups that were differentiated according to the cropping focus: field crops, orchards, micro-orchards, and diverse gardens.

Despite the fact that 46 % of garden households rely on off-farm income, that gardens provide only 12 % of household food, and that low market prices and high costs were cited as major problems by respondents in the study, the sustainable development of the gardening system has the potential to promote the future viability for UPA in Khartoum in the face of ever increasing pressure on land for multiple purposes other than agriculture.

Keywords: Agroforestry, biodiversity, food security, homegardens, Sudan, sustainable agriculture, UPA, urban agriculture, peri-urban agriculture