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Plant Species Richness and Diversity in Urban Uganda: An Inventory of Kampala’s Homegardens

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Abstract

Urban homegardens can be considered as multifunctional biodiversity hotspots in an urbanising world and provide urban populations, including those in Kampala, Uganda, with valuable produce for home consumption and sale. However, biodiversity of urban gardens is rarely documented and their true potential for livelihoods is still poorly understood, while the whole urban homegarden system might be under threat. The aim of this study was to determine plant species composition and diversity in inner-, outer- and peri-urban gardens in Kampala, Uganda. We performed a full floristic inventory of 74 homegardens, which were visited between February and April 2015. For each plant species, apart from weeds, the scientific name, abundances and main uses were recorded. Diversity indices and summed dominance ratios (SDRs) were calculated and data analysed by applying ANOVAs, correlation and cluster analyses. The total number of plant species inventoried was 248, of which 70 plant species were food plants, 101 medicinal, 53 technical and 24 ornamental plant species. Median species richness was 25.5 (range 11 to 65) with no difference among the three studied zones. However, garden size was positively correlated with plant species richness ($r=0.507$; $p < 0.001$). Mean Shannon Wiener (H') index per garden was 2.37, with significantly lower diversity in the inner than the outer urban areas (2.65 versus 2.16; $p = 0.011$). No differences between the different urban areas were found for Evenness (J') (mean $J'=0.78$). Median plant individual density per 1000 m² garden area was 390 (range 36–3879), however, no significant differences were found between the three urban areas. The summed dominance ratio (SDR) of plant species indicated that food plants were slightly less dominant in peri-urban areas than in inner and outer urban areas (62% versus 71%). This difference was mainly due to a lower proportion of vegetable plant species in the peri-urban areas (18% versus 32%). Further data analyses, including clustering, are still on-going and final results will be presented at the conference. Outcomes of our study may be used to identify potentials for improving food production in homegardens by making better use of the available plant diversity.

Keywords: Floristic diversity, Shannon index, species composition, urban biodiversity