Agrodiversity in Selected Urban Farming Sites in Havana (Cuba)

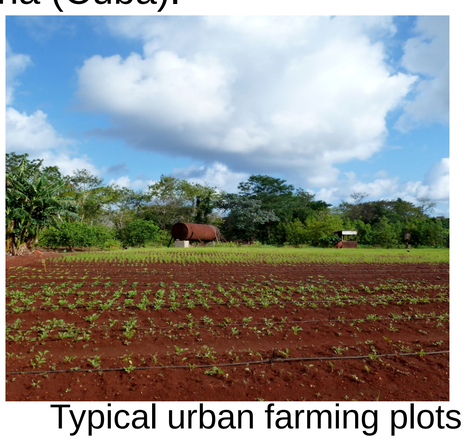
Christiane Ringler, Friedrich Leitgeb, Christian R. Vogl
Contact: christian.vogl@boku.ac.at

University of Natural Resources and Life Sciences, Vienna
Department of Sustainable Agricultural Systems
Division of Organic Farming
WG Knowledge Systems and Innovation

Introduction

By 2030 most of the world population will be living in cities and the sustainable supply of this growing population with fresh fruits and vegetables will be of major concern. Urban agriculture can contribute to ensure regional food security, reducing transportation and ameliorate the micro-climate in urban areas. The conservation and management of agro(bio)diversity in urban farming sites are major elements for ensuring sustainable farming systems, food diversity and food security (FAO, 1999 & 2009, WHO 2003, WRIGHT 2009, ALTIERI 1999).

In this poster our aim is describing selected parameters on one element of agrodiversity (as defined by BROOKFIELD 2001), which is agro**bio**diversity, in urban gardening/farming plots in Havana (Cuba).



Typical urban farming plots (Havanna) from cluster 1

Results

130 different plant species (used mostly as leafy vegetables, tubers, fruits and spices) with 65 plant families with a maximum of 70 species at one farming site were found in the studied 15 plots (together with 10 livestock species used e.g. as food, source, for manure and drought).

Two clusters of plots were identified with plot N14 for the lowest plant species richness and plot J10 for the highest plant species richness.

- **Cluster 1**: high abundance (evenness) of each single species, but lower species richness (Shannon-Weaver)
- **Cluster 2**: lower abundance of each single species (evenness) but overall more different species (Shannon-Weaver)

The farms in Cluster 1 were predominantly producing for the government and social consumption whereas the farms in Cluster 2 (except for one sample) all sold the produce directly on-farm as well as social consumption.

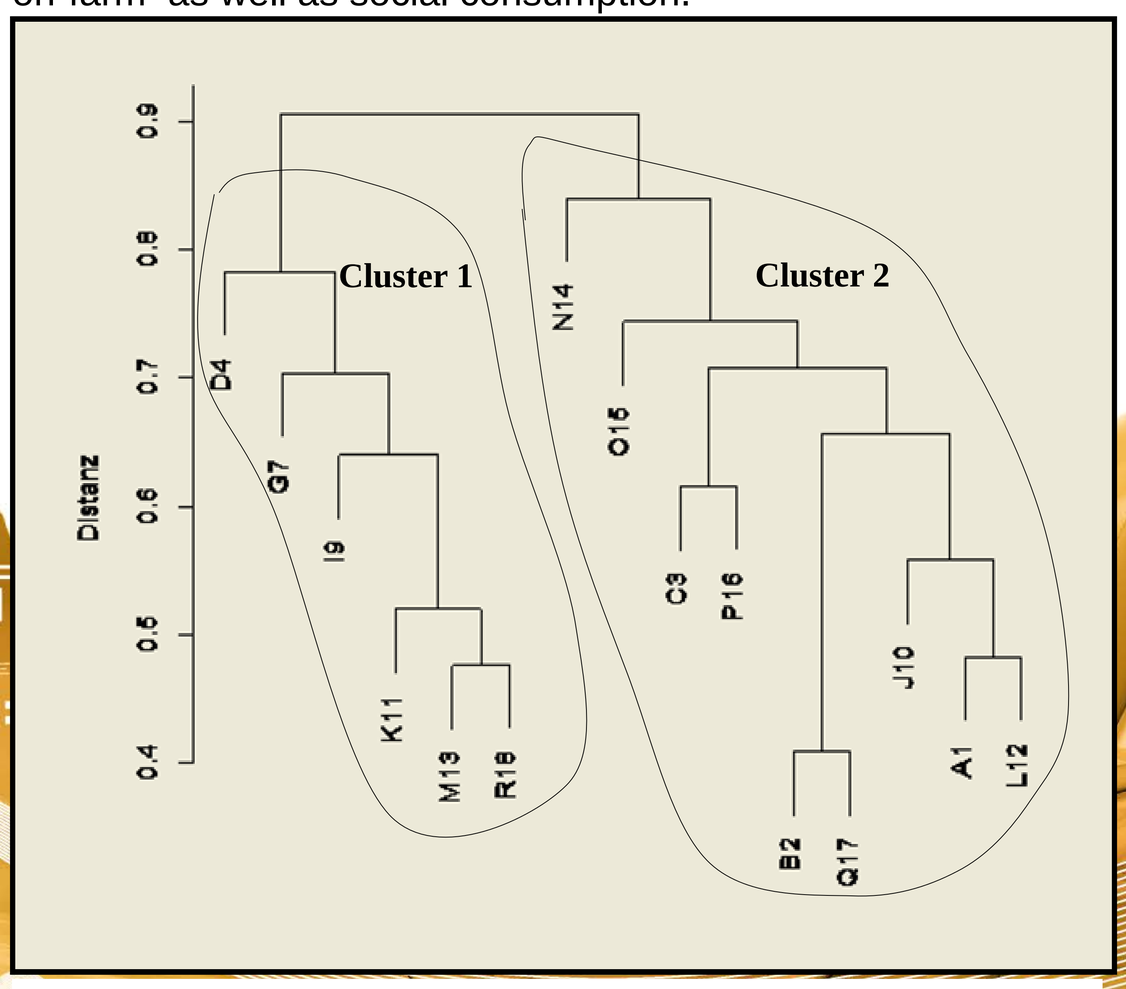


Figure 1: : Cluster analysis of 15 urban farming plots in Havana based upon abundance of each single species (evenness) and occurrence (Shannon-Weaver Index).

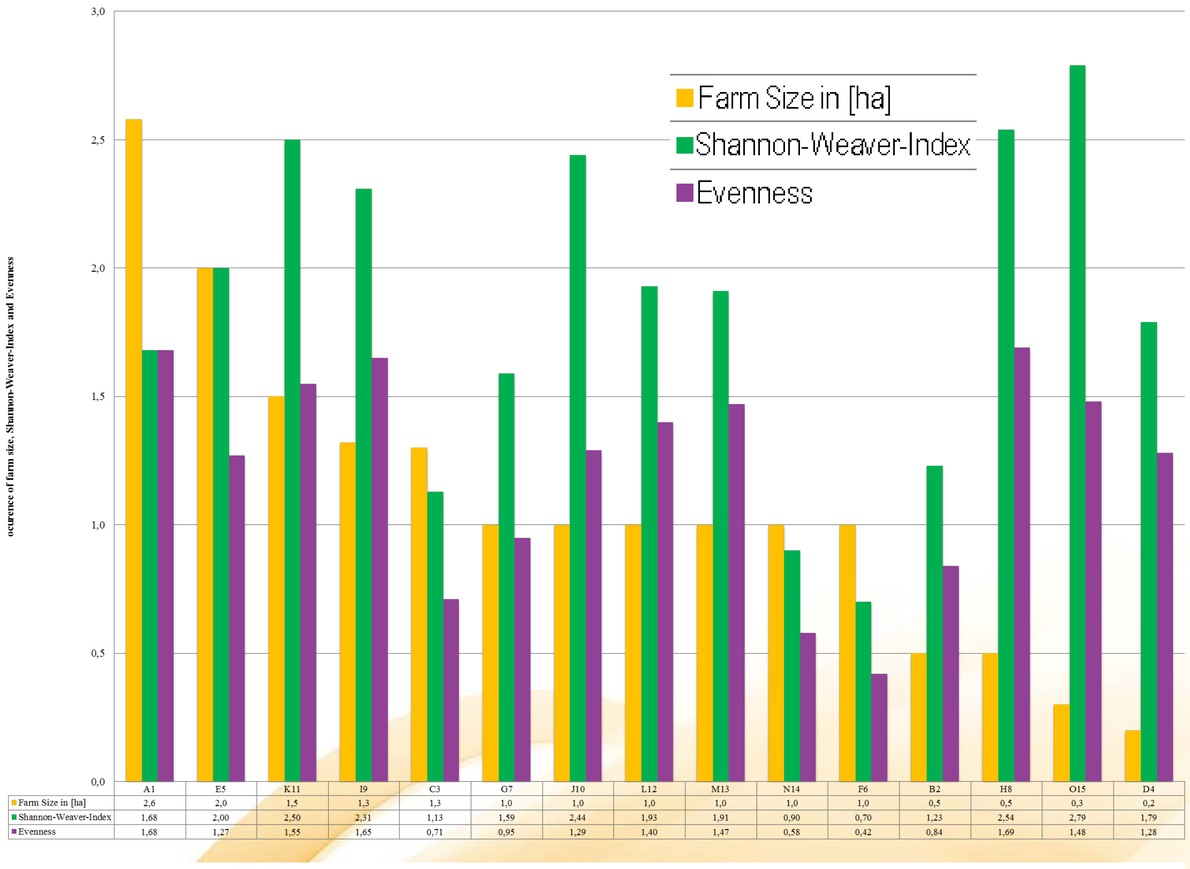
Methods

In 2013 fifteen urban gardens/farms in Havana were investigated using a purposive judgement sample. The methods used were qualitative semi-structured interviews on crops grown, livestock, horticultural/farming practices and organization of the plots and it's management (agrodiversity).

Here only selected data on **plant** agro**bio**diversity is shown. Plant species diversity was measured using Shannon-Weaver-Index, Evenness and Jaccard similarity coefficient (Pilou, 1969 in Kent and Coker, 2000, Gliessmann 2001 and Magurran, 1988).

Fotos: Christiane Ringler

Typical urban farming plots (Havanna) from cluster 2



	A1	E5	K11	I9	C3	G7	J10	L12	M13	N14	F6	B2	H8	O15	D4
Farm Size in [ha]	2,6	2,0	1,5	1,3	1,3	1,0	1,0	1,0	1,0	1,0	1,0	0,5	0,5	0,3	0,2
Shannon-Weaver-Index	1,68	2,00	2,50	2,31	1,13	1,59	2,44	1,93	1,91	0,90	0,70	1,23	2,54	2,79	1,79
Evenness	1,68	1,27	1,55	1,65	0,71	0,95	1,29	1,40	1,47	0,58	0,42	0,84	1,69	1,48	1,28

Figure 2: Farm size (ha), evenness and occurrence (Shannon-Weaver Index) of 15 urban farming plots in Havana.

Conclusion

Urban farms in Havanna are by no mean homegenous. Small urban farms/gardens might have higher species richness and evenness compared to larger farms/gardens with lower species richness and evenness. Thus high **plant agrobiodiversity** might even be seen on relatively small plots. The plant and tuber crop species most frequently found in the urban farming sites were strongly promoted by the GNAU (National Urban Agriculture Group) and farmers associate high species richness as an indicator for agrobiodiversity. The farm with the lowest species richness had at least 18 different species. The destination of the production might have an impact on species richness, as the farms from Cluster 2 mostly distribute their harvest through on-farm-sale, in contrast to sales to the government (Cluster 1).

References

Please see the references and full details in: RINGLER Christiane (2014): Agrodiversity in selected urban farming sites in Havana, Cuba. Master thesis. University of Natural Resources and Life Sciences Vienna. Available with the corresponding author C. R. Vogl..