On the Contribution of Planting and Use of Underutilised Local Food Tree Resources for Food Security and Biodiversity Conservation in Uganda

Bendicto Kabiito[1], Bethany Melville[3], Moritz Prüm[3], Jens Gebauer[2], Rolf Becker[3], Dietrich Darr[2]

[1]Uganda Martyrs University, School of Arts and Social Sciences, Uganda. [2]Rhine-Waal University of Applied Sciences, Fac. of Life Sciences, Germany.
[3]Rhine-Waal University of Applied Sciences, Fac. of Communication and Environment, Germany

INTRODUCTION/BACKGROUND

- Forest-based food sources support livelihoods of over 1.6 billion people globally [1].
- Deforestation threatens 21% of the global plant species with extinction and reduction in tree-based food resources [2].
- Out of 30,000 edible plant species, only 15 plants (and 8 animal species) provide 90% of human food [3].
- Uganda's natural forest cover has reduced from 12.1 million hectares in 1890 to 2.9 million hectare in 2012, with effect of indigenous food tree resources [4].
- Loss of these tree resources can aggravate malnutrition, food insecurity, biodiversity loss and vulnerability of rural communities to hidden hunger and some climate change impacts [5].

OBJECTIVE

- To ascertain the current role of local food tree species in local food security and biodiversity conservation.

METHODOLODY

- Use of survey questionnaire method (n=302) in two districts (Kalangala, Masaka).
- Qualitative key informant interviews for triangulation.
- Descriptive statistics by SPSS.

Figure 1. Fruits and Habitus of four Underutilised Local Food Tree Resources in Uganda

All pictures taken by the first author.

RESULTS

Table 1. Socio-economic description of study area

Variable	Mean	St. dev.
Male household (HH) heads	66%	
Age oh HH head (years)	47.1	14.56
HH who migrated to area	99.7%	
Access to off-farm income	57%	
Off-farm income p.a. (UGX)	163,179.2	210,897.9
HH size (persons)	5.82	3.09
Farm size (acres)	3.54	3.50
Main agricultural crops	Coffee, bananas, beans, maize, pineapple, cassava	
Number of crops on farm	1.76	0.71
Type of farming		
subsistence	32.7%	
Commercial	1.7%	
mixed	65.6%	

Table 2. Utilization of tree species*

Purpose	*C. schweinfurthii*	*V. acituloba*	*P. microcarpa*	*S. cumini*
Food	293	297	280	296
Beverage	256	92	134	122
Fodder	283	124	72	267
Fuel	275	255	276	24
For sale	280	147	285	280
Employment	214	100	157	165
Medical uses	243	148	112	187
Food for wildlife	287	277	131	275
Habitat	135	110	133	104
Wind breaking	274	241	269	174
Mulching	219	133	178	115
Soil protection	237	170	89	145
Water conservation	137	131	208	258
Rituals	79	7	21	22
Spiritual functions	77	20	28	21
Shade	289	243	263	212
Timber	190	38	224	10
Construction	111	34	120	8

*Shaded cells refer to uses reported by >75% of sample population

Table 3. Planting of tree species by respondents

Tree species	Number of respondents (%), n=302	Trees per farm (Stdev)
Canarium schweinfurthii	30 (9.9)	1.3 (0.60)
Vangueria acituloba	98 (32.5)	1.75 (1.76)
Pseudospondias microcarpa	16 (5.3)	1.6 (0.81)
Syzygium cumini	78 (25.8)	1.97 (1.65)
Mangifera indica	301 (99.7)	6.0 (5.90)
Artocarpus heterophyllus	290 (96.0)	3.9 (1.91)
Carica papaya	281 (93.0)	4.0 (6.36)
Elaeis guineensis	15 (5.0)	191.1 (300.02)
Eucalyptus spec.	73 (24.2)	1020.1 (2010.8)
Pinus spec.	19 (6.3)	180.2 (472.1)

CONCLUSION

The food tree species studied contribute to human nutrition and biodiversity conservation. *C. schweinfurthii* is the most important among the species studied for both purposes. However, despite their importance, these tree species are rarely planted by villagers as they give preference to species with higher commercial potential. Tree products from underutilized species are mainly gathered from naturally occurring trees, the use of which is currently not regulated. This can potentially lead to negative environmental outcomes, in particular during times of intensive use of these species.

References:
[1] FAO, (2013), The contribution of Forests to Sustainable Diet, Rome: FAO
[2] RBG Kew (2016), The State of the World's Plants Report – 2016, Royal Botanic Gardens, Kew
[3] FAO, (2016), Forestry for a low-carbon future Integrating forests and wood products in climate change strategies, Rome: Food and Agriculture Organization of The United Nations.
[4] Kaboggoza, J (2011), Forest Plantations and Woodlots in Uganda, African Forest Forum Working Paper Series, Vol.1 (1), Nairobi: African Forest Forum
[5] Vira B, Wildburger, C and Mansourian, S (2015), Forests and Food Addressing Hunger and Nutrition Across Sustainable Landscapes, Cambridge: Open book Publishers.

Contact: Bendicto Kabiito, School of Arts and Social Sciences, Uganda Martyrs University. Email: bkabiito@umu.ac.ug

Acknowledgements: The study was funded by the Alexander von Humboldt foundation, whose support we gratefully acknowledge.

Poster presented at the Tropentag conference, 17-19 September 2018, Ghent University, Belgium.