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RESEARCH ARTICLE

Wild and semi-wild food plants in Bunyoro-Kitara Kingdom, Uganda: cultural significance, local perceptions and social implications of their consumption

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Abstract: This paper presents the cultural significances, local perceptions and social implications of consumption of wild and semi-wild food plants (WSWFPs) in the Bunyoro-Kitara Kingdom. Data was collected using household questionnaire survey and focus group discussions. It was apparent that the bulk of WSWFPs had moderate (CFSI 20–99) to very high (CFSI ≥ 300) cultural food significance indices. The most outstanding being *Bidens pilosa* (410.1), *Capsicum frutescens* (377.0) and *Amaranthus spinosus* (366.0). Most people perceived WSWFPs as medicinal, nutritious, sources of income; emergency and supplementary foods. Other people, however, perceived some WSWFPs as weedy and problematic in the gardens; toxic and/or fatal if adequate care is not taken during their preparation before consumption. Most people noted that consumption of WSWFPs is often considered as a source of shame and a sign of poverty especially by the elites. Some alleged their consumption is a sign of uncivilized and backwardness associated with loss of respect and dignity in the society. Others regarded WSWFPs as food for the lazy, elderly or handicapped persons. Investigation of the food-medicinal properties of documented WSWFPs that had high food-medicinal role indices (FMRI) is needed. In addition, those plants that had high taste score appreciation indices (TSAI) should be investigated for their nutritional attributes. There is a need for investigation of anti-nutrient factors or toxic compounds that could be present in some of the documented WSWFPs. So far in Uganda, little attempt has been made in this direction. Therefore, attempts to research in this aspect of WSWFPs would be quite rewarding. There is also a need for massive awareness campaigns about the nutritional and or food-medicinal properties of WSWFPs as a measure to reduce the negative perception towards their consumption.

Keywords: Semi-cultivated food plants; semi-wild food plants; wild food plants; Bunyoro; Uganda.

Introduction

Wild and semi-wild food plants (WSWFPs) form a significant portion of the total food basket for households from agricultural, hunter, gatherer and forager systems. However, the focus on the contribution of agriculture to total food security has resulted in the routine undervaluation of wild food species. The continued contribution of wild species to food and nutritional security is threatened by some of the modern processes that seek to increase agricultural production and enhance economic development (Agea 2010). WSWFPs provide more than just food and income. In communities with a tradition of wild food use, it is part of a living link with the land, a keystone of culture (Pretty 2007; Pilgrim and Pretty 2010). The decline of traditional ways of life and decreased wild food use are interlinked.

Research assessing the differential cultural significance of plant species to human cultures has increased over the last decade, and some studies have constructed quantitative indices to analyze the relative cultural importance of plant species. For instance, Phillips and Gentry (1993) developed a Use Value Index, defined as the proportion of uses of plant species within a sample of interviewed people in Tambopata,

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Peru, to analyze relative differential meaning of plant resources among them. Other indices have considered aspects such as knowledge of utilitarian properties, use frequency, and local perception of plant resource abundance. In a pioneering work, Turner (1988) developed the Index of Cultural Significance based on plant species quality (the contribution of a taxon to people's survival) and the intensity and exclusivity of use, to analyze lexical retention of plants names in two Interior Salish groups of British Columbia. Stoffle et al. (1990) developed the Ethnic Index of Cultural Significance, which included the notion of contemporary use of plants, and the plant parts used, as a way to define priorities for biodiversity conservation in the Yucca Mountain area, Nevada.

Pieroni (2001) proposed the Cultural Food Significance Index, which considered taste appreciation and perception on plant species availability as indicators of the importance of edible plants used in Northwestern Tuscany, Italy. More recently, Reyes-García et al. (2006) developed a method to value plant species based on their cultural, practical, and economic characteristics. The authors integrated a total value index considering frequency of use, economic value, and observations of households' patterns of plant species use. Quantitative studies of the cultural significance of plant species have been considered useful tools for ethnobotanical research oriented to understanding the reasons why humans interact with plants in different ways (González-Insuasti 2006). This paper therefore, presents the cultural significance, local perceptions and social implications of consumption of WSWFPs in the Bunyoro-Kitara Kingdom.

Methodology

Study area

The study was conducted in Mutunda and Kiryandongo sub-counties of Kibanda County in Bunyoro-Kitara Kingdom (Figure 1). The Kingdom is located in the western region of Uganda. It lies between 0°36' and 2°20' N, and 30°30' and 32°23' E (UDIH, 2005). The Kingdom covers a total area of 19,621.8 Km^2 (8.12% of total area of Uganda).

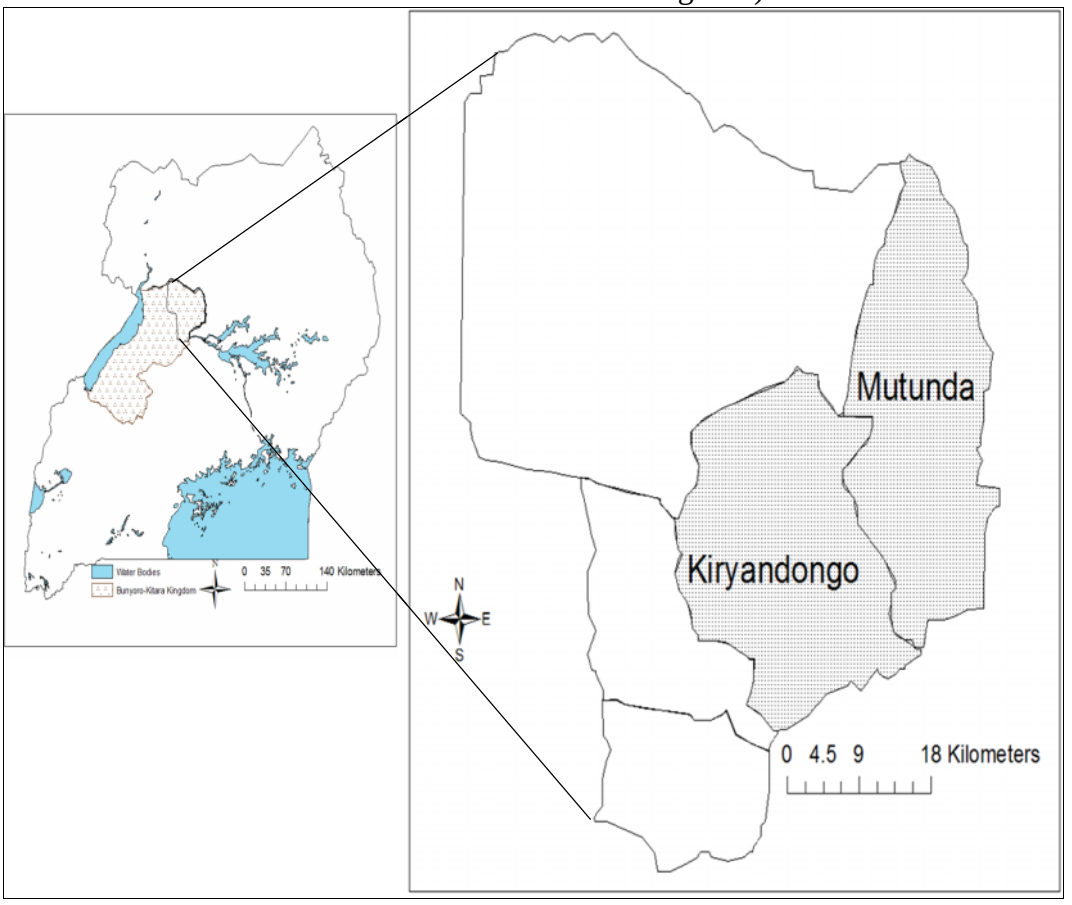

Figure 1: Location of Bunyoro-Kitara Kingdom and the study sites.

Bunyoro-Kitara Kingdom consists of districts of Hoima, Masindi and Kibale. The three districts have a common denominator - poverty, which is threatening to become a trademark of sorts. The Kingdom was created when the ancient Empire of Kitara broke apart during the 16th Century (Mwambutsya 1991). The Kingdom is home mainly to the Banyoro ethnic group (Nzita and Mbaga 1998). The native language is Runyoro-Rutooro, a bantu language. Runyoro-Rutooro is also spoken by the people of Toro Kingdom, whose cultural traditions are similar to those of the Banyoro. Inspite of Western cultural imperialism, the Banyoro have maintained their rich cultural heritage. While many Western cultural elements have been assimilated, many Banyoro proudly uphold the ancient traditions of their ancestors (Nzita and Mbaga 1998).

Data collection

Data were collected using a combination of methods namely: semi-structured questionnaires, focus group discussions, and key informant interviews. A total of 385 households from the two sub-counties (Kiryandongo and Mutunda) were chosen for household survey following the method described by Krejcie and Morgan (1970). Fifty-five (55) households each from the three (3) parishes (Kakwokwo, Diima and Nyamahasa) of Mutunda sub-county and from four (4) parishes (Kitwara, Kyankende, Kichwabugingo and Kikube) of Kiryandongo sub-county were then randomly selected. According to Krejcie and Morgan (1970), if one wished to know a representative sample size of a population of 9,000 people, then one looks in the table at level N = 9,000 (Appendix 1a). The sample size in this example is 368. The table, which is applicable to any population of a defined (finite) size, is based on a formula:

$$Sample\ size = \frac{X^2 NP(1-P)}{C^2(N-1)+X^2P(1-P)}).$$

Where, X^2 is a constant value of 3.841 (the square of the Z value of 1.96 for 95% confidence level); N represents the population size; P is the population parameter of 0.5; C is a 95% confidence interval (0.05) - a probability that the samples represent the population. No calculations are required to use the Table.

Using this method, 364 households were chosen for household survey because the documents gathered from sub-counties and county headquarter indicated that Kiryadongo and Mutunda had a total household number of 6788. However, 21 extra households were added to make a total of 385 samples for household survey. Krejcie and Morgan (1970) state that, using this calculation, as the population increases the sample size increases at a diminishing rate (plateau) and remains, eventually constant at slightly more than 380 cases. There is little to be gained to warrant the expense and energy to sample beyond about 380 cases. Alreck and Settle (1995) provide similar evidence.

The selected households were administered with semi-structured questionnaire to assess their perceptions about the wild food plants and social implications of their consumption. Respondents were also asked to name the wild food plants they gather and parts consumed. This information together with perceived availability, the frequency of species use, the taste appreciation and the medicinal purpose attributed to its ingestion were used to evaluate the cultural significance of individual WSWFPs consumed in the Kingdom. An approach similar to that followed by Padoch (1988) and Hedge et al. (1996) was adopted during interviews about WSWFPs gathered.

Data analysis

Cultural food significance indices (CFSI) (Pieroni, 2001) were calculated in order to evaluate the cultural significance of WSWFPs commonly consumed by the local people. The index is calculated as: CFSI = QI x AI x FUI x PUI x MFFI x TSAI x FMRI x 10^{-2}. The formula takes in account seven indices which express the; frequency of quotation (QI), availability (AI), frequency of Utilization (FUI), plant parts use (PUI), multifunctional food use (MFFI), taste score appreciation (TSAI), and food-medicinal role (FMRI). The quotation index

(QI) (Appendix 1b) expresses the number of all the positive responses given by the informants about a particular plant while listing the plants that they gather and consume.

The availability index (AI) expresses the availability of the species corrected by the factor that considers if the use of the plant is ubiquitous or localized within the study area (Table 1). In the last case AI is diminished by half or a whole unit. In this way, AI does not represent a 'determined' availability index as in the work of Leposky et al. (1985), but rather a 'perceived' availability index (Pieroni 2001). In cultural significance evaluation studies, ecological factors such as relative abundance in the natural milieu cannot be directly considered as criteria because they are not culturally dependent (Pieroni 2001).

On the contrary, perception of a given species, which only indirectly expresses its availability in the natural context, also represents a factor, which influences the cultural meanings of the species within a given group and a natural context. Frequency of use index (FUI) represents the frequency of utilization of each plant as stated by informants (Table 1). Food-medicinal role index (FMRI) reflects the perceived properties as food-medicine for the wild food plants commonly consumed by the local people. Supposed ritual or magical 'health' as related to the ingestion of some plants (Pieroni 2001) is considered in the evaluation of these values. Higher values are attributed in cases of well-defined medicinal properties ascribed to the ingested plants. For more general assessment of the plant as 'healthy', without any specifications, minor FMRI values are assigned (Table 2). Taste score appreciation index (TSAI) represents the score by which local people express the taste appreciation for each plant (Table 2). Scores are based on a possible range of values between 4 and 10 (4: lowest, terrible taste; 10: highest, best taste) (Pieroni 2001). Kuhnlein et al. (1982) used similar scale (1: very poor; 2: poor; 3: fair; 4: good; 5: very good) on taste to score the acceptability of roots used by the native people on the coasts of British Columbia.

Plant parts use index (PUI) expresses the multiple uses of diverse parts of the same plant. It takes into account whether multiple morphological plant parts are collected and eaten instead of single parts (Table 3). The contemporary use of the multiple plant parts for different food purpose is evaluated higher than the use of young tissues of the whole plant (Pieroni 2001). Multifunctional food use index (MFFI) considers the possible food uses of each plant. Values are assigned to traditional food preparations, excluding the new 'imported' or 'creative' utilisation. In species which are boiled and then further processed (stewed, stuffing for diverse preparations), the value attributed to the boiling process is increased by a half unit. If the plant is generally used in a mixture of more than three species, the index value is diminished by a half a unit (Table 3). Perceptions of respondents towards WSWFPs and the social implications of the consumption of WSWFPs were also analysed descriptively. Mean frequencies of the perceived responses and social implications were computed.

Table 1: The availability index (AI) and the utilization frequency index (FUI) categories.

Availability	**Index value**	**Utilisation frequency**	**Index value**
Very common	3.0	More than once/week	5.0
Common	2.0	Once/week	4.0
Rare	1.0	Once/month	3.0
Localisation of use	Index	More than once/year but less than twelve times	2.0
Ubiquitary	=	Once/year	1.0
Localised	-0.5		
Very localised	-1.0		

Table 2: Taste score appreciation index (TSAI) and Food-medicinal role index (FMRI) categories.

Taste appreciation	**Index value**	**Role as food-medicine**	**Index value**
Best/excellent	10	Very high ('that food is a medicine')	5.0
Very good	9	High ('that food is quite a medicine', with clear specification of the treated affection)	4.0
Good	7.5	Middle-high ('that food is very healthy')	3.0
Fair	6.5	Middle-low ('that food is healthy', no specification of a particular therapeutic action)	2.0
Poor	5.5	Not recognised	1.0
Terrible/bad	4		

Table 3: Part use index (PUI) and Multi-functional food use index (MFFI) categories.

Part use for food	Index value	Usage	Index value
Bark	1.0	Raw, as snack	0.5
Roots or rootstocks	1.5	Raw, in salads	1.5
Roots, only young plant parts	1.0	Fried	1.0
Bulbs	1.5	Boiled	1.0
Stems	1.0	Boiled- then stewed, fried or pasted with groundnut/sesame	1.5
Leaves	1.5	Soups (mixtures)	0.75
Leaves stalks	1.0	Stewed	1.0
Young whorls of leaves	1.0	Roasted/steamed	1.0
Leaves with a few stems	2.0	Condiments/spices	1.0
Shoots	1.25	Juices/wine/beverages	1.0
Shoots, only young parts	0.75	Syrups	1.0
Buds	0.75	Potash	0.5
Flowers	0.75	Bread/porridge component	0.75
Receptacles	0.75	Relishes	1.0
Fruits	1.5	Paste	1.5
Seeds	1.0		
Whole aerial parts	3.0		

Results

Cultural significance of commonly consumed WSWFPs in Bunyoro-Kitara Kingdom

Cultural food significance index (CFSI) values of WSWFPs commonly consumed in the Kingdom are presented in Table 4. CFSI values varied between 410.1 and 0.6. Based on the CFSI values, the documented WSWFPs were c1assified into six (6) groups: species with very high significance (CFSI ≥ 300), with high significance (CFSI ranging from 100 to 299), moderate significance (CFSI ranging from 20 to 99), low significance (CFSI varying from 5 to 19), very low significance (CFSI from 1 to 4) and negligible significance (ICS< 1).

The group of WSWFPs with very high significance values (CFSI ≥ 300) consisted of *Bidens pilosa* (410.1), *Capsicum frutescens* (377.0) and *Amaranthus spinosus* (366.0). These three plants had generally high quotation indices (QI), availability indices (AI), multifunctional food use indices (MFFI) and food-medicinal role indices (FMRI). *Capsicum frutescens* and *Amaranthus spinosus* had also high frequency of utilization indices (FUI). WSWFPs with high cultural significance values comprised of *Cleome gynandra*, *Imperata cylindrica*, *Solanum lycopersicum*, *Amaranthus dubius*, *Cymbopogon citrates*, *Vernonia amygdalina*, *Cleome hirta* and *Ocimum gratissimum*. With exception of *Cleome gynandra* and *Cleome hirta*, these plants had also high QI. Similarly, with exception of *Imperata cylindrica* and *Vernonia amygdalina*, this group had very high taste score appreciation indices (TSAI). *Imperata cylindrica*, *Vernonia amygdalina* and *Cymbopogon citrates*, however, had very high FMRI.

The group with moderate cultural significance values consisted of the majority of WSWFPs reported in the study. Key among them included *Solanum macrocarpon*, *Hibiscus sabdariffa*, *Amaranthus graecizans*, *Amaranthus lividus*, *Asystasia gangetica*, *Oxygonum sinuatum*, *Physalis peruviana*, *Hibiscus acetosella*, *Phaseolus lunatus* and *Basella alba*. With exception of some few species such as *Asystasia gangetica*, *Lantana camara*, *Senna obtusifolia* and *Borassus aethiopum*, this group had generally low QI. The group with low cultural significance values included amongst others *Corchorus tridens*, *Carissa edulis*, *Phoenix reclinata*, *Hyptis spicigera*, *Crassocephalum crepidioides*, *Rhus pyroides* var. *pyroides*, *Solanum anguivi*, *Sonchus oleraceus* and *Acalypha bipartite*. With exception of *Carissa edulis*, *Rhus pyroides* var. *pyroides* and *Vitex doniana*, this group had generally low QI, PUI and MFFI. WSWFPs with very low cultural significance values had generally very low QI, AI, FUI, PUI (plant parts use indices) and MFFI, although most of them had a very high TSAI. A group with negligible cultural significance values consisted of two members namely: *Dioscorea minutiflora* and *Ficus sur*.

Table 4: Cultural significance of WSWFPs commonly consumed in Bunyoro-Kitara Kingdom.

WSWFPs	Botanical family	Local names	QI	AI	FUI	PUI	MFFI	TSAI	FMRI	CFSI
Bidens pilosa L.	Compositae	Obukurra	10	2.70	2.91	3.50	4.50	7.30	4.54	410.1
Capsicum frutescens L.	Solanaceae	Kamulari, Alyera	7	2.71	5.01	3.00	3.50	7.71	4.90	377.0
Amaranthus spinosus L.	Amaranthaceace	Doodo y'amahwa	10	2.40	4.39	2.75	4.50	8.69	3.23	366.0
Solanum nigrum L.	Solanaceae	Enswiga	6	2.26	4.61	3.75	3.50	8.94	3.95	289.7
Cleome gynandra L.	Capparaceae/	Eyobyo	3	2.47	4.52	6.25	3.50	8.64	3.59	227.3

	Cleomaceae									
Imperata cylindrica (L.) Raeuschel	Gramineae	Rusojo	12	2.90	2.40	3.50	2.00	7.29	5.00	213.1
Solanum lycopersicum L.	Solanaceae	Bunyanya bunyoro	9	2.19	4.77	1.50	5.00	9.34	3.21	211.4
Amaranthus dubius Mart. *ex* Thell.	Amaranthaceace	Doodo	5	2.73	4.62	2.75	4.50	9.13	2.47	176.0
Cymbopogon citrates (DC.) Stapf	Poaceae	Lemon grass	5	2.56	5.01	3.00	2.00	9.35	4.01	144.3
Vernonia amygdalina Del.	Compositae	Kibirizi	7	2.22	3.75	2.75	2.50	7.60	4.69	142.8
Cleome hirta (Klotzsch) Oliv.	Capparaceae/ Cleomaceae	Akayobyo akasajja	3	1.69	4.44	4.50	3.50	8.36	3.95	117.1
Ocimum gratissimum L.	Labiatae	Mujaja	8	2.21	4.66	1.50	2.00	9.59	4.56	108.1
Solanum macrocarpon L.	Solanaceae	Bugorra	5	1.62	4.30	3.00	3.50	8.20	2.90	87.0
Hibiscus sabdariffa L.	Malvaceae	Bamya, Ekikenke	2	2.12	4.52	3.75	3.50	9.19	3.42	79.1
Amaranthus graecizans L.	Amaranthaceace	Nyabutongo, Ocoboro	4	1.80	4.21	2.75	4.00	8.67	2.65	76.6
Amaranthus lividus L.	Amaranthaceace	Bwora, Mboog'ennene	5	1.77	3.79	2.75	3.50	7.75	2.97	74.3
Asystasia gangetica (L.) T.Anders.	Acanthaceae	Temba, Odipa ikong	10	1.60	3.37	3.75	1.50	8.03	2.86	69.7
Oxygonum sinuatum (Hochst. & Steud. *ex* Meisn.) Dammer	Polygonaceae	Kacumita bagenge, Cu-guru	4	2.16	4.27	2.75	2.50	8.17	3.25	67.3
Physalis peruviana L.	Solanaceae	Ntuutu	5	1.79	3.71	1.50	3.75	8.75	3.93	64.2
Hibiscus acetosella Welw. *ex* Hiern	Malvaceae	Makawang kulo, Gwanya	4	1.00	3.41	3.75	3.50	7.82	3.84	53.8
Phaseolus lunatus L.	Fabaceae	Amaijalero, Okuku	2	2.22	4.20	3.25	3.50	8.20	3.02	52.5
Basella alba L.	Baselllaceae	Enderema	4	1.61	3.91	1.50	4.00	8.48	3.50	44.8
Amaranthus hybridus subsp. *cruentus* (L.) Thell.	Amaranthaceace	Omujuiga	3	1.36	4.69	2.75	3.50	8.65	2.46	39.2
Lantana camara L.	Verbenaceae	Jerenga, Abelwinyo	10	2.92	4.87	1.50	0.50	8.28	4.38	38.7
Mondia whitei (Hook.f.) Skeels	Asclepiadaceae	Omurondwa	5	1.40	3.42	1.50	2.50	9.22	4.33	35.8
Sesamum calycinum Welw.	Pedaliaceae	Amacande ga kanya-munya	4	1.69	4.09	1.50	3.50	7.88	3.15	36.0
Borassus aethiopum Mart.	Palmae/Arecaceae	Ekituugu, Tugo	6	2.31	2.69	1.50	2.25	9.41	2.53	30.0
Senna obtusifolia (L.) Irwin & Barneby	Caesalpiniaceae	Oyado, Luge	7	2.00	3.40	1.50	1.50	7.76	3.53	29.3
Corchorus trilocularis L.	Tiliaceae	Otigo lum	4	2.21	4.68	1.50	2.00	7.87	2.95	28.8
Urtica massaica Mildbr.	Urticaceae	Orugenyi	4	1.75	4.30	1.50	2.50	8.64	2.78	27.1
Asystasia mysorensis (Roth) T.Anders.	Acanthaceae	Nyante, Acwewanggwe-no	3	1.66	4.27	3.00	1.50	7.59	3.33	24.2
Tamarindus indica L.	Caesalpiniaceae	Mukoge	3	2.30	3.69	1.50	2.25	8.47	3.26	23.7
Corchorus tridens L.	Tiliaceae	Eteke	2	2.22	4.61	1.50	2.00	9.13	3.24	18.2
Carissa edulis (Forssk.) Vahl	Apocynaceae	Omuyonza, Acuga	7	1.61	2.55	1.50	1.50	9.28	2.76	16.6
Phoenix reclinata Jacq.	Palmae	Omukindo	3	2.10	3.25	2.50	1.50	8.54	2.53	16.6
Hyptis spicigera Lam.	Labiatae	Amola, Lamola	3	0.43	2.64	3.25	4.00	9.05	3.97	15.9
Crassocephalum crepidioides (Benth.) S.Moore	Compositae	Ekinami	5	1.75	2.93	1.50	1.50	7.46	3.66	15.7
Rhus pyroides var. *pyroides* Burch.	Anacardiaceae	Obukanjakanja, Awaca	6	1.80	2.79	1.50	1.50	8.08	2.82	15.4
Solanum anguivi Lam.	Solanaceae	Obuhuruhuru, Katukuma	1	1.80	4.60	1.50	3.50	8.07	4.40	15.4
Sonchus oleraceus L.	Compositae	Kizimyamucho, Apuruku	3	2.17	4.10	1.50	1.50	7.68	3.19	14.7
Acalypha bipartite Müll. Arg.	Euphorbiaceae	Egoza, Ayuu	3	1.44	3.96	2.75	1.50	8.27	2.33	13.6
Vitex doniana Sweet	Verbenaceae	Muhomozi, Owelo	15	1.39	3.47	1.50	0.50	8.56	2.81	13.1
Vigna unguiculata (L.) Walp.	Papilionaceae	Mugobiswa	2	1.99	3.64	2.75	1.50	7.14	2.60	11.1
Ipomoea eriocarpa R.Br.	Convolvulaceae	Acatolao, Podowia kuri	5	0.73	2.62	2.75	1.50	7.63	3.17	9.5
Crotalaria ochroleuca G.Don	Papilionaceae	Kumuro, Alaju	3	1.20	3.42	2.25	1.50	7.41	3.03	9.3
Ampelocissus africana (Lour.) Merr.	Vitaceae	Anunu, Olok	2	1.15	2.57	3.00	2.00	7.57	3.15	8.5
Aframomum alboviolaceum (Ridley) K.Schum	Euphorbiaceae	Amasaasi, Ocao	2	1.44	2.28	1.50	2.25	9.10	3.86	7.8
Sida alba L.	Malvaceae	Orucuhya	2	0.88	3.58	1.50	3.00	7.47	3.56	7.5
Garcinia buchananii Bak.	Guttiferae	Museka	2	1.31	3.03	2.50	1.50	7.91	3.13	7.4
Canarium schweinfurthii Engl.	Burseraceae	Empafu	2	1.71	2.89	2.50	1.00	8.52	2.68	5.6
Oxalis corniculata L.	Oxalidaceae	Kanyunywa mbuzi	3	2.24	4.46	1.50	0.50	7.17	2.80	4.5
Oxalis latifolia Kunth	Oxalidaceae	Kanyeebwa	3	2.50	3.59	1.50	0.50	7.78	2.76	4.3
Abrus precatorius L.	Papilionaceae	Akarunga	4	1.34	3.77	1.50	0.50	7.81	3.46	4.1
Aframomum angustifolium (Sonnerat) K.Schum.	Zingiberaceae	Amatehe, Kongo amor	1	1.58	2.33	1.50	2.25	9.06	3.43	3.9
Erucastrum arabicum Fisch. & C.A.Mey.	Cruciferae	Oburobwenaku	1	1.37	3.96	1.50	2.00	7.46	2.51	3.0
Rubus pinnatus Willd.	Rosceae	Amakerre	1	1.49	3.06	1.50	2.00	7.91	2.67	2.9
Annona senegalensis Pers.	Annonaceae	Mubengeya, Obwolo	4	1.51	2.14	1.50	0.50	9.20	3.17	2.8
Tristemma mauritianum J.F.Gmel.	Melastomatacease	Oburo bw'enkombe	2	1.05	3.55	2.75	0.50	7.24	3.13	2.3
Vangueria apiculata K.Schum.	Rubiaceae	Matungunda	4	1.09	2.27	1.50	0.50	9.52	2.83	2.0
Ximenia Americana L.	Olacaceae	Enseka, Olimo	2	1.32	2.99	1.50	0.50	9.02	2.88	1.5
Dioscorea minutiflora Engl.	Dioscoreaceae	Kaama/Ekihama	2	0.45	2.15	1.50	1.00	7.90	3.09	0.7
Ficus sur Forssk.	Moraceae	Kabalira, Oduru	1	1.32	3.03	1.50	0.50	8.03	2.68	0.6

AI: availability index, QI: quotation index, FUI: frequency of utilization index, MFFI: multifunctional food use index, PUI: plant parts use index, TSAI: taste score appreciation index, FMRI: food-medicinal role index.

Local perceptions and social implications of consumption of WSWFPs in Kingdom

Local perceptions about WSWFPs in Bunyoro-Kitara kingdom are presented in Figure 1. A majority (72.7 ± 4.3%) of the respondents perceived WSWFPs as medicinal in nature. Similarly, many (71.2 ± 2.3%) respondents said that WSWFPs are generally nutritious. Others perceived WSWFPs as emergency foods (60.7 ± 4.75%), income-generating (55.6 ± 3.7%) and supplementary food sources (33.5 ± 3.2%). About 17.9 ± 2.9% of the respondents said WSWFPs increase food choices available to households. Some (50.1 ± 6.1%) respondents, however, reported that most WSWFPs (e.g. *Bidens pilosa* and *Senna obtusifolia*) are weedy and problematic in the gardens.

About 11.4 ± 4.2% of the respondents said some WSWFPs (e.g wild yams and seeds of *Abrus precatorius*) are toxic and that they can be harmful if adequate care is not taken during their preparation before consumption. Asked about their opinion on whether WSWFPs consumption carries social implications or not, a majority (88 ± 3.4%) of the respondents said their consumption have negative social implications (Figure 2). For instance, most respondents reported that WSWFPs consumption is very often considered as a source of shame (75.5 ± 1.9%) and a sign of poverty (70.8 ± 4.3%) especially by the well-to-do households, educated people, and some of the local leaders.

About (52.8 ±2.1%) reported that consumption of WSWFPs is seen by others as a sign of uncivilized persons/households and backwardness. Loss of respect and dignity in the society was also reported to be associated with households or persons that rely much on WSWFPs to meet their food requirements. Other respondents said WSWFPs were regarded by some people as food for lazy ones, elderly or handicapped persons (Figure 3).

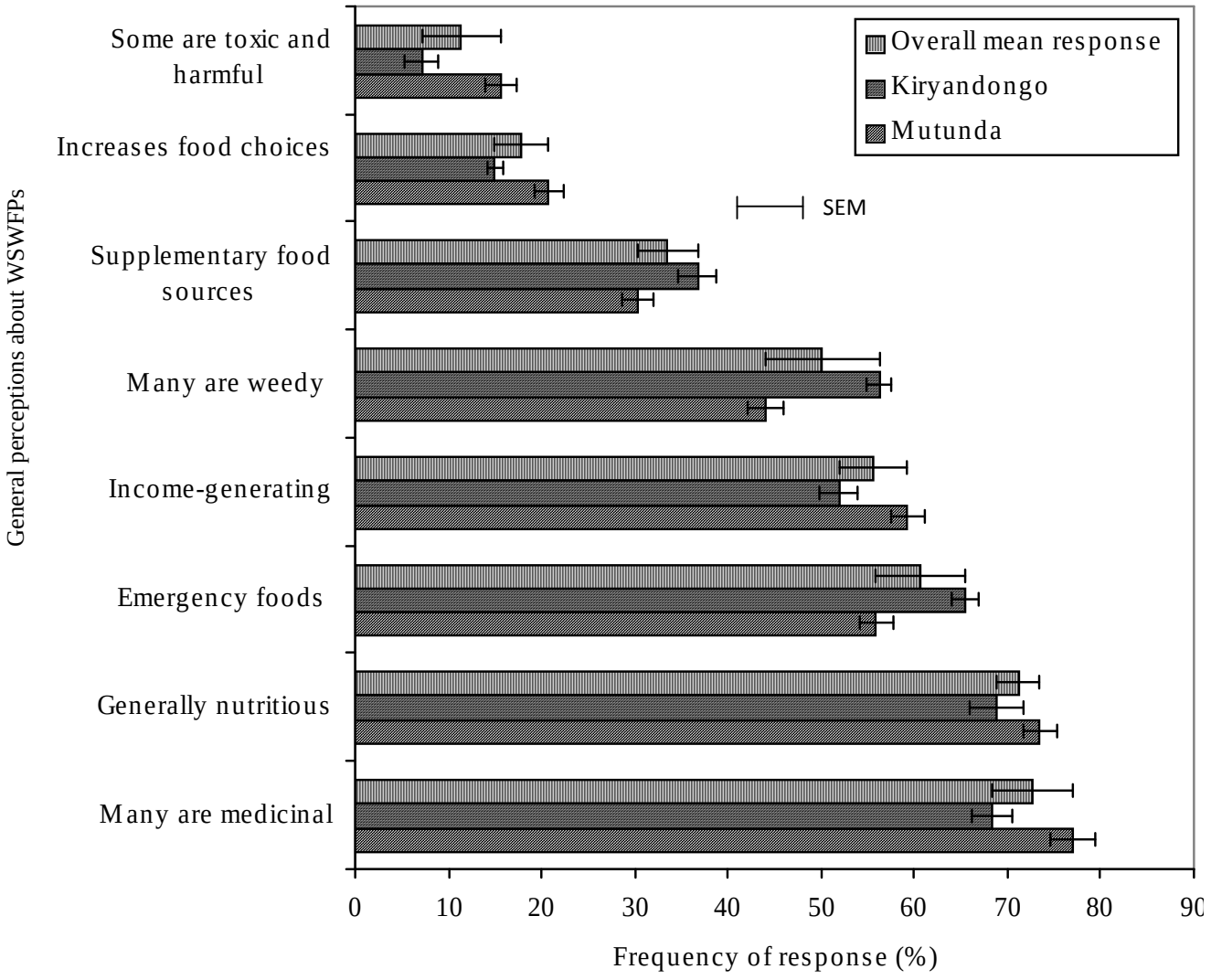

Figure 1: General perception about WSWFPs consumed in the study area.

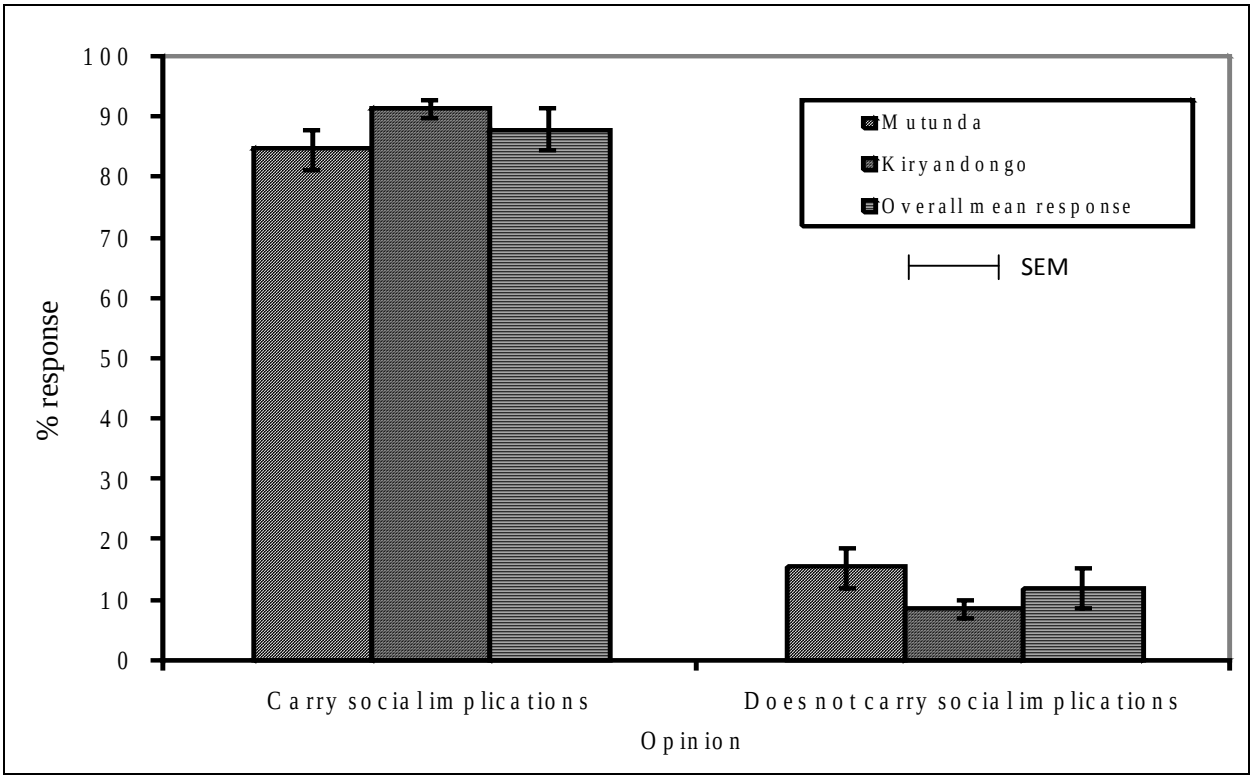

Figure 2: Opinion on whether consumption of WSWFPs carries social implications.

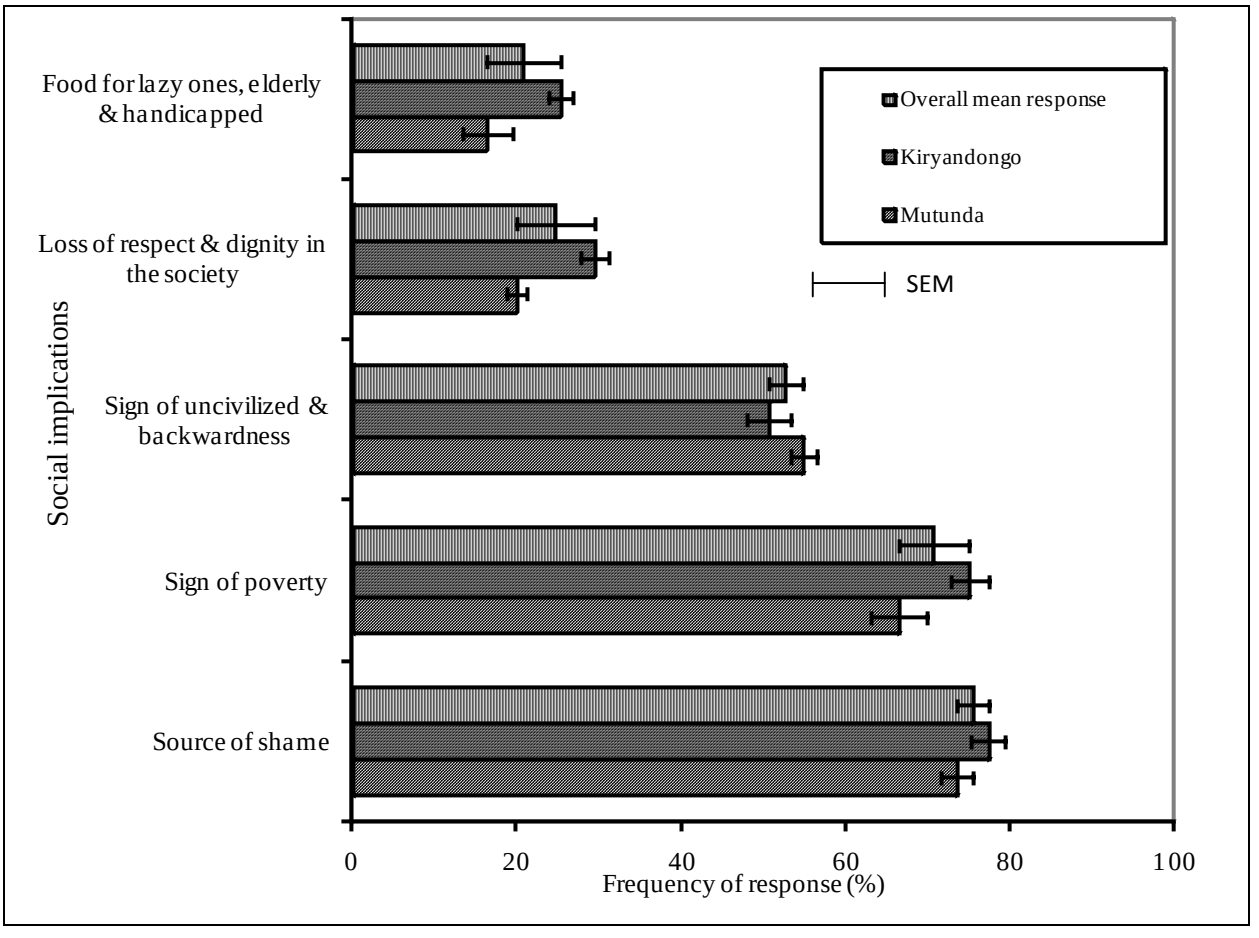

Figure 3: Social implications of the consumption of WSWFPs.

Discussion

Cultural significance of WSWFPs popularly consumed in Bunyoro-Kitara Kingdom

Cultural food significance indices (CFSI) help to show the cultural importance of WSWFPs in a given locality. The present study therefore, has been able to classify using CFSI, important WSWFPs gathered and consumed by local communities in Bunyoro-Kitara Kingdom. Simple qualitative ethnobotanical data, such as lists of plants consumed, may not generally be able to clarify the cultural role played by a given species within a particular area (Pieroni 2001). Moreover, bias or personal interpretations, sometimes even suggestions, may occur while conducting qualitative field studies. On the other hand, consensus use indices, which have been frequently and successfully applied in intercultural ethnobotanical studies on medicinal plants (Heinrich et al. 1998), do not permit in-depth investigation of the complex phenomenon of the consumption of edible plants (Pieroni 2001). At times, certain WSWFPs may present very low quotation, availability, the plant parts use, multifunctional food use, and frequency of use indices, but are nevertheless appreciated for their taste (as in the present study for example *Vangueria apiculata*, *Annona senegalensis*, *Aframomum alboviolaceum, Aframomum angustifolium*, *Ximenia americana*, *Canarium schweinfurthii* and *Hyptis spicigera*) or medicinal values (as in the cases of *Solanum anguivi, Hyptis spicigera*, *Mondia whitei* and *Abrus precatorius*). In these cases, the application of consensus use analysis would underestimate the value of these WSWFPs.

In the present study, consumption of most WSWFPs was found to be culturally important. However, with exception of few WSWFPs whose fruits were edible such as *Solanum lycopersicum* and *Capsicum frutescens*; and those whose rhizomes (roots) are chewed as in the case of *Imperata cylindrica*, very high to moderate CFSI values were generally associated with WSWFPs that are predominantly harvested and consumed as leafy vegetables. WSWFPs that are consumed predominantly as fruits, seeds and roots seem to play a subordinate cultural role. This finding agrees with Pieroni (2001) who reported higher CFSI values for 'wild greens' than the wild fruits in northwestern Tuscany region of Italy. According to Johns (1990), 'wild greens' or wild edible vegetables represent an important diet source of phytoceuticals that support the nutritional need to balance the traditional diet, which in Bunyoro- Kitara Kingdom, is rich in carbohydrates (maize, finger millet, cassava, rice, sorghum, yams, sweet potatoes and bananas) and proteins (beans, peas, and cowpeas), but relatively poor in minerals and vitamins.

The popularity of the WSWFPs (mainly consumed as leafy vegetables) with very high to moderate CFSI values and at the same time, the limited role played by WSWFPs with generally low CFSI values (mainly fruits), could also be explained by relative high quotation, availability, the plant parts use and multifunctional food use indices for the former. In addition, many of WSWFPs that are predominantly gathered and consumed as leafy vegetables were reported during the FGDs to taste bitter (e.g. *Vernonia amygdalina*) but their taste appreciation were also never very low. Pieroni (2001) opined that elderly people often tend to appreciate their bitter taste, and automatically attribute it to a medicinal role, even if its health role is not specific. There is therefore, need to popularize the management of WSWFPs with high cultural significance values or those that are highly appreciated for certain attributes such as taste, nutritional and medicinal importance among the local community in the study area.

Local perceptions and social implications of consumption of WSWFPs

The findings from the present study indicated that most people perceive WSWFPs as medicinal and nutritious. One woman said *"Wild food plants are very useful; some like 'Kibirizi' (Vernonia amygdalina) and 'Gwanya' (Hibiscus acetosella) are medicinal, and also nutritious and tasty if well prepared"*. This perception is supported by Green (1993) who reported that wild plants are good sources of minerals, fibre, vitamins and essential fatty acids, and enhance taste and colour of staple foods. Beyond their recognition as medicinal and nutritious, WSWFPs were perceived to have 'hid-

den' income-generating potentials, which in some households were reported as representing a significant source of income.

Some respondents also noted that WSWFPs often increase food choices available to households and indeed also complement food intake throughout the year. This assertion is clearly validated by many respondents who said their households consumed WSWFPs as main meals and side dishes, in addition to cases where they mixed WSWFPs with staple or other speciality dishes notably fish and beef. Gullick (1999) reported that wild foods enhance food texture and palatability. Addition of mucilaginous leaves of some WSWFPs such as *Corchorus trilocularis*, *Corchorus tridens* and *Crotalaria ochroleuca* to staple food gives the food a slimy texture, which is believed to aid ingestion of accompanying foods.

Some WSWFPs were perceived as emergency foods and supplementary food sources. In fact, it is a common understanding in the study locality that WSWFPs can play a crucial role in supplying essential nutrients, especially during times of acute and chronic food shortages as well as on routine diet supplementary basis. It is common for poor households to depend on WSWFPs between harvests, when harvested and stored stocks have been depleted, and before new crops are mature. Elsewhere, wild edible plants are reported as vital insurance against malnutrition or famine during times of seasonal food shortage and emergencies such as droughts, floods or wars (Irvine 1952; Campbell 1986; Falconer 1990 and Tardío et al. 2005). The current finding is therefore, not surprising because of the frequent and recurrent drought that have resulted into food crisis in the study area just like in other parts of Uganda.

Perceptions by some respondents that certain WSWFPs are weedy and problematic in the gardens cannot be contested. Many studies (e.g. Zmarlicki et al. 1984; Altieri et al. 1987; Grivetti 1987; Mergen 1987; Brandoa and Zurlo 1988; Sharland 1989) have reported that a range of wild plants that grow in agricultural fields as weeds also represent potential food. However, as noted by Scoones et al. (1992), the perception of whether these plants are weeds (potential competitors with the major crop), depends on the observer. To many agronomists anything apart from the major crop itself is regarded as a weed and yet many plants deemed weedy may have a variety of uses to local people.

The opinion that some WSWFPs are toxic, harmful, and that they could be fatal if adequate care is not taken in their preparation before consumption have also been reported elsewhere (e.g. Coursey 1967; Guil et al. 1997). Toxicity and harmfulness of some WSWFPs as perceived by the respondents are often due to the presence in these plants of anti-nutritional and toxic factors such oxalic acid, nitrate, erucic acid, phytic acid and alkaloids (Guil et al. 1997). For example wild yams whose tubers are liked by some respondents in the present study contain dioscorine, a toxic alkaloid (Webster et al. 1984; David and Michael 1985), which triggers the fatal paralysis of the nervous system when a fragment of the tuber weighing about 100 g is ingested without adequate procedural preparation (Coursey 1967). This confirms the claims of respondents who said that over consumption of wild yams often causes headache and stomachache.

Conclusion and recommendations

The bulk of WSWFPs had moderate (CFSI 20–99) to very high (CFSI ≥ 300) cultural food significance indices. The most outstanding among these are *Bidens pilosa* (410.1), *Capsicum frutescens* (377.0) and *Amaranthus spinosus* (366.0). These three plants had also generally high quotation indices (QI), availability indices (AI), multifunctional food use indices (MFFI) and food-medicinal role indices (FMRI). Most people perceived WSWFPs as medicinal, nutritious, sources of income; emergency and supplementary foods. Other people perceived some WSWFPs (e.g. *Bidens pilosa and Senna obtusifolia*) as weedy and problematic in the gardens. Other WSWFPs (e.g. wild yams and seeds of *Abrus precatorius*) are considered as toxic and/or fatal if adequate care is not taken in their preparation before consumption. Consumption of most WSWFPs carried negative social implications. Most people noted that consumption of WSWFPs is very often considered as a source of shame and a sign of poverty especially by the well to do households, edu-

cated people, and some of the local leaders. Some people also alleged that consumption of WSWFPs was a sign of uncivilized persons/households and backwardness. Loss of respect and dignity in the society was also reported to be associated with households or persons that rely much on WSWFPs to meet their food requirements. Other people regarded WSWFPs as food for lazy ones, elderly or handicapped persons.

Investigation of the food-medicinal properties of the documented WSWFPs (e.g. *Capsicum frutescens* and *Vernonia amygdalina*) that had high food-medicinal role indices (FMRI) is needed. In addition, those plants that recorded high taste score appreciation indices (TSAI) should also be investigated for their nutritional attributes. Some of these plants may also contain lethal levels of toxic contents, and must therefore, be correctly processed before consumption. There is a need therefore for investigations of the anti-nutrient factors or toxic compounds that could be present in some of the documented WSWFPs. So far in Uganda, little attempt has been made in this direction. Therefore, attempts to research in this aspect of WSWFPs would be quite rewarding. It is unfortunate in this era of global food crisis that some people still have negative perception about WSWFPs and their consumption. However, such perception could be overcome through concerted awareness campaigns about the nutritional and or food-medicinal properties of these otherwise neglected food plants.

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Appendix 1a: Required sample size at the 5% confidence interval, given a finite population (N = Population size and n = Sample size).

N - n	N - n	N - n	N - n	N - n
10 - 10	100 - 80	280 - 162	800 - 260	2800 - 338
15 - 14	110 - 86	290 - 165	850 - 265	3000 - 341
20 - 19	120 - 92	300 - 169	900 - 269	3500 - 346
25 - 24	130 - 97	320 - 175	950 - 274	4000 - 351
30 - 28	140 - 103	340 - 181	1000 - 278	4500 - 354
35 - 32	150 - 108	360 - 186	1100 - 285	5000 - 357
40 - 36	160 - 113	380 - 191	1200 - 291	6000 - 361
45 - 40	170 - 118	400 - 196	1300 - 297	7000 - 364
50 - 44	180 - 123	420 - 201	1400 - 302	8000 - 367
55 - 48	190 - 127	440 - 205	1500 - 306	9000 - 368
60 - 52	200 - 132	460 - 210	1600 - 310	10000 - 370
65 - 56	210 - 136	480 - 241	1700 - 313	15000 - 375
70 - 59	220 - 140	500 - 217	1800 - 317	20000 - 377
75 - 63	230 - 144	550 - 226	1900 - 320	30000 - 379
80 - 66	240 - 148	600 - 234	2000 - 322	40000 - 380
85 - 70	250 - 152	650 - 242	2200 - 327	50000 - 381
90 - 73	260 - 155	700 - 248	2400 - 331	75000 - 382
95 - 76	270 - 159	750 - 254	2600 - 335	100000 -384

(Adapted from Krejcie and Morgan, 1970, p.608).

Appendix 1b: Positive attribute reported about the WSWFPs documented.

WSWFPs	Local name	Positive attribute reported about the plant
Abrus precatorius L.	Akarunga	Seeds often carried by people in their pockets, necks or waists as: lucky charms; spiritually defending pendants; used for making love beads, which are worn in the waists. Leaf infusion extract is drunk like tea as a therapy for malaria/fevers
Acalypha bipartita Müll. Arg.	Egoza, Ayuu	Leaves and leaves extract used for the treatment of diarrhoea; good fodder; stems use for making winnowing trays.
Aframomum (Ridley) K.Schum *alboviola-ceum*	Amasaasi, Ocao	Fruit pulp eaten as a remedy for malaria/fever; leave infusions is used as remedy for measles.
Aframomum angustifolium (Sonnerat) K.Schum.	Amatehe, Kongo amor	Fruit pulp eaten as a remedy for malaria/fever.
Amaranthus dubius Mart. *ex* Thell.	Doodo	Colour dyes are made from the plant leaves; decoctions from the leaves and roots are used as: remedy for tapeworm, relief of respi-ratory disease.
Amaranthus graecizans L.	Nyabutongo, Ocoboro	Regular consumption helps prevent stomach aches; colour dyes made from the plant leaves; used as potash salt; helps to easy constipation; available year round.
Amaranthus hybridus subsp. *Cruentus* (L.) Thell.	Omujuiga	Favoured as fodder by: goats, sheep & pigs; colour dyes are made from the plant leaves.
Amaranthus lividus L.	Bwora, Mboog'ennene	Leaves are eaten to remove poison from the body; roots infusion is used externally to relieve headaches; decoction from the plant is also used as remedy for: tumours and warts, ulcerated mouths and throats, skin ulcers and sores.
Amaranthus spinosus L.	Doodo y'amahwa	Roots and leaves decoctions are drunk for the treatment of: internal bleeding; diarrhoea and dysentery; severe menstruation; snake bites and vomiting. Externally, it is used as therapy for: ulcerated mouths; vaginal discharges; gonorrhoea; nose bleeds and wounds.
Ampelocissus africana (Lour.) Merr.	Anunu, Olok	Infusion from the roots is used to relieve snake-bites. Aerial parts of the plant are used as a remedy for lice infestation in poultry (chicken, ducks and turkeys).
Annona senegalensis Pers.	Mubengeya, Obwolo	The roots and the barks are boiled and drank as a remedy for: ma-laria; stomach ache; vomiting and diarrhoea.
Asystasia gangetica (L.) T.Anders.	Temba, Odipa ikong	Concoction from the plant is used: to ease pain during childbirth; as an enema in the later months of pregnancy; to treat stomach ache; as remedy for asthma and to treat snakebites. Sap is used as a remedy for: swellings; back pains; neck pains and intestinal worms. Good fodder.

Asystasia mysorensis (Roth) T.Anders.	Nyante, Acwe-wanggweno	Infusion from the aerial part is used as relieve for: constipation and malaria. Good fodder.
Basella alba L.	Enderema	Eaten as: a remedy for constipation; measles and a relief from pain among pregnant women. Leaves and root extracts used as treatment for snake bite.
Bidens pilosa L.	Obukurra	Fresh leaves and roots are chewed/decocted as a remedy for: malaria; dysentery and kidney problems. Fresh leave or half-cook leaves are also chewed as medicine for increasing blood level in people with leukemia. Fresh leaves are also squeezed and the liquid extract used to treat: cuts; wounds; eyes problems and ear problems. The oiled ash of the seeds, mixed with other medicinal plants, is applied to haemorrhoids (swelling and inflammation of veins in the rectum and anus). Leaf boiled and taken as tea
Borassus aethiopum Mart.	Ekituugu, Tugo	Juice from fruit pulp is used to make local wine; fruits are eaten to treat: stomach ache, skin, and respiratory problems; Leaves are used to make mats and baskets.
Canarium schweinfurthii Engl.	Empafu	Resin from the tree is mixed with water for the treatment of a disease called *mwanamimba* (Swahili), a female disease; a decoction of the resin with other plant leaves is used as a bathe for children affected by measles.
Capsicum frutescens L.	Kamulari, Alyera	A weak infusion of the fruits is used as a gargle to treat minor mouth and throat infections; daily consumption of the fruits is a: remedy for stomach aches, food digestive stimulant. Rubbing pepper onto sore muscles and joints helps relieve pain. Rubbing red pepper onto forehead also helps to reduce headache. Dried fruits are used as food preservatives. Plant and the fruit is insect repellents.
Carissa edulis (Forssk.) Vahl	Omuyonza, Acuga	Decoction from the boiled roots and leaves is used to treat: malarial fever; diarrhoea; gonorrhoea; chest pain; abdominal pains; headache and breast cancer.
Cleome gynandra L.	Eyobyo	Decoction from the root and leaves is used to treat: malaria/fevers; chest pains and diarrhoea.
Cleome hirta (Klotzsch) Oliv.	Akayobyo akasajja	Decoction from the roots and leaves is used as a medicine for: painful menstruation; chest pains and diarrhoea.
Corchorus tridens L.	Eteke	Leaves are chewed and squeezed on the following to heal them: fresh cuts; wounds and burns. Pounded dry leaves and stems are used to treat syphilis wounds. Infusion from the leaves is drunk as a blood purifier.
Corchorus trilocularis L.	Otigo lum	Decoction of roots and seeds is used as treatment for syphilis; cooked leaves used as demulcent against sore throats and intestinal ulcers; infusions from the leaves is drunk as a blood purifier; Pounded seeds is used externally as a remedy for edema (abnormal accumulation of fluid beneath the skin)
Crassocephalum crepidioides (Benth.) S.Moore	Ekinami	Leaves extract used to treat: wounds; Kidney problems; eye problems (pink eye); the plant is put into a pot of local beer to prevent it from going bad; a leaf-decoction is taken for abdominal pains.
Crotalaria ochroleuca G.Don	Kumuro, Alaju	Leaves are eaten as remedy against malaria; seeds repel storage insect pests; improves soil fertility.
Cymbopogon citratus (DC.) Stapf	Lemon grass	Leaves infusion is used to treat: malaria; high blood pressure; gastrointestinal problems and as an anti-inflammatory; plant is protected near houses to repel mosquitoes and other insects.
Dioscorea minutiflora Engl.	Kaama/Ekihama	Root decoction is used as a remedy for: abdominal pain and boils/swelling
Erucastrum arabicum Fisch. & C.A.Mey.	Oburobwenaku	Leaves are rubbed on the skin to reduce skin rashes.
Ficus sur Forssk.	Kabalira, Oduru	Sap from the tree is used as a remedy for toothache.
Garcinia buchananii Bak.	Museka	Infusion from the bark of the tree is taken as an aphrodisiac and tonic; the infusion is also used to treat ulcers.
Hibiscus acetosella Welw. *ex* Hiern	Makawang kulo, Gwanya	Fresh cooked leaves induce more milk in lactating and breast-feeding mothers. A leaf-decoction is taken: as a remedy for coughs, and for 'increasing blood' in anaemic people Increases ones' appetite.
Hibiscus sabdariffa L.	Bamya, Ekikenke	Fresh cooked leaves induce more milk in lactating and breast-feeding mothers. Increases ones' appetite
Hyptis spicigera Lam.	Amola, Lamola	Whole plant, or the leaves, is infused and drunk hot to treat fevers. A leaf-mashed in hot water is rubbed on the body to reduce the temperature during fever attack. Plant is also burned in homes to get rid of mosquitoes and other insects like cockroaches.

Imperata cylindrical (L.) Raeuschel	Rusojo	Its young inflorescence and shoots are cooked and eaten. Its ash is used as a salt substitute. Decoctions from flowers, and rhizomes are used for treatment of: diarrhoea; dysentery; stomach troubles; wounds; kidneys; haemorrhages; fevers, urinary tract infections. Decoctions from flowers and rhizomes are drunk as a lactation stimulant. The plant is used for thatching huts.
Ipomoea eriocarpa R.Br.	Acatolao, Podowia kuri	Liquid extract from the leaves are used as enema/ inserted into the bowels via the rectum as a treatment for constipation. Decoction from the leaves also used as a remedy for: back, neck, shoulder and knee pains.
Lantana camara L.	Jerenga, Abelwinyo	Decoction from the roots is used as remedy for: influenza; cough; painful swelling of the salivary glands; persistent high fever; malaria. Decoction from the bark, leaves and flowers is boiled and taken as remedy for: high fever; lung tuberculosis; skin rashes (eczema); sprains and wounds.
Mondia whitei (Hook.f.) Skeels	Omurondwa	Fruit pulp is used as first aid for the treatment of: burns and scalds; back pain; neck pain; shoulder pain and knee pains. Decoction of the root is used as remedy for painful toothache. Daily consumption of the fruits helps prevent heart problems Concoctions from the plant is used as insect repellents (insecticides)
Ocimum gratissimum L.	Mujaja	Roots chewed: as sexual stimulant; for clearing alcoholic hangovers; as an appetiser; as a medicine for de-worming stomach; as a stimulate for milk production in lactating mothers.
Oxalis corniculata L.	Kanyunywa mbuzi	Leaves are boiled in water and taken as refreshing tea to relieve fatigue. Liquid extract from leaves is drunk as remedy of: diarrhoea; cough; cold; malaria; yellow fever and abdominal pain. The plant is protected around houses as a mosquito repellent.
Oxalis latifolia Kunth	Kanyeebwa	Infusion from leaves is used for treating: wounds and toothache; ash of the plant is mixed with powdered dung of cattle for treatment of teeth cavities.
Oxygonum sinuatum Hochst. & Steud. *ex* Meisn.) Dammer	Kacumita bagenge, Cuguru	Infusions from leaves are used for treating: wounds and toothache. Ash of the plant is mixed with powdered dung of cattle for treatment of teeth cavities.
Phaseolus lunatus L.	Amaijalero, Okuku	Infusion from the boiled leaves and stems used for treating: snakebites; stomach aches and boils. Sap squeezed from fresh leaves is used in eye treatment
Phoenix reclinata Jacq.	Omukindo	Seeds are used as remedy for fevers; Roots are used as narcotic/sedative.
Physalis peruviana L.	Ntuutu	Leaves are used to make: baskets; hats and mats.
Rhus pyroides var. pyroides Burch.	Obukanjakanja, Awaca	Eaten as remedy for: asthma; cancer/leukaemia; hepatitis/liver problems and malaria. Leaves extracts used for treatment of skin rash and ringworm.
Rubus pinnatus Willd.	Amakerre	Stems are popularly used as toothbrushes. Stems are boiled and liquid extract is used to treat: cuts wounds; burns; fever and stomach ache.
Senna obtusifolia (L.) Irwin & Barneby	Oyado, Luge	A leaf-infusion is given to children as a de-wormer for intestinal worms
Sesamum calycinum Welw.	Amacande ga kanyamunya	Its leaves, seeds, and root are chewed to relieve: cough and chest pains. Decoction from leaves, seeds, or root is also used to treat: fevers; wounds; snake bites; stomach ache. Protected near homesteads to repel snakes.
Sida alba L.	Orucuhya	Oil extract from the seeds is used as remedy for ringworms. Mucilage extract from the leaves is used to treat: eye problems; burns and wounds.
Solanum anguivi Lam.	Obuhuruhuru, Katukuma	Leaf-infusion is taken as remedy for: stomach disorders; kidney troubles.
Solanum lycopersicum L.	Bunyanya bunyoro	Roots and leaves decoction is drunk as a remedy for typhoid fever.
Solanum macrocarpon L.	Bugorra	Decoction from the roots is used as a remedy for: skin itch; general body aches; asthma; wounds. Powder from the seeds is used to treat toothache.
Solanum nigrum L.	Enswiga	Whole plant is chopped and boiled and the liquid extract is taken orally as abortifacient and foetus is discharged within a short time. Fruits are eaten as remedy for diarrhoea. Juice squeezed from fresh leaves is used externally to ease pain from: boils and burns. The juice is also used as a remedy for: ringworms and earache.
Sonchus oleraceus L.	Kizimyamucho, Apuruku	An infusion from the leaves clears fever and toxins from the body leaf sap is used as a remedy for: ear problems; eye problems.
Tamarindus indica L.	Mukoge	Roots and leaves decoction is drunk as a remedy for fevers (esp.

		yellow fever); fruit pulp is also used to make a refreshing drink to reduce fever; fruit juice drunk as a remedy for constipation.
Tristemma mauritianum J.F.Gmel.	Oburo bw'enkombe	Leaves are chewed to relieve sore throat; decoctions from the leaves are used to ease delivery during childbirth
Urtica massaica Mildbr.	Orugenyi, Ekicura-ganyi	Leaves infusion used for treatment of: boils, skin sores, skin itch. The plant easily sprouts when cut/harvested.
Vangueria apiculata K.Schum.	Matungunda	Decoction from the leaves and roots are used: as a remedy for constipation; to aid delivery during childbirth; roundworms, and as a good luck charm.
Vernonia amygdalina Del.	Kibirizi	Leaves and or roots are boiled and the liquid extract is used for treatment of: malaria/fever; stomach ache; intestinal worms; hypertension; diarrhoea. The crushed leaves are applied to skin eruptions. Small amount of powdered leaves is mixed with local beer to make it potent.
Vigna unguiculata (L.) Walp.	Mugobiswa	Good animal fodder especially for: goats and pigs.
Vitex doniana Sweet.	Muhomozi, Owelo	Leaves, bark & leaves are used as medicine for: eye treatments; headache; anaemia; genital stimulation; paralysis; epilepsy; chick-enpox; convulsions; gonorrhoea; leprosy; diarrhoea; dysentery; stomach de-worming; lactation stimulation. Fruits eaten as a treatment for constipation.
Ximenia americana L.	Enseka, Olimo	Decoction of the roots and leaves are used as a remedy for: fever and headaches.

Note: The information tabulated is as provided by interviewees and has not been confirmed scientifically.