

---

# Status of non-cultivated food plants in Bulamogi County, Uganda

J. R. S. Tabuti\*

Department of Botany, Makerere University, P.O. Box 7062, Kampala, Uganda

## Abstract

This study was carried out to document the non-cultivated food plants (NCFPs) of Bulamogi County, Uganda. It formed part of a wider study meant to document all edible plant species in the county with the general aim of strengthening food security. The study was conducted using semi-structured interviews. Fifty-nine NCFPs were recorded in the county. These grow as weeds, wild plants and semi-cultivated crops. They are equally distributed between herbaceous (54%) and woody (46%) growth habits. They yield fruits (31, n = 59), leaves (11, n = 59) or leaves and stems (10, n = 59) for consumption. A short list of 27 NCFPs with potential for domestication is suggested here for further study.

*Key words:* food security, management systems, non-cultivated food plants, Uganda

---

## Introduction

There are more than 30 000 plant species known to man as food (FAO, 1996). The majority of these are harvested locally and are not widely used at the global level. It is estimated that only 30 plant species contribute to 95% of the world plant food intake (FAO, 1996). At the global level, therefore, the majority of food plants are neglected or are underutilized. These neglected food plants are generally wild. Although it is difficult to define wild plants within man-inhabited landscapes, they can be defined as those plants that grow naturally in the bush and do not have to be planted or tended to before producing edible parts (FAO, 1988). In this paper, the terms 'wild food plants' and 'non-cultivated food plants' (NCFP) are used synonymously.

---

\*Correspondence: Tel: +256 (0) 772 960 880; Fax: +256 (0) 41 541 280; E-mail: jtabuti@botany.mak.ac.ug

Wild food plants contribute to local household food and livelihood security especially for the economically disadvantaged, the young or the elderly. They are important to local food security because they are free and are easy to access by the local communities (FAO, 1988; Banana & Turiho-Habwe, 1997; Shackleton *et al.*, 1998; Somnasang & Moreno-Black, 2000). They are especially significant during periods of acute food shortages. Wild food plants also provide nutritional security by adding essential nutrients as well as variety to diets, making staples more appealing to the taste. In addition, they also contribute to household economies (Ladio, 2001). Wild relatives of crop plants are important to plant breeding because they are a source of genes which can be used to improve existing crop varieties (Iltis, 1988; Frisvold & Condon, 1998; Smith, el Obeid & Jensen, 2000).

Neglecting these important food resources can lead to loss of local plant populations and landraces. When farmers discontinue planting and maintaining particular plants, they can become extinct. This genetic erosion is unfortunate, because once genetic material is lost it forecloses all future options of using these genetic resources to improve crop plants (Iltis, 1988; Frisvold & Condon, 1998). At the same time this neglect may result in loss of local knowledge concerning the use and management of these plant resources which is often localized and specialized. Loss of this knowledge can have negative consequences on plant survival and food security as well as nutritional security.

The conservation and promotion for sustainable utilization of neglected food plants require various actions including inventorying of existing food plants, *in situ* conservation of wild crop relatives, and promoting development and commercialization of under-utilized plant species (FAO, 1996). This paper reports results from a study to create an inventory, that was carried out in Bulamogi County as part of a wider study to document existing edible plants in the county. Bulamogi County is

found in Kamuli district, 200 km north-east of Kampala, the capital city. The people are a rural community whose source of livelihood is crop agriculture. They also practice minimal livestock husbandry. The people of Bulamogi, the Balamogi also gather NCFP and add them to their diet.

## Method

This research was carried out in 2001 in the Bulamogi County. It formed part of a wider study aimed at documenting all existing food plants of Bulamogi County. Data were collected through interviews with 23 key informants and 126 respondents. Semi-structured interviews using a checklist of open-ended questions were employed. In the interview, personal information was recorded. As the aim was to record local knowledge of important food plants, the free listing technique was used. In this technique, the respondent is asked to name any species that comes to their mind. Normally, people readily remember species which are important to them (Lykke, 2000). People were asked to name all plants that they knew to be food and these were recorded. Following this, they were then asked to specifically name food plants that they knew were not to be cultivated. Some of the non-cultivated plants, it turned out, were also part of those that they had mentioned in the first round of asking. Recipes which used some of the edible plants were also recorded, but these are not reported here. All species reported in interviews were collected and identified at the Makerere University Herbarium. Voucher specimens were kept at this herbarium.

An index to explain the importance of each species was calculated directly from the number of respondents who mentioned the species. Two indices were calculated separately for generally known plants [recorded in the first round of asking and termed the general familiarity index (GF<sub>i</sub>)] and another for the NCFP [recorded in the second round of asking and termed NCFP familiarity index (NCFP-Fi)]

$$GF_i = \frac{R_a}{n} \times 100$$

$$NCFP_i = \frac{R_b}{n} \times 100$$

$$R_a = N$$

## Results and discussion

### NCFPs appearing in the diet

Fifty-nine different plants were recorded as NCFP. Of these, 55 were identified to the species level and three to the genus level (Table 1). These are distributed in 45 genera and 31 families. Two varieties were recorded for *Corchorus olitorius* (Mutele). *Mangifera indica* (Muyembe) has many varieties but these are not recorded here.

### Management

The NCFPs were equally divided among three management systems: weed, wild and semi-cultivated plants (Table 1). Wild plants are defined as those plants that cannot survive and grow in human-disturbed habitats. On the other hand, weeds are plants that reproduce and survive in permanently human-disturbed habitats but do not depend on human beings for their reproduction or survival (De Wet & Harlan, 1975; Casas *et al.*, 1996). An example of a plant treated as a wild plant here is *Dioscorea praehensilis* (Mpama), which according to respondents, could not grow anywhere apart from thickets. Species like *Borassus aethiopicum* (Kilala) are also included under wild plants here, because much as they exist in a man-managed ecosystem, still in their natural wild state they exist in human-disturbed habitats. Some plants grow naturally but are sometimes planted, e.g. *Cleome gynandra* (Yoby) and *Persea americana* (Ovakedo); these were grouped under semi-cultivated in this paper. The management status for *Abelmoschus esculentus* (Bamia) and *Citrus* sp. (Secungwa) was unclear and these were not assigned to any single group.

### Attributes of NCFPs

Most of the NCFPs were indigenous (61%; n = 59) and almost equally distributed between woody (46%) and herbaceous (54%) plant types. Here 'herbaceous' are taken to include the herbs and climbers, while the woody types include lianas, shrubs and trees (Fig. 1). Most of the NCFPs yield fruit (31 species, n = 59) (Fig. 2a; Table 1) that are eaten as snacks (Fig. 2b). The larger majority of herbaceous plants (19/27) are consumed as leafy vegetables (Fig. 2c; Table 1).

**Table 1** Cultivated and semi-wild food plants of Bulamogi

Scientific name (voucher no.) local name <sup>a</sup>	Family	History	Status <sup>b</sup>	Growth habit <sup>c</sup>	FC <sup>d</sup>	PC <sup>e</sup>	MC <sup>f</sup>	GFI	AFS	SFS	NCPFI
<i>Cleome gynandra</i> L. (JRST 4) Yobyoy	Capparaceae	I	Semi-cultivated	H	Lv	AG	Co	60.3			
<i>Cleome monophylla</i> L. (JRST 378,384) Kayobyoy yobyoy	Capparaceae	I	Semi-cultivated	H	Lv	AG	Co	1.6			
<i>Amaranthus cf. hybridus</i> (JRST 416) Doodo omusoga	Amaranthaceae	Int	Semi-cultivated	H	Lv	AG	Co	8	×		4.8
<i>Amaranthus gracizans</i> L. subsp. <i>silvestris</i> (Will.) Brenan (JRST 436) Doodo	Amaranthaceae	Int	Semi-cultivated	H	Lv	AG	Co	74.6	×		4.8
<i>Amaranthus hybridus</i> L. subsp. <i>hybridus</i> (JRST 415,436) Doodo	Amaranthaceae	Int	Semi-cultivated	H	Lv	AG	Co	8	×		4.8
<i>Amaranthus lividus</i> L. subsp. <i>lividus</i> (JRST 417) Buga	Amaranthaceae	Int	Semi-cultivated	H	Lv	AG	Co	4	×		4.8
<i>Ocimum gratissimum</i> L. (JRST 298) Mujaaja	Lamiaceae	Int	Semi-cultivated	H	Cn	L	Co	0.8			
<i>Capsicum frutescens</i> L. (JRST 473) Kalali	Solanaceae	OI	Semi-cultivated	H	Cn	F	Co	2.4			
<i>Carica papaya</i> L. (JRST 506) Mupapali	Cariaceae	OI	Semi-cultivated	T	Ps/Sn	F	Ra/Co	57.9	×		1.6
<i>Citrus aurantifolia</i> (Christm.) Swingle (JRST 521) Nimawa	Rutaceae	OI	Semi-cultivated	Sh/T	Sn	F	Ra	4			
<i>Citrus limon</i> (L.) Burm.f. (JRST 520) Niimu	Rutaceae	OI	Semi-cultivated	Sh/T	Sn	F	Ra	25			
<i>Citrus reticulata</i> Blanco (JRST 476) Mangada	Rutaceae	OI	Semi-cultivated	Sh/T	Sn	F	Ra	14			
<i>Citrus sinensis</i> (L.) Osb. (JRST 475) Micungwa	Rutaceae	OI	Semi-cultivated	Sh/T	Sn	F	Ra	74.6	×		3.2
<i>Mangifera indica</i> L. (JRST 99) Muyembe	Anacardiaceae	OI	Semi-cultivated	T	Sn	F	Ra	76.2	×		21
<i>Psidium guajava</i> L. (JRST 479) Mapeera	Myrtaceae	OI	Semi-cultivated	Sh/T	Sn	F	Ra	32	×		2.4
<i>Artocarpus heterophyllus</i> Lam. (JRST 459) Mifenesi	Moraceae	RI	Semi-cultivated	T	Sn	F	Ra	55.6	×		3.2
<i>Passiflora edulis</i> Sims (NC) Butunda	Passifloraceae	RI	Semi-cultivated	Li	Sn	F	Ra	29			
<i>Persea americana</i> Mill. (JRST 481) Ovakedo	Lauraceae	RI	Semi-cultivated	T	Ps/Sn	F	Ra	49.2	×		1.6
<i>Lagenaria siceraria</i> (Molina) Standley (JRST 135) Nyungumuti	Cucurbitaceae	I	Semi-cultivated	C	St	F	Co	3.2	×		0.8
<i>Abelmoschus esculentus</i> (L.) Moench. (NC) Bamia	Malvaceae	Int	Status unclear	H	Lv	F	Co	0.8			
<i>Citrus</i> sp. (NC) Secungwa	Rutaceae	OI	Status unclear	Sh/T	Sn	F	Ra	2.4			
<i>Acalypha bipartita</i> Muell. Arg. (JRST 236,315) Helele (namunkukwa)	Euphorbiaceae	I	Weed	H	Lv	L	Co	4	×		7.9
<i>Commelina benghalensis</i> L. (JRST 16) Iranda	Commelinaceae	I	Weed	H	Lv	L	Co	0.8			
<i>Dactyloctenium aegyptium</i> (L.) Willd. (JRST 216) Bukuuku	Poaceae	I	Weed	G	St	Se	Co	15	×		15
<i>Polygonum salicifolium</i> Willd. (JRST 164) Sokosye	Polygonaceae	I	Weed	H	Lv	L	Co	4.8	×		1.6
<i>Amaranthus</i> sp. (JRST 406) Nkona mutwe/Kalulya nkoko	Amaranthaceae	Int	Weed	H	Lv	AG	Co	8			
<i>Canna indica</i> L. (JRST 349) Bitembetembe	Cannaceae	Int	Weed	H	St	Tu	Co	7.9	×		7.9
<i>Physalis lagascae</i> Roem. & Schult. (JRST 328) Ntuntunu entono	Solanaceae	Int	Weed	H	Sn	F	Ra	21			
<i>Physalis peruviana</i> L. (JRST 504) Ntuntunwe	Solanaceae	Int	Weed	H	Sn	F	Ra				
<i>Corchorus olitorius</i> L. (NC) Mutele	Tiliaceae	OI	Weed	H	Lv	L	Co	4			
<i>Corchorus olitorius</i> L. var. <i>incifolius</i> Aschers & Schweinf (JRST) Mutele omukali	Tiliaceae	OI	Weed	H	Lv	L	Co	8			
<i>Asystasia schimperii</i> T. Anders. (JRST 156,376,414) Nyante	Acanthaceae	I	Weed	H	Lv	AG	Co	3.1	×		
<i>Basella alba</i> L. (JRST 225) Nderema	Basellaceae	I	Weed	C	Lv	L	Co	1.1			
<i>Micrococca mercurialis</i> (L.) Benth. (JRST 366) Kalyabakyala	Euphorbiaceae	I	Weed	H	Lv	AG	Co	0.8			
<i>Oxygonum sinuatum</i> (Meisn.) Dammer (JRST 122) Nkenge	Polygonaceae	I	Weed	H	Lv	L	Co	0.8			
<i>Solanum nigrum</i> L. (NC) Nsiiga/Nswiga	Solanaceae	I	Weed	H	Lv	L	Co	0.8			

**Table 1** (Continued)

Scientific name (voucher no.) local name <sup>a</sup>	Family	History	Status <sup>b</sup>	Growth habit <sup>c</sup>	FC <sup>d</sup>	PC <sup>e</sup>	MC <sup>f</sup>	GFI	AFS	SFS	NCFPFi
<i>Thunbergia alata</i> Bojer ex Sims (JRST 80,240) Matamavu	Acanthaceae	I	Weed	H	Lv	AG	Co	0.8			
<i>Tylosema fassoglensis</i> (Schweinf.) Torre & Hillc. (JRST 50) Kiyuge yuge	Fabaceae – Caesalpinoideae	I	Weed	C/Li	Sn	F	Ro	0.8			
<i>Vernonia amygdalina</i> Delile (JRST 81) Lubitili	Asteraceae	I	Weed	Sh/T	Lv	L	Co	0.8			
<i>Vigna unguiculata</i> (L.) Walp. (JRST 280,334) Kotebote	Fabaceae – Faboideae	I	Weed	H	Lv	L	Co	1.6			
<i>Aframomum albobolaceum</i> (Ridley) K. Schum. (JRST 108) Matungulu	Zingiberaceae	I	Wild	H	Sn	F	Ra	3.2	×		1.6
<i>Carissa adullis</i> (Forssk.) Vahl (JRST 36, 299) Mutwogwa	Apocynaceae	I	Wild	Sh	Sn	F	Ra	6.3	×		0.8
<i>Borreria aethiopicum</i> Mart. (JRST 527) Kilala	Arecaceae	I	Wild	T	Sn	F	Ra	1.6			
<i>Canarium schweinfurthii</i> Engl. (JRST 538) Mbafu	Burseraceae	I	Wild	T	Sn	F	Ra/Co	0.8	×		0.8
<i>Dioscorea dunnatorum</i> (Kunth) Pax (JRST 103,184) Ididiyva/Kilologolo	Dioscoreaceae	I	Wild	C	St	Tu	Co	0.8	×		0.8
<i>Dioscorea praehensilis</i> Benth. (JRST 101,14) Mpama	Dioscoreaceae	I	Wild	C	St	Tu	Co	5.6	×		75.4
<i>Dioscorea schimperiana</i> Kunth (JRST 67,100,110) Bigaya	Dioscoreaceae	I	Wild	C	St	Tu	Co	6.3	×		61.1
<i>Dovyalis macrocalyx</i> (Oliv.) Warb. (JRST 248) Nsundamunwa	Flacourtiaceae	I	Wild	Sh/T	Sn	F	Ra	0.8			
<i>Ficus sycomorus</i> L. (JRST 472) Mukunyu	Moraceae	I	Wild	T	Be	F	Fer	7.1	×		7.1
<i>Millettia excelsa</i> (Welw.) C.Berg (JRST 500) Mvule	Moraceae	I	Wild	T	Be	F	Fer	0.8	×		0.8
<i>Nymphaea lotus</i> L. (JRST 165) Nsakwa/Makoka	Nymphaeaceae	I	Wild	H	St	Se	Ro/Co	21	×		51.6
<i>Nymphaea nouchali</i> Burm.f. (JRST 178) Ngoli	Nymphaeaceae	I	Wild	H	St	Se	Ro/Co	2.4	×		21
<i>Rhus vulgaris</i> Meikle (JRST 201) Busojole	Anacardiaceae	I	Wild	Sh/T	Sn	F	Ra	5.6	×		0.8
<i>Saba comorensis</i> (Bojer) Pichon (JRST 363) Mavongo	Apocynaceae	I	Wild	Sh/Li	Sn	F	Ra	1.6	×		1.6
<i>Sclerocarya birrea</i> (A. Rich.) Hochst. (JRST 181,241,259) Wemunyemunye	Anacardiaceae	I	Wild	T	Sn	F	Ra	20	×		0.8
<i>Syzgium cumini</i> (L.) Skeels (NC) Muziru	Myrtaceae	I	Wild	T	Sn	F	Ra	1.6	×		0.8
<i>Tamarindus indica</i> L. (JRST 8) Mukooge	Fabaceae – Caesalpinoideae	I	Wild	T	Sn	F	Ra	7.1			
<i>Vitex doniana</i> Sweet (JRST 89) Kifudumbwa/kifudungwa	Verbenaceae	I	Wild	T	Sn	F	Ra	1.6			
<i>Zanthoxylum chalybeum</i> Engl. (JRST 364) Mitala irundu	Rutaceae	I	Wild	T	Sn	F	Ra	0.8			

<sup>a</sup>NC, Not collected.

<sup>b</sup>I, indigenous; Int, introduced no date; OI, old introduction (C13th–C17th); RI, recent introduction (last 200 years). History of plant domestication and introduction from Purselove (1970), Katende *et al.* (1998) and Blench (2002).

<sup>c</sup>C, climber; G, grass; H, herb; Li, liana; Sh, shrub; Ss, subs-shrub; T, tree.

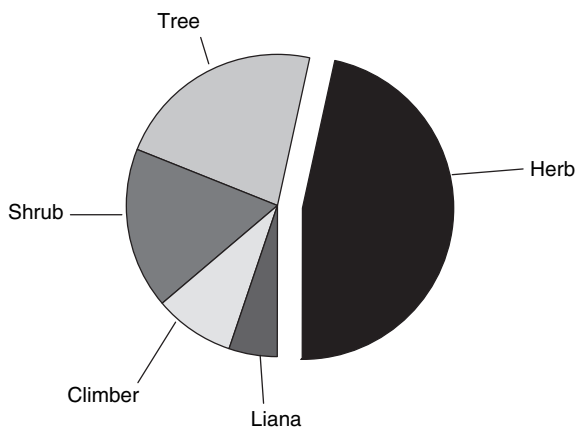
<sup>d</sup>FC (form of consumption); Be, beer; Cn, condiment; Lv, leafy vegetable; Ps, pot stew; Sn, snack; St, staple.

<sup>e</sup>PC, part consumed; AG, above ground; Bu, bulb; F, fruit; Inf, inflorescence; L, leaf; Rh, rhizome; Se, seed; Stm, stem; Tu, tuber.

<sup>f</sup>MC (mode of consumption/use) Co, cook; Fer, ferment; Ra, raw; Ro, roast; Sn, smoked.

<sup>g</sup>It is not possible to tell which species was referred to by the respondents here as all these species have the same local name.

FC, form of consumption; PC, part consumed; MC, mode of consumption/use; GFI, general familiarity index related to general knowledge of edible plant use; FFi, famine familiarity index related to knowledge of use of the plant during periods of food shortage; AFS, acute food shortage plants; SFS, seasonal food shortage plants. Under AFS and SFS, the symbol '×' implies presence of attribute.



**Fig 1** Growth habit of NCFPs

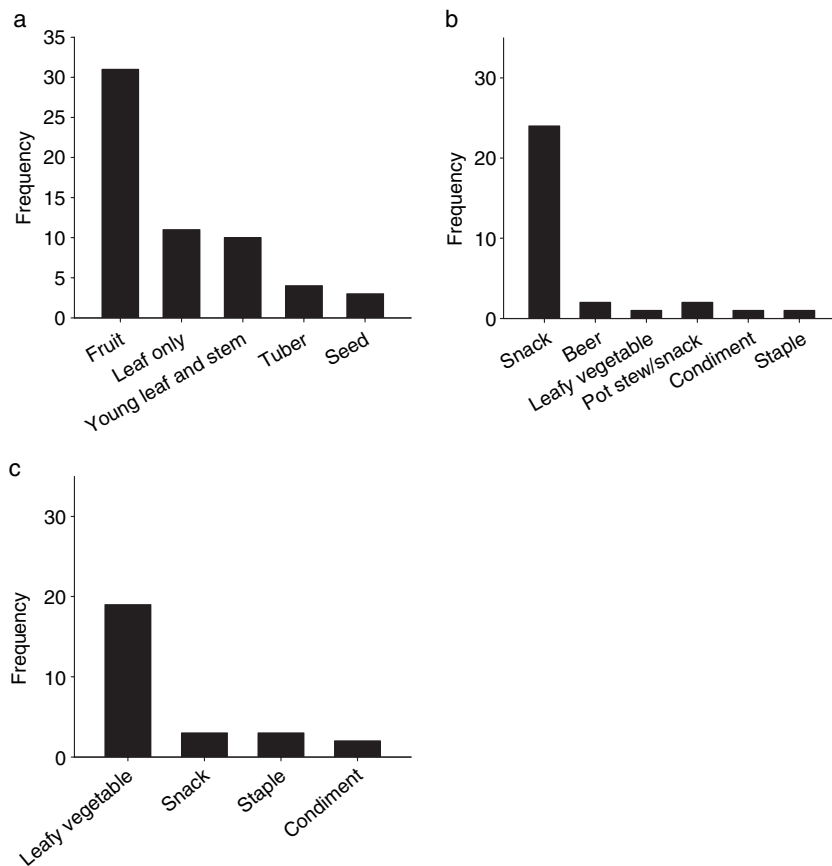
*Level of preference*

From interviews it was clear that 22 species that included all the semi-cultivated plants, as well as *Tamarindus indica* (Mukooge) and *Physalis lagascae* (Ntuntunu entono) were

highly favoured as food plants. Furthermore, these same plants had the highest familiarity indices (GFi; Table 1). It is assumed that the higher the familiarity index a given plant species has, the higher its popularity and use as a food plant.

From the interviews, it was also apparent that some 10 species were detested by the community, mainly because they were unpalatable. These were reportedly exploited during famines; outstanding in this regard were the two *Nymphaea* species. For some of these no respondent claimed to have ever eaten them, although they had heard that they had been used as food (*Milicia excelsa*) or had been processed to make beer (*Ficus sycomorus*).

Finally, 26 species (plus one variety) appeared to be liked but were infrequently eaten. The most frequently mentioned reasons by respondents why they did not frequently eat these 27 plants included: the prevalence of a wide diversity of cultivated foods available to choose from; difficulty in finding and gathering NCFPs because their habitats had been cleared for agriculture and/or for



**Fig 2** Consumption patterns of NCFPs: parts consumed (a); different ways that fruits (b), or herbaceous plants (c) are consumed

**Table 2** Main reasons that have led to neglecting wild food plants and the number of respondents mentioning the reason

Reason	Number of respondents
Cultivated foods are abundant	40
NCFPs are rare due to land clearance for cropping and settlement	37
People are active in growing food crops	15
NCFPs are unpalatable	12
Ignorance	8
No cash value	5

settlement (Table 1). For example, the wild *Dioscorea* spp., which are traditionally used as food during famine, are disappearing because their habitat has been modified or destroyed. Another key reason given was that there had been loss of the traditional knowledge required for preparing of, as well as loss of taste for NCFPs. On the other hand, the young people were spending much of their time at school, and had less opportunity to learn about these foods. Other NCFPs were not eaten because of prejudices. For example, *Acalypha bipartita* was reputed to lead to poor lactation in mothers, besides creating hunger sensations soon after eating it. These 27 species which appear to be liked but are infrequently consumed should be promoted for wider consumption. Furthermore, some should be selected for domestication. Domestication will require research.

#### Contribution to food security

Besides some of the plants being eaten regularly when encountered, 20 NCFPs were important during seasonal food shortages, such as during the period before harvesting, while 12 were important during famines or acute food shortages (see Table 1).

## Conclusions

Many NCFPs exist in Bulamogi. They commonly grow as weeds, wild plants, while some are semi-cultivated. They are commonly eaten as snacks (from fruits) or as vegetables. These plants are infrequently eaten but assume significance during periods of seasonal food shortage and famine. Their specific contribution to the diet needs to be investigated in food diaries. Although no effort was made to evaluate the level of preference for the species, a short list of 27 from which to select for plants for wider promotion and domestication is proposed.

## References

- BANANA, A.Y. & TURIHO-HABWE, G.P. (1997) A socio-economic survey of forest foods consumption in Hoima and Masindi districts of Uganda. *Afr. Crop Sci. Conf. Proc.* **3**, 1435–1442.
- BLENCH, R. (2003) The movement of cultivated plants between Africa and India in prehistory. In: NEUMANN, K., BUTLER, A. & KAHLHEBER, S. (eds): *Food, Fuel and Fields. Progress in African Archaeobotany. Africa Praehistorica* 15. Köln (Heinrich-Barth-Institut).
- CASAS, A., VÁZQUEZ, M., DEL CARMEN, M., VIVEROS, J.L. & CABALLERO, J. (1996) Plant management among the Nahua and Mixtec in the Balsas river basin, Mexico: an ethnobotanical approach to the study of plant domestication. *Human Ecol.* **24**, 455–478.
- DE WET, J.M.J. & HARLAN, J.R. (1975) Weeds and domesticates: evolution in the man-made habitat. *Econ. Bot.* **29**, 99–107.
- FAO (1988) Traditional food plants: a resource book for promoting the exploitation and consumption of food plants in arid, semi-arid and sub-humid lands of Eastern Africa. FAO Food and Nutrition Paper no. 42.
- FAO (1996) *Report on the State of the World's Plant Genetic Resources*. 17–23 June 1996, International Technical Conference on Plant Genetic Resources, Leipzig, Germany; FAO ITCPR/96/3.
- FRISVOLD, G.B. & CONDON, P.T. (1998) The Convention on biological diversity and agriculture: implications and unsolved debates. *World Dev.* **26**, 551–570.
- ILTIS, H.H. (1988) Serendipity in the exploration of biodiversity: what good are weedy tomatoes? In: *Biodiversity* (Ed. E. O. WILSON). National Academy Press, Washington, DC, pp. 98–105.
- KATENDE, A. B., BUKENYA-ZIRABA, R., KAKUDIDI, E. K. Z., LYE, K. A. (1998) *Catalogue of economically important plants in Uganda*. Botany Department, Makerere University, Uganda.
- LADIO, A.H. (2001) The maintenance of wild edible plant gathering in a Mapuche Community of Patagonia. *Econ. Bot.* **55**, 243–254.
- LYKKE, A.M. (2000) Local perceptions of vegetation change and priorities for conservation of woody savannah vegetation in Senegal. *J. Environ. Manage.* **59**, 107–120.
- PURSEGLOVE, J. W. (1970) The origins and migration of crops in tropical Africa, 291–309. In: HARLAN, J. R., DE WET, J. M. J. & STEMLER, A. B. L. (eds.) *Origins of African plant domestication*. Mouton Publishers, Paris.
- SHACKLETON, S.E., DZEREFOS, C.M., SHACKLETON, C.M. & MATHABELA, F.R., (1998) Use and trading of wild edible herbs in the central Lowveld Savanna region, South Africa. *Econ. Bot.* **52**, 251–259.
- SMITH, L.C., el OBEID A.E. & JENSEN, H.H. (2000) The geography and causes of food insecurity in developing countries. *Agric. Econ.* **22**, 199–215.
- SOMNASANG, P. & MORENO-BLACK, G. (2000) Knowing, gathering and eating: knowledge and attitudes about wild food in an Isan village in north-eastern Thailand. *J. Ethnobiol.* **20**, 197–216.

Manuscript accepted 1 November 2006