

Community Education for the preservation of medicinal plants for poverty reduction and sustainable development



United Nations
Educational, Scientific and
Cultural Organization

Organisation
des Nations Unies
pour l'éducation,
la science et la culture



REPUBLIC OF UGANDA

UGANDA NATIONAL COMMISSION FOR UNESCO

July, 2010

Community Education for the Preservation of Medicinal Plants for Poverty Reduction and Sustainable Development

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FUNDED UNDER
THE UNESCO PARTICIPATION PROGRAMME THROUGH
THE UGANDA NATIONAL COMMISSION FOR UNESCO (UNATCOM)

Cover photo: Healer training by PROMETRA-Uganda, Buyija forest. The healers are sharing knowledge about bone setting.

Foreword

Traditional medicine is very important element in the delivery of health services to many Ugandans. It is estimated that between 60-80% of Ugandans use traditional medicine for their primary health care problems. Sadly, this aspect of indigenous knowledge is threatened with extinction. Some of the causes of this threat include; changing life styles, modernisation and disappearance of some plant species. To mitigate this loss, the Uganda National Commission for UNESCO (UNATCOM) commissioned this study. The findings of the study are described in this report.

The major outputs of the project were: an inventory of medicinal plants, a catalogue of these plants, establishment of demonstration gardens and awareness campaigns on the importance of traditional medicine in different parts of Uganda. It is our hope that this report will contribute to the conservation of the heritage of traditional medicine and to the lowering of poverty in Uganda.

Many individuals and institutions actively participated in this project. We acknowledge and appreciate all of them, particularly the local leadership and communities in the districts of Mukono, Pallisa, Nakapiripirit and Kanungu where the study was conducted. We hope that this initiative will catalyse more action in the use and preservation of indigenous knowledge and traditional medicine in primary health care.



Augustine Omare-Okurut

Secretary General, UNATCOM

July 2010

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List of acronyms

KACHEP – Karamoja Christian Ethno-veterinary medicine Program

NaFORRI – National Forestry Research Institute

NFA – National Forestry Authority

RDC – Resident District Commissioner

SUPD – Sustainable Use of Plant Diversity

TM – Traditional medicine

TK – Traditional knowledge

UNATCOM - Uganda National Commission for UNESCO

UNESCO - United Nations Educational, Scientific and Cultural Organization

Executive summary

Traditional medicine (TM) occupies a special place in the management of diseases in Uganda. Although a number of people rely on TM, the traditional knowledge (TK) related to traditional medicine is getting steadily eroded. To slow down this loss of TK it is necessary to document and conserve as much of this knowledge as possible. This project was conducted with three objectives, namely to:

1. Catalogue Medicinal Plants
2. Conduct Stakeholders Workshops and Sensitization Campaigns, and
3. Establish Demonstration Botanical Gardens

1. Cataloguing of medicinal plants

Field research for this project was conducted in the districts of Mukono, Nakapiripirit, Kanungu and Pallisa. Data was collected through key informant interviews and household interviews. 171 respondents (93 female and 78 male), belonging to the Karamojong, Bakiga, Bagwere and Baganda ethnic groups were interviewed in the household interviews. The respondents had low levels of formal education (commonly no higher than primary level education, 57%) or none (24%), belonged to the mainstream religions, and were farmers.

The common diseases and conditions in the four districts include malaria, cough, headache, diarrhea, abdominal pain, common cold, backache and eye diseases. Respondents stated that when they fall sick they self medicate using plant medicines or consult western trained medicine doctors. Self medication using medicinal plants was reported mostly by respondents of Nakapiripirit and Mukono. Only respondents from Nakapiripirit claimed to consult traditional medicine practitioners as first source of health care.

Respondents have knowledge of how to treat 78 ailments using plants. People sometime use animal parts, soil, salt and water from a grass roof, in traditional medicines. The knowledge to treat

ailments is acquired from parents and grand parents. Respondents' age, level of formal education, occupation and tribe significantly affect knowledge on medicinal species ($p < 0.05$). Gender on the other hand does not affect this knowledge.

262 different plant species used to treat ailments in the four districts have been documented. 155 of these have been identified to species level. Out of these, 41 species have been prioritized basing on the number of respondents who mentioned them and the number of districts from which they were reported. The species *Vernonia amygdalina*, *Aloe* spp., *Chamaecrista nigricans*, *Azadirachta indica*, *Mangifera indica*, *Momordica foetida*, *Carica papaya*, *Senna occidentalis*, *Chasmanthera dependens*, *Psidium guajava*, *Warburgia ugandensis*, *Erythrina abyssinica*, *Vernonia lasiopus*, *Physalis peruviana*, *Bidens pilosa*, and *Albizia anthelminthica* stand out as the most frequently mentioned. The most frequently used part in herbal medicines is the leaf, followed by the stem and root. Herbal medicines are stored for short periods of time in used plastic bottles.

2. Stakeholders' workshops and sensitization campaigns

A one day workshop was conducted in each of the four project districts. The workshops had three specific objectives, namely:

1. To present results of the medicinal survey to the participants who provided data in the survey
2. To raise awareness and promote traditional medicine among the district leadership, and
3. To hold discussions with the stakeholders regarding the establishment of the medicinal botanical garden (part of objective no. 3 of the overall project)

The workshops included all respondents who had participated in the survey that inventoried the medicinal plants, as well as district leaders and other officials. Presentations were made by facilitators. After every presentation a discussion was generated between the participants and the facilitators. Part of the discussions focused on the proposed botanic garden and included

issues of where in the district the garden would be established and how it would be managed. Recommendations and suggestions made in these meetings were followed up with selected stakeholders. The key interest of the follow up meetings was to identify land for the botanical garden.

The district leadership promised full support for the promotion of traditional medicine. They observed that many local people use traditional medicines and that in many cases they are efficacious. They also noted that environmental problems such as deforestation were threatening the availability of traditional medicines and that traditional medicine practitioners needed to improve their packaging practices and also conduct their practices honestly and avoid indulging in unethical behaviors.

The participants were happy that the study results had been returned to them and promised better cooperation in future. They stated that the feedback results had improved their trust with the research team. The participants were interested to know whether laboratory tests had been conducted to determine whether the medicinal plants that had been inventoried had medicinal activity and also whether doses had been determined.

Lastly the people were also interested to see the medicinal plants propagated around their areas. In all districts visited, the stakeholders pledged land for the botanical garden.

3. Establishment of Demonstration Botanical Gardens

Medicinal botanical gardens were established in collaboration with Nabalanga Primary School (Mukono District), Kaucho Primary School (Pallisa District), San Geovani High School Makiro (Kanungu District) and St. Theresa, Nabilatuk Parish Church (Nakapiripirit District). These institutions provided land and labor. All collaborators were given support to clear plots of land for establishing the gardens, acquire planting material, sow seedlings and maintain the gardens for the first four months. Fences and signposts were also provided. The District Forestry Officers of Pallisa

and Kanungu participated and provided expert advice on the establishment of the gardens. Plots were monitored two months after establishment to check the progress of propagation. The entire project was undertaken at a cost of UGX 34,487,400.

4. Conclusions

This project has confirmed that traditional medicine is still important in Uganda because many people use it as a first line of health care when they fall sick. The many plants that are used in herbal medicines or remedies should be prioritized by focusing on those remedies believed to be efficacious and/or for which a high consensus exists. The people and communities are interested in conserving medicinal plants.

1. Introduction

1.1. Background

This is a report of the project titled “**Community Education for the Preservation of Medicinal Plants for Poverty Reduction and Sustainable Development**”. It was commissioned by the Uganda National Commission for UNESCO (UNATCOM) under the Participation Program with financial support from UNESCO. The project covered three major components:

1. cataloguing of Medicinal Plants
2. conducting Stakeholders Workshops and Sensitization Campaigns, and
3. establishment of Demonstration Botanical Gardens

It covered four regions of Uganda, namely the northern region (Nakapiripirit District), western (Kanungu District), eastern (Pallisa District) and central (Mukono District) regions.

1.2. Rationale

Traditional medicine (TM) is widely used in Uganda for the treatment of diseases. Although a diversity of material – plant, animal and inorganic material – are used in traditional medicines, plants are the most important materials. Households possess relevant indigenous knowledge of traditional cures. On the other hand, Traditional medicine practitioners (TMPs) hold specialized knowledge about TM and are very important for the practice and delivery of traditional treatments.

In order to successfully preserve medicinal plants for poverty reduction and sustainable development it is important that the existing diversity of medicinal plant species is documented and that some herbal medicine species are prioritized from among the vast diversity of species used in traditional medicine (TM). One way to prioritize among important plant species is to identify those that are sold in markets. According to Cunningham (2001), species which are important and for which demand is high are sold in markets. Such species are good candidates for conservation, domestication and commercialization.

Although a number of people rely on TM, the traditional knowledge (TK) related to traditional medicine is getting steadily eroded. It is believed that this is a consequence of people adopting new lifestyles and migrating to urban centers (World Bank, 1992). Other workers have identified lack of confidence among users and practitioners as a cause of loss of knowledge of traditional medicine (Obbo, 1996; Hafeel et al., 2001). To control the loss of TK related to TM it is necessary to document and conserve as much of this knowledge as possible. The specific objectives of this study were to 1) determine the health seeking behavior by households, 2) inventory the plant material that they use in traditional medicine and 3) determine the most important medicinal species.

2. Methodology

Field research for this project was conducted between October 2008 and February 2009 in the districts of Mukono, Nakapiripirit, Kanungu and Pallisa. These districts were selected because they are rural and remote (Mukono is rural but not remote). Rural and remote communities are known to be marginalized in terms of access to health services and to suffer high levels of poverty because they lack of appropriate means of income generation. These factors force people to use traditional medicine and keep the traditional knowledge associated with TM intact.

Permission to conduct this study was sought for and granted by the Uganda National Council for Science and Technology (SS 2163). In every village we requested for and acquired an endorsement to conduct the study by the village Local politicians. Before every interview, the purpose, method and end use for the data collected were explained to every respondent before requesting for permission to interview the respondent. Data collection was supervised by Prof. Tabuti who was assisted by four assistants; Mr Collinss Kukunda, Mr. Henry Wafula, Mr. Ayub Mukisa and Mr. Experito Kakooza.

2.1. Cataloguing of Medicinal Plants

Data was collected using social survey methods and biological methods. The survey started off

with key-informant interviews. The key-informants included local politicians, elderly people, and a nursing sister. In the key informants interviews the focus was on understanding health seeking behavior (Appendix 1).

The plant species used to treat ailments in the home were documented using a questionnaire modified from that used by Almeida et al. (2006). Respondents were selected using a multi-stage sampling strategy. One village was selected from each district, serendipitously. In each of the selected villages between 40 and 50 households were randomly selected; Nakapiripirit (50), Mukono (41), Kanungu (39), and Pallisa (41). Altogether we interviewed 171 respondents (93 female and 78 male). A complete list of all respondents is attached as appendix 2. We aimed at equal gender participation by systematically selecting alternating gender of the interviewees. For example, after conducting an interview in one household with a male respondent we would interview a female respondent in the next one. Interviews with children were conducted at a nearby primary school in each of the villages. Ten pupils attending classes between primary 4 and 7, and equally distributed in gender were identified by the head teacher for the interviews.

Our interviews centered on the following types of information: Common ailments that afflict households; sources of health care for community members; specific ailments for which people seek health care from TMPs; materials used to treat ailments in traditional medicine; how the materials are prepared and administered when treating ailments; and perceptions of efficacy.

We also conducted a Rapid Market Survey to determine the most important medicinal plants. We interviewed 20 market vendors of Owino market specialized in the sale of traditional medicines. Owino market is the largest market in Uganda. Vendors were requested to name and rank the most valuable medicinal species, they were also asked to report an estimate of the price that they sold herbal medicines at and the amounts sold on a weekly basis. An attempt was made to collect and identify all plant species mentioned in the household interviews with the help of a para-taxonomist at Makerere University Herbarium. Photographs of medicinal species encountered were taken and used to prepare a catalogue of the most important medicinal species prioritized according to frequency of mention in the study.

2.2. Data analysis

All questionnaire data was entered into Microsoft® Office Excel. It was later imported into SPSS 12.0.1 for Windows, for analysis. Frequencies were summarized and percentages calculated from the data. Differences in traditional knowledge (TK) were tested for using ANOVA at the 95% confidence level. Independent variable tested for were gender, occupation, education and tribe of the respondents, while the dependent variable was the level of traditional knowledge. The level of TK of treating using herbal medicine by a respondent was equated to the number of remedies reported by that respondent. Multiple comparisons of means were performed using the least squares procedure (LSD) at the 95% confidence level where ANOVA test indicated significant differences. Correlations were performed between age and number of remedies to determine influence of age on knowledge.

The Informant Consensus Factor (ICF) was calculated to determine the disease systems where there was highest community consensus on plants used in treatments. A high consensus factor (close to 1) means that the community is confident in the choice of plants, whereas a low ICF (close to 0) means that the community is still experimenting and that the treatments may not be effective (Heinrich et al., 1998). Disease systems with 2 or fewer respondents were not considered when performing the ICF analysis. The ICF is calculated using the expression:

$$ICF = \frac{N_{ur} - T}{N_{ur} - 1}$$

Whereby N_{ur} – number of respondents mentioning a disease, and T – number of plant species mentioned for the disease.

2.3. Stakeholders Workshops and Sensitization Campaigns

To achieve the second objective a one day workshop was conducted in each of the above four districts (Figure 1). The workshops had three specific objectives:

1. to present results of the medicinal survey to the participants who provided data in the survey
2. to raise awareness and promote traditional medicine among the district leadership, and
3. to discuss with the stakeholders regarding the establishment of the medicinal botanical garden (part of objective no. 3 of the overall project)

In the week before the start of the workshops presentations by the facilitators were discussed and edited. In the same week the workshop materials and other logistics were assembled (Appendix 3). The workshops were facilitated by Prof. Tabuti, Dr. Wako and Mr. Bukenya.

The workshops were organized to include all respondents who had participated in the survey (Appendix 4), that inventoried the medicinal plants, as well as the Resident District Commissioners, the District Forest Officer, the leader of the Traditional Medicine Practitioners, the District Cultural Officer, the District Environmental Officer, and the District Production Officer. Workshops were conducted in the local languages which the facilitators knew how to speak. In Karamoja, where none of the facilitators could speak or understand the local language the discussions were translated by Ms. Julia Muge.



Figure 1.

Group photographs of participants who participated in the awareness workshops; a). Nakapiripirit b). Mukono c). Kanungu and d). Pallisa.

Before every workshop, the assistants visited the district leadership and delivered invitation letters. On entering every district, short meetings were held by the group with the district leadership where we explained the purpose of the workshop and requested for the leadership's support. We found the leadership very supportive of the project.

At the beginning of every workshop, Prof. Tabuti would make the necessary introduction of the workshop team, and thank the participants for coming to attend the workshop. Mr. Kaweesi would then present the position of UNATCOM and also describe the genesis of the project (Appendix 5 and 6).

The following four presentations were made in every workshop:

1. Traditional medicines used in the districts of Nakapiripirit, Pallisa, Kanungu and Mukono (the project survey results)
2. Traditional medicine: their roles and values in health care and income generation (Prof. Tabuti, Appendix 7).
3. Herbal medicine, utilization and patient care, and interactions of herbal and modern medicine (Dr. Waako, Appendix 8).
4. Threats to traditional medicine, conservation and domestication measures for sustainable utilization and economic development (Mr. Bukenya, Appendix 9).

After every presentation the participants were invited to make comments on the presentation and to ask questions to seek clarity. The questions and comments were discussed in a participatory manner by the workshop facilitators and by the relevant district officials in attendance. Details of these reactions are captured in the detailed proceedings in appendices 10 – 13.

Both a workshop report and a catalogue of traditional medicinal plants were available for display, as feedback of the results and for stimulating comments from participants. This exercise was very helpful because the participants were able to collaborate and/or give feedback on the accuracy of

the information in the report and the catalogue of medicinal plants. A copy of the report was left with the District Information or the Cultural Secretary for commentary and as a reference material for local people.

In the afternoon, discussions focused on the proposed botanic garden were held. These discussions included a description of the rationale for establishing a botanical garden and how the garden was to be established, managed and maintained; issues of where in the district the garden would be established. It was explained that UNATCOM would fund the whole exercise and that the communities would establish and maintain the gardens. It was highlighted that the botanical garden was aimed at improving the conservation of medicinal plants, contribute to education, provide alternative future source of herbal materials and contribute to tourism. Recommendations and suggestions made in these meetings were followed up on the second day with selected stakeholders. The key interest of the second day was to identify land for the botanical garden.

2.4. Establishment of herbal medicine botanic gardens

Establishment of the demonstration gardens was undertaken in the rainy season of March 2010. Forty one priority species that had been selected following the inventorying part of this project were propagated in these gardens (Appendix 14).

Previously and as explained above, it had been planned that these botanical gardens would be established on private land provided by farmers or healers and that these stakeholders would manage these gardens. However, following further consultations it was noted that sustainability of running the gardens with these stakeholders would be low. A decision was therefore made to change the plan and work with schools and churches instead. Three reasons guided this decision, namely that churches or schools:

1. have land that has few tenurial problems
2. have a ready source of labour from their students or church members, and

3. present a good opportunity to raise awareness about the need to conserve plants exists with the young people.

Following this modification, collaborating institutions to participate in the establishment of gardens were identified and meetings held with them. The collaborating institutions were Nabalanga Primary School (Mukono District), Kaucho Primary School (Pallisa District), San Geovani High School Makiro (Kanungu District) and St. Theresa, Nabilatuk Parish Church (Nakapiripirit District) (Figure 2). The head-teachers of the above schools, and the Father of St. Theresa, Nabilatuk Parish Church signed memorandum of understanding (MOU) with Sustainable Use of Plant Diversity (the consulting NGO). During the discussions it was agreed that the collaborating institutions would:

1. provide land
2. motivate the pupils and their wildlife clubs to provide labor
3. interest community members to volunteer in caring for the medicinal garden, and
4. at every opportunity raise awareness about the garden

All collaborators were given support to clear the plots of land, acquire planting material, sow seedlings and maintain the gardens for the first four months. Fences and signposts were also provided. The District Forestry Officers of Pallisa and Kanungu participated and provided expert advice on the establishment of the gardens. Plots were monitored two months after establishment to check the progress of propagation.



Surveying plot at nabalanga primary school



Clearing plot at San Geovani high school Makiro



Nursery operations at St. Theresa, Nabilatuk Parish Church



Mature Aloe at the Nabilatuk garden



Fenced off plot at Kaucho Pr. School



Head teacher and Deputy Headteacher of Kaucho Pr. School surveying the young medicinal plants



Figure 2. Establishing demonstration gardens in the project sites

3. Findings of the Inventory of medicinal plants and health seeking behavior survey

3.1. Respondent characteristics

The respondents interviewed in this study had attained low levels of formal education (Table 1). The majority had no higher than primary level education (57%) and 24% had never attended formal education. Most respondents were Christians (> 90%). The respondents mostly belonged to the tribes Karamojong, Bakiga, Bagwere and Baganda. Most of the respondents' livelihoods depended on crop farming. Others, especially those from Nakapiripirit District, were pastoralists.

Table 1. Respondent characteristics (n= 171)

Characteristic	Percent	Characteristic	Percent
Education of respondent		Religion	
Primary	59	Catholic	61
None	23	Anglican	31
Lower secondary	11	Moslem	7
Tertially	4	Adventist	1
Higher secondary	2	Yudaya	1
University	1		
Tribe		Occupation of respondent	
Karamojong	30	Farmer	42
Mukiga	23	Student	22
Muganda	20	Pastoralist	20
Mugwere	19	Civil servant	7
Iteso	2	Housewife	3
Musoga	1	Business	1
Tanzanian	1	Crafts Man	1
Munyarwanda	1	Tailor	1
Mulundi	1	Mechanic	1
Munyole	1	Traditional Livestock Healer	1
Mukonjo	1	Watchman	1

3.2. Health seeking behavior

The common diseases and conditions in the four districts include malaria, cough, headache, diarrhea, abdominal pain, common cold, back-ache and eye conditions (Figure 3). Respondents stated that when they fall sick they self medicate using plant medicines or consult western trained medicine doctors (Figure 4a). The respondents from Nakapiripirit claimed that they consult traditional medicine practitioners alongside self medication with traditional medicines as the first source of health care. Generally, when the first form of treatment is not effective, respondents claimed that they consult a western trained medicine practitioner (Figure 4b).

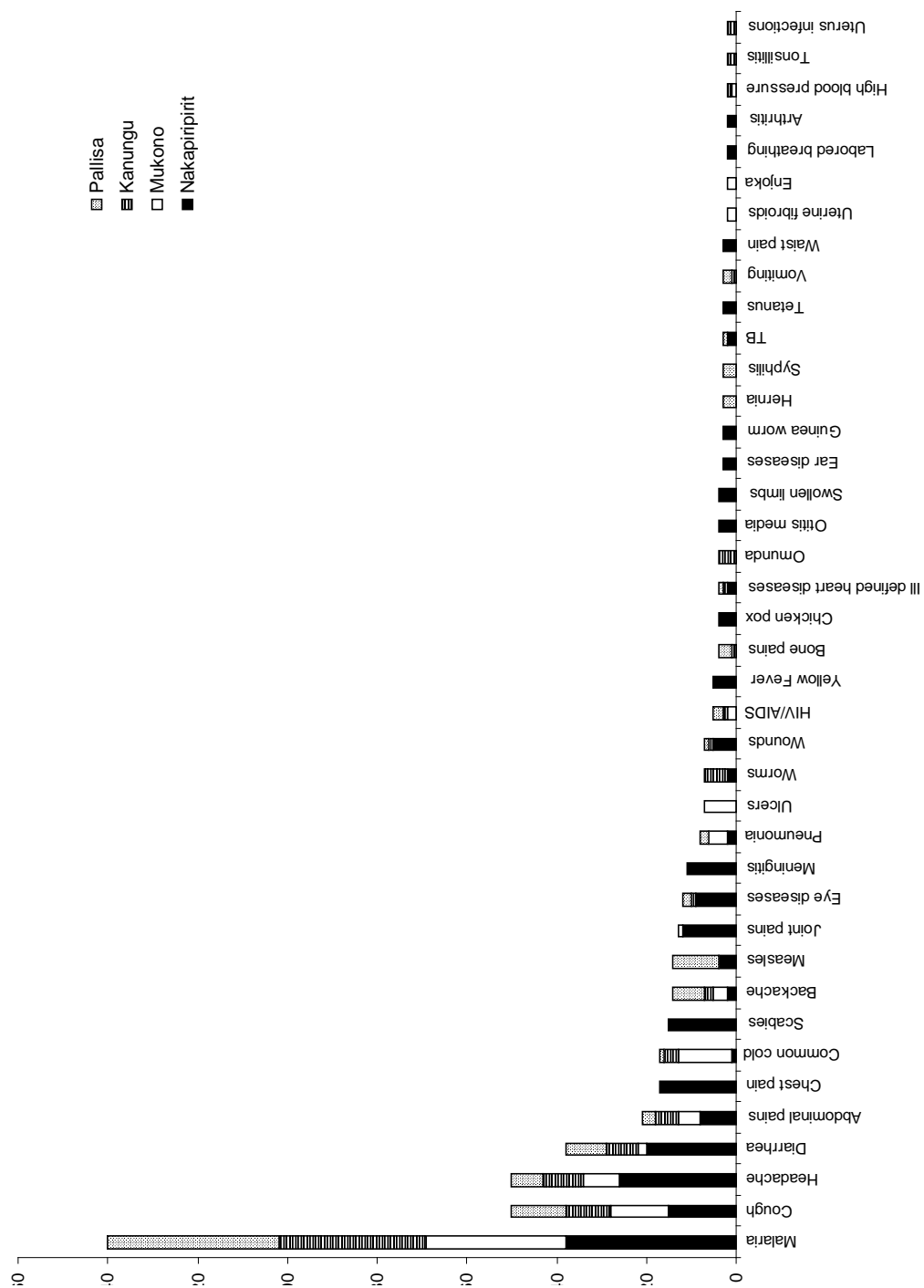


Figure 3. Most frequently mentioned ailments by respondents of Nakapiripirit, Mukono, Kanungu and Pallisa. Included are diseases mentioned by two or more respondents

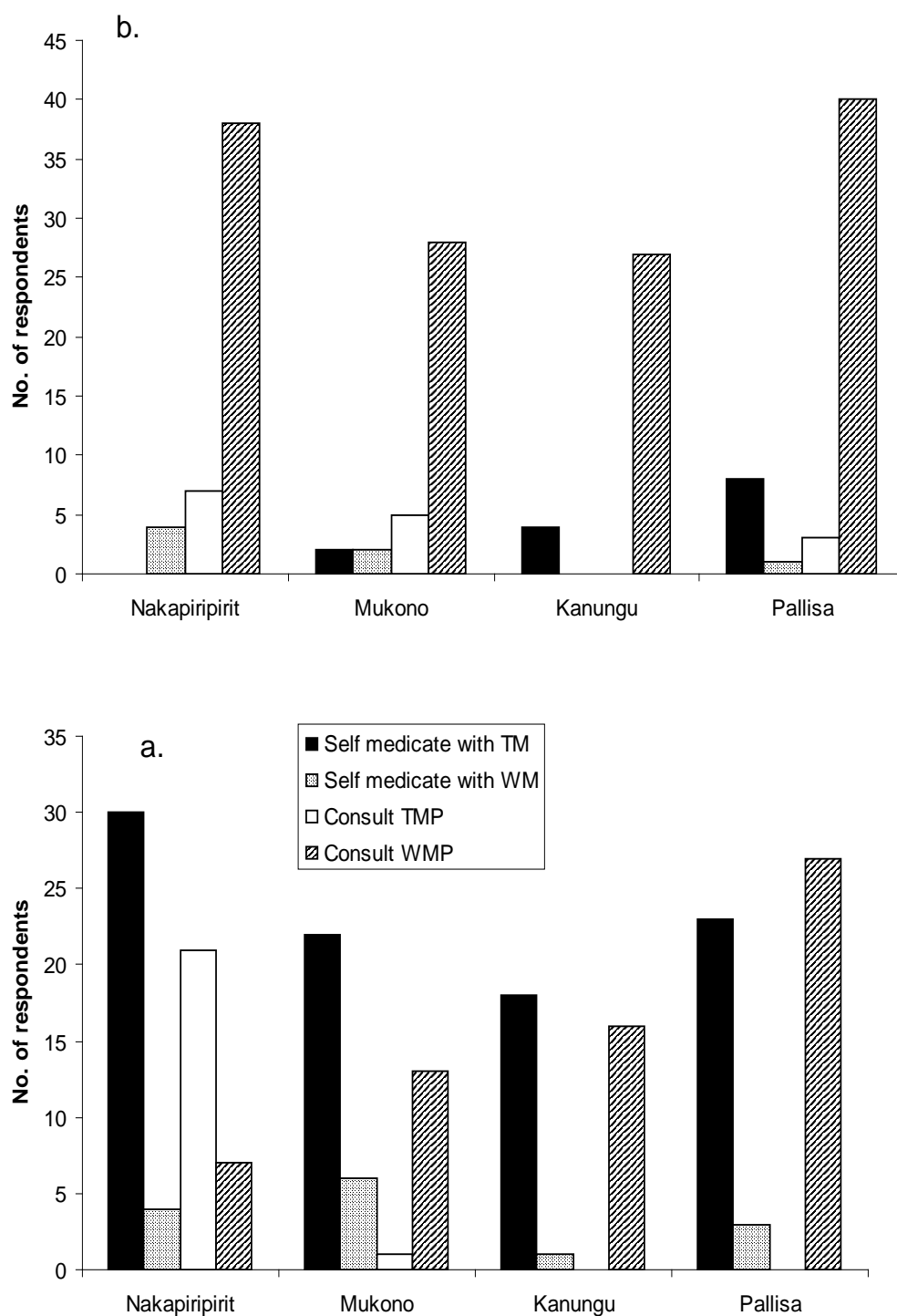


Figure 4. Health seeking behaviors of respondents in Nakapiripirit, Mukono, Kanungu and Pallisa. a. First form of health care sought. b. secondary form of care sought when the first provider or source fails to work.

3.3. Indigenous knowledge of traditional medicine use

Respondents reported that they use plants mostly when preparing their remedies. However, they at times use animal products, inorganic materials e.g. soil, kitchen soot and water (Table 2). No rituals accompany the treatments. Respondents have knowledge to treat at least three diseases using herbal medicine plants. We documented 262 different plants used to treat 78 diseases and medical conditions (Appendix 16). We have prioritized this list by excluding species that are used to treat three or fewer conditions, to remain with 44 species (Table 3). The respondents stated that they harvest leaves, for the most part, to prepare herbal medicines; roots and stems are also commonly harvested (Figure 5). The medicines are mostly prepared as water extracts or as decoctions and administered orally (Figure 6).

Table 2. Other material used in treatments

Material	Ailment
1. White chalk soil	Chicken pox
2. Animal parts (fat, offal, blood, butter and cow dung)	Chest pain
a. Milk from a black cow	Measles
b. fat	Tuberculosis
3. Ash	Febrile convulsions, Wounds, Malaria
4. Coral salt, Ebalangit	Toothache
5. Hot cloth	Headache
6. Petroleum Jelly	Pneumonia, Fractures
7. <i>Kihonde</i>	
8. Kitchen soot	Worms
9. Rabbit hair and parts of the animal called <i>Napupu</i>	Burns
10. Salt and Rock salt	Wounds
11. Anthill soil	Pyomyositis
12. Soil, Red soil,	Diarrhea, Tonsillitis, Worms, Malaria Cough, Malaria
13. Water from a grass roof	Uterine fibroids

Table 3. Plants used in traditional medicine and the diseases that they treat

	Abdominal pain	Anemia	Arthritis	Boils	Brucellosis	Burns	Chest pain	Colic pain	Conjunctivitis	Cough	Diarrhea	Ear infection	Enjoka	Whitlow	Febrile convulsions	Eye diseases	Fever	Flu	Fractures	Gastritis	Headache	Heart problems	HIV/AIDS	Joint pains	Kidney disease	Kiri	Lameness	Body swelling	Malaria	Measles	Meningitis	Muganga	Otitis Media	Scabies	Snake bite	Splenomegaly	Back pain	Sternum (pain in)	Tonsillitis	Ulcers	Uterus infection	Vomiting	Waist Pain	Spirits	Worms	Wounds	Yellow fever	Total			
<i>Vernonia amygdalina</i>	4			1		1		1		5					3	3	3				1		1			1	1	1	5	1	2	1													3	1		86			
<i>Aloe spp.</i>	1					1				1											7							30		1																		42			
<i>Azadirachta indica</i>										2	1									2								18	1					1	2														27		
<i>Cassia nigricans</i>																				3									13	1	10																27				
<i>Mangifera indica</i>	2									13								1		1									3					2														22			
<i>Momordica foetida</i>										5								2		1			1						6					1														16			
<i>Carica papaya</i>		1								3	3																		4																			3	15		
<i>Chasmanthera dependens</i>																				1	5							8																					14		
<i>Senna occidentalis</i>	1						5																					1								2												11			
<i>Psidium guajava</i>	1									3	2																	1							1														9		
<i>Warburgia salutaris</i>											2									3									4																				9		
<i>Erythrina abyssinica</i>																				1				1																									8		
<i>Physalis peruviana</i>	3													1	1																																		8		
<i>Vernonia lasiopus</i>	3							1		1				1						1									2					1														8			
<i>Albizia anthelmintica</i>											1																								2														7		
<i>Bidens pilosa</i>	1	2																																																7	
<i>Aristolochia elegans</i>																																																		6	
<i>Abrus precatorius</i>																																																		6	
<i>Jatropha curcas</i>																																																		6	
<i>Lantana camara</i>																		1																																6	
<i>Leonotis nepetifolia</i>	2													1						1																													6		
<i>Plectranthus barbatus</i>	3																																																	6	
<i>Saba comorensis</i>			1																																															6	
<i>Acacia nilotica</i>										4							1																																5		
<i>Cymbopogon citratus</i>										3								1																															5		
<i>Cymbopogon nardus</i>																																																		5	
<i>Indigofera arrecta</i>	1																																																	4	
<i>Kitiatabe*</i>	1																																																	4	
<i>Melia azedarach</i>																				1	1								2		1																				5
<i>Ocimum suave</i>	2																			1																													5		
<i>Asplia mossambicensis</i>													1																																					4	
<i>Conyza floribunda</i>																																																		4	
<i>Cupressus lusitanica</i>										4																																								4	
<i>Citrus sinensis</i>																																																		4	
<i>Digitaria abyssinica</i>										1																																								4	
<i>Esiokan*</i>																																																		4	
<i>Eucalyptus spp.</i>																																																		4	
<i>Eyrolit*</i>																																																		4	
<i>Lantana trifolia</i>																																																		4	
<i>Moringa oleifera</i>																																																		4	
<i>Zanthoxylum leprieurii</i>																																																		4	
<i>Persea americana</i>	1	2																																																4	
<i>Tagetes minuta</i>																																																		4	
<i>Zizyphus mauritiana</i>	1		1																	3																													4		
Total	28	5	2	1	1	2	1	7	1	62	17	3	4	1	3	1	4	9	1	3	29	1	2	3	1	2	2	1	166	6	11	1	12	4	3	2	1	3	1	4	4	3	2	13	8	5					

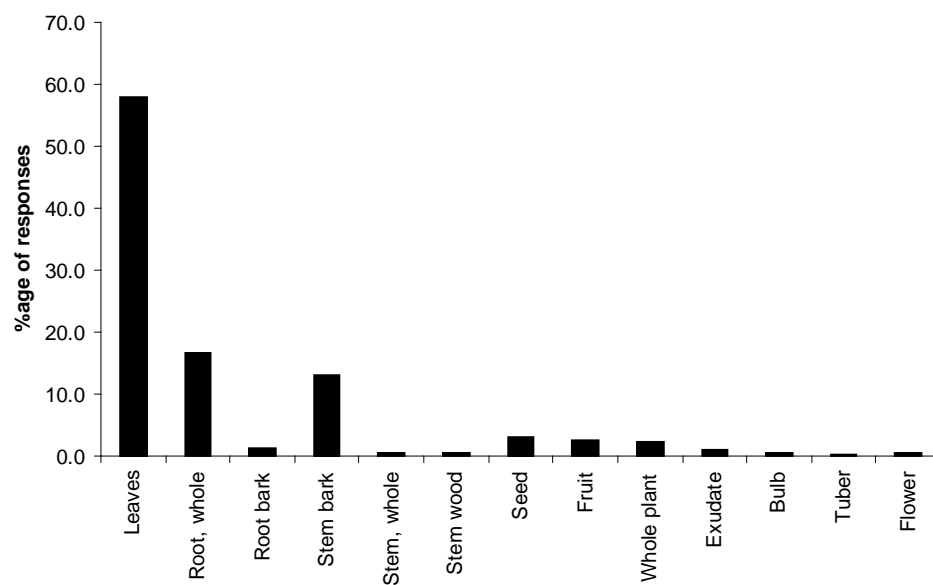


Figure 5. Plants parts used in the preparation of herbal medicines.

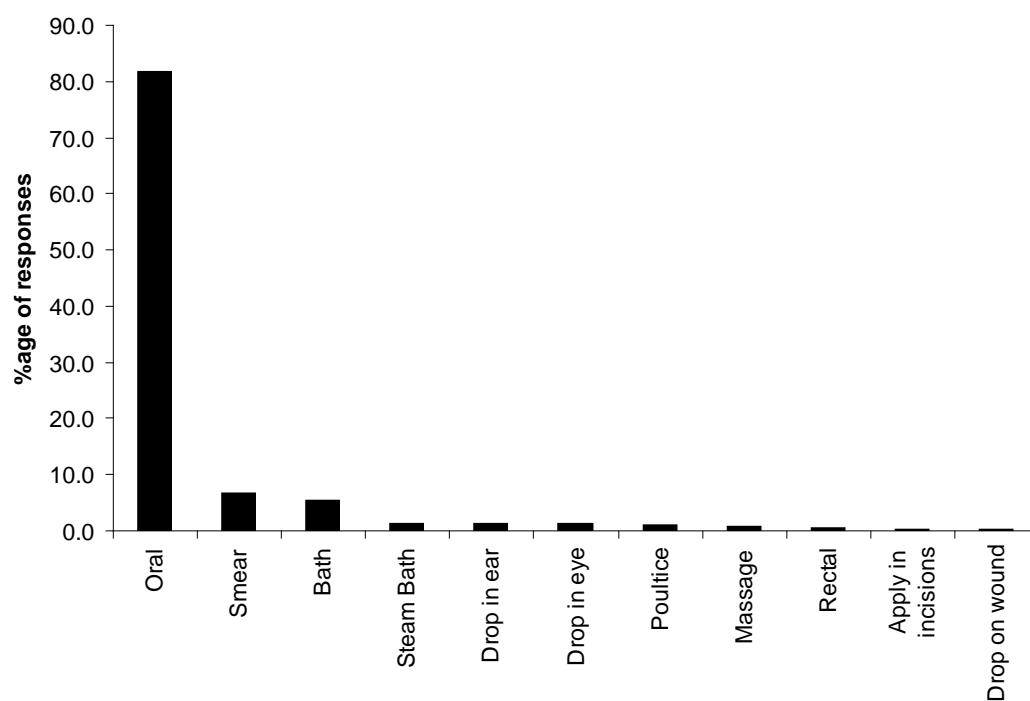


Figure 6. Routes of administration of traditional medicines

According to the informant consensus factor (ICF), plant remedies for meningitis, scabies, *enjoka* (*Enjoka* is an all inclusive term that may refer to abdominal worms; to abdominal cramps/pain which are believed to be caused by abdominal worms among other things; to gonorrhea; or to painful menses in females), snake bite, malaria, uterus infection, diarrhea, wounds, cough, headache, measles, fever, abdominal pain, common cold, worms and yellow fever were well collaborated by respondents (Table 4). This analysis is well collaborated by observations by respondents on efficacy. According to observations in the survey five or more respondents reported that treatments for malaria, cough, headache, abdominal pain, diarrhea and meningitis were efficacious (Table 5).

Table 4. Informant consensus factor for diseases by respondents from Nakapiripirit, Pallisa, Kanungu, and Mukono.

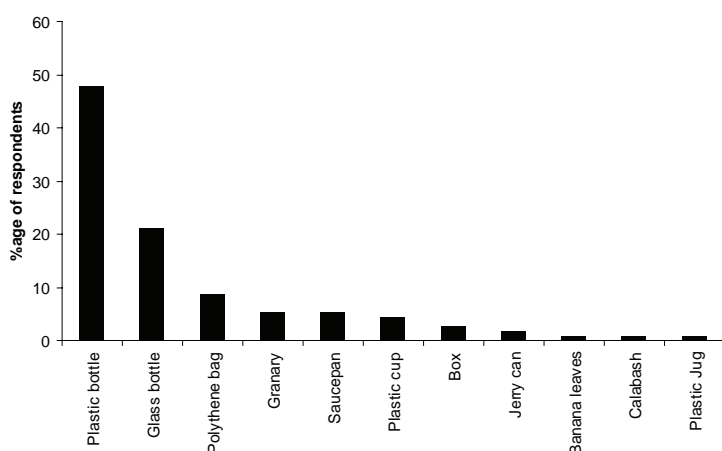
Only disease where 3 or more respondents mentioned a remedy are reported here.

Disease	ICF
Meningitis	0.92
Scabies	0.92
<i>Enjoka</i>	0.88
Snake bite	0.80
Malaria	0.76
Uterus infection	0.75
Diarrhea	0.68
Wounds	0.67
Cough	0.55
Headache	0.54
Measles	0.50
Fever	0.50
Abdominal pain	0.38
Flu	0.38
Worms	0.33
Yellow fever	0.33

Table 5. Perceptions on the efficacy of herbal medicines for the treatment of different diseases

Disease	Improved	Recovered	some times Recovered	Did not improve	Total
Malaria	24	26		1	52
Cough	7	9			16
Headache	2	5			7
Abdominal pain	1	5			6
Diarrhea	3	2			5
Meningitis	2	3			5
Common cold	1	2		1	4
Abdominal worms		4			4
Joint pains	2	1			3
Dysentery	2				2
Pneumonia	1	1			2
Measles	1	1			2
Ulcer		2			2
Yellow fever	1	1			2
Anemia		1			1
Chest pain	1				1
Pyomystis		1			1
Fever				1	1
Gastritis		1			1
Headache	1				1
Lameness		1			1
Malnutrition in children		1			1
<i>Nkado</i>	1				1
<i>Obulogo</i>		1			1
<i>Omunda</i>	1				1
Uterus infection		1			1
Vomiting		1			1
Waist pain	1				1
Whitlow		1			1

Herbal medicines are stored in used plastic bottles (Figure 7). Medicines when stored last for short periods of time (Fig 8). According to one respondent, only those medicines prepared from difficult to find species are stored. Easy to find species are not usually stored.

**Figure 7. Storage practices of herbal medicines by respondents.**

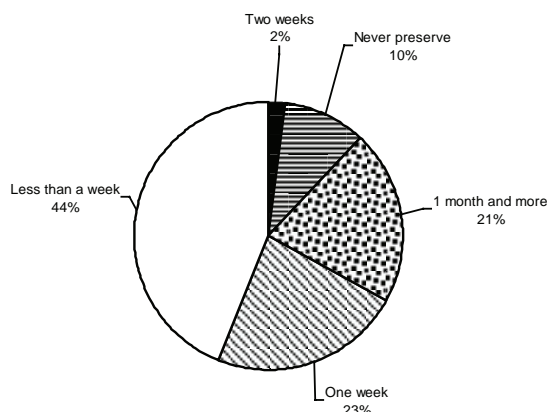


Figure 8. Period of storage of herbal medicines before they get spoiled.

The knowledge to treat ailments was acquired from a variety of sources by respondents. The most important sources of this knowledge were the parents and grand parents (Figure 9). There is a positive correlation between age and knowledge about traditional medicine treatment using herbal medicine plants ($r = 0.227$, $p < 0.006$). The level of formal education attained, occupation and tribe significantly affected knowledge on medicinal species ($p < 0.005$; Table 6). Respondents of the Karamojong tribe and those with no formal education (Nakapiripirit respondents) mentioned more remedies than respondents from other ethnic groups, or those who had higher levels of formal education or employed respondents (Table 6). Women have higher levels of medicinal knowledge (mean = 2.91) than men (mean = 2.56), but this difference is not significant.

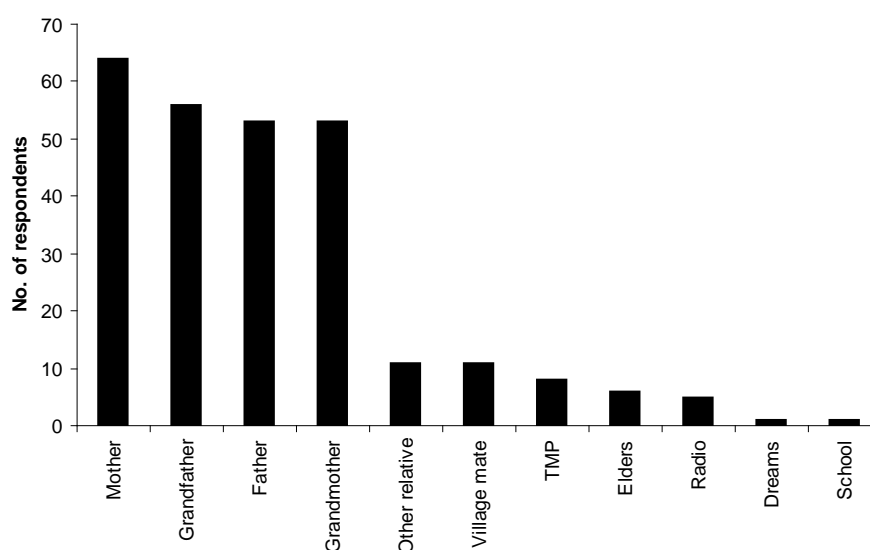


Figure 9. Source of knowledge on how to use plants for healing. Other relatives reported in the study are aunts and brother.

Table 6. Influence of education, occupation and ethnic group on number of remedies mentioned by respondents.

	Mean ¹		Std. Deviation
Education			
None	3.87	ab	1.502
Primary	2.41	a	1.543
Secondary	2.5	b	1.978
Tertially	2.8		1.304
Occupation			
Pastoralist	4.4	abcd	1.453
Other	3.33		2.082
Artisan	2.8	a	1.643
Farmer	2.25	b	1.352
Civil service	2.89	ce	2.205
Housewife	3.0		0.816
Student	1.72	de	0.888
Tribe ²			
Iteso	2.67		1.528
Karamojong	3.92	abc	1.47
Muganda	2.45	ad	1.546
Mugwere	1.67	bd	0.922
Mukiga	2.22	c	1.376

Notes:

¹ Means followed by the same letter are significantly different at the 0.05 level

² tribes with one respondent were excluded from the analysis

A survey made with market vendors revealed that some of the species mentioned in interviews were sold in the market (Table 7). Out of the 35 species mentioned by 3 or more vendors 11 were also mentioned by household respondents.

Table 7. The most frequently sold herbal medicine species by vendors of Owino market. Mean ranks are also shown. A rank of 1 shows a species known to be the most important and 8 the least important among the sold species. Only species mentioned by 3 or more vendors are shown. Species mentioned by respondents in household interviews are highlighted.

Species	Local name	Mean Rank
Unidentified	Dokiyo	1.0
<i>Warburgia salutaris</i> (G. Bertol.) Chiov.	Abasi	1.7
<i>Elaeodendron buchananii</i> (Loes.) Loes.	Mbaluka	1.9
<i>Securidaca longipedunculata</i> Fres.	Mukondwe	2.0
<i>Mangifera indica</i> L.	Muyembe	2.3
<i>Zanthoxylum chalybeum</i> Engl.	Ntale ya dungu	2.3

Species	Local name	Mean Rank
<i>Psorospermum febrifugum</i> Spach	Kanzironziro	2.4
<i>Alstonia boonei</i> De Wild.	Mubaja ngalabi	2.5
<i>Piliostigma thonningii</i> (Schumach.) Milne-Redh.	Mugaali	2.7
<i>Garcinia buchananii</i> Baker	Musaali	3.2
<i>Vernonia amygdalina</i> Delile	Mululuza	3.3
<i>Ziziphus pubescens</i> Oliv.	Mugenda kilo	3.4
<i>Entada abyssinica</i> A. Rich.	Mwolola	3.5
<i>Albizia coriaria</i> Welw. ex Oliv.	Mugavu	3.9
<i>Myrica kandtiana</i> Engl.	Kikimbo	4.0
<i>Acacia polyacantha</i> Willd.	Kibeere	4.2
<i>Syzygium cuminii</i> Skeels	Jambula	4.3
<i>Toddalia asiatica</i> Lam.	Kawule	4.3
<i>Acacia hockii</i> De Wild.	Kasaana	4.5
<i>Aristolochia elegans</i> Mast.	Musuja welaba	4.8
<i>Zanthoxylum</i> spp.	Munyeeye	4.9
<i>Erythrina abyssinica</i> Lam.	Jirikiti	5.0
<i>Rhus vulgaris</i> Meikle	Kakwanso kwanso	5.1
<i>Prunus Africana</i> Kalkman	Ntaseesa	5.1
<i>Spathodea campanulata</i> P. Beauv.	Kifabakazi	5.1
<i>Canarium schweinfurthii</i> Engl.	Muwafu	5.1
<i>Carissa edulis</i> (Forssk.) Vahl.	Muyonza	5.3
<i>Piptadeniastrum africana</i>	Mpewere	5.4
<i>Maytenus senegalensis</i> Exell	Naligwalimu	5.4
<i>Cryptolepis sanguinolenta</i> (Lindl.) Schltr.	Kafulu	5.8
<i>Kigelia africana</i> (Lam.) Benth.	Mussa	6.3
<i>Combretum molle</i> G. Don	Ndagi	6.5
<i>Ficus glumosa</i> Delile	Muwo	6.7
<i>Dracaena steudneri</i> Engl.	Kajjolyenjovu	7.7
<i>Albizia</i> spp.	Nongo	8.3

4. Discussion and Conclusions

Respondents interviewed in this survey had knowledge that could be used to treat 78 ailments and conditions. Herbal medicine knowledge is extensive as every respondent could, on average, mention three remedies. This knowledge varied from district to district. Variation of traditional knowledge between cultural communities is widely reported in the literature.

Knowledge of how to treat ailments by respondents was acquired from parents and grandparents. Indeed older people mentioned significantly more remedies than the young. This is in agreement with studies conducted elsewhere which show that older people hold more IK than younger ones

and that they are the ones who transmit this knowledge (Caniago and Siebert, 1998; Millar and Haverkort, 2006).

The TK related to TM may be threatened and could be declining. This is because knowledge is still mostly held by the older members of the society who transmit it to the younger members. This inter-generation mode of transmission has been observed to be leading to loss of IK (Caniago and Siebert, 1998; World Bank, 1992). Additionally, in this study education and occupation seem to have a negative impact on IK acquisition and retention, whereby the educated and those employed in wage labor mentioned fewer species than the least educated and those in peasant agriculture or pastoral occupations.

Many of the ailments for which treatments were known, e.g. malaria and diarrhea, are what are known as self limiting ailments. Self limiting ailments are disease conditions whose symptoms may disappear even without treatment. According to van Wyk & Wink (2004) traditional medicines are most useful in the treatment of self-limiting ailments and chronic ailments where they alleviate symptoms or shorten recovery time. Allopathic medicine is preferred for the treatment of serious diseases and conditions like tuberculosis.

Self-medication using plants and allopathic medicines is widely practiced in the four districts studied. The practice of self-medication is popular in many parts of the world including Africa and is mostly practiced in areas where the health infrastructure is poor, people have a negative attitude about the quality of care in medical facilities, are poor and can ill afford the consultation fees charged in medical facilities (Geissler et al., 2000; Nuwaha, 2002; Shankar et al., 2002). In Nakapiripirit the most marginalized of the study districts respondents reported that they consult traditional medicine practitioners. This practice is not common as can be readily seen from the data for the other districts (Figure 4). Traditional medicine practitioners are commonly consulted for chronic and difficult to understand ailments (Tabuti et al. 2003).

Conclusions

This survey has indicated that abundant TK on traditional medicine still exists and that TM is still important in Uganda, because respondents mentioned many species and remedies used in traditional medicine and stated that they use it as a first line of health care when they fall sick. This wide use was observed more in the marginalized communities of Nakapiripirit. The TK is transmitted from the older members to the young members. Lastly, many (35) plant species have market potential and could be commercialized because they were found in markets.

Recommendations

Firstly, there is need to validate the efficacy and safety of the remedies reported in this study in order to determine whether they are effective to treat the diseases that they are claimed to treat and are safe to use. Priority species should be those that are first of all used to treat diseases which respondents have observed to be effective and for which people have the highest agreement measured as informant consensus factor (ICF), namely meningitis, scabies, *enjoka*, snake bite, malaria, uterus infection, diarrhea, wounds, cough, headache, measles, fever, abdominal pain, common cold, abdominal worms and yellow fever and are at the same time found in markets. The first step in this direction should be to conduct a literature review to see what information exists for the target species before bioassays are conducted in the laboratory.

Secondly, this study was conducted in only four districts of Uganda, and showed that IK varied between districts. This means that more detailed surveys covering the whole country need to be undertaken to complete the documentation of this knowledge in Uganda.

Thirdly, a wider market survey of medicinal plants needs to be conducted to capture the whole diversity of herbal medicine species sold in markets.

5. Feedback messages from participants in the stakeholders Workshops and Sensitization Campaigns

5.1. Feedback from Guests of honor/district leaders

All districts leaderships' welcomed the feedback workshop and encouraged the awareness-raising on traditional medicine. All the district top leadership that we interacted with promised to fully support the promotion of traditional medicine. They reiterated that the Uganda government was fully supportive of maintaining and improving health for its people through immunizations, construction of health centers covering the country and recognizing the role of indigenous herbal medicine alongside programs for improvement of rural livelihoods.

The leaders observed that many local people use traditional medicines and that in many cases these medicines are efficacious. They expressed happiness at the composition of group of participants which included women and young children and were also happy that the facilitating team had brought results of the project back to the people who participated in the interviews.

Lastly, these leaders expressed concern over the environmental problems such as deforestation which were threatening the availability of traditional medicines. They also noted that practitioners needed to improve their packaging practices and to also conduct their practices honestly and avoid indulging in unethical behaviors.

5.2. Feedback from participants

The audience comprising people who had participated in the survey was very happy that we had returned results to them and that the return of the results had improved their trust of us. In the words of one participant, they (the participants/respondents) did not disclose all that they knew because they did not trust us the first time, but now that we had conducted the feedback, they trusted us more and would disclose more information if we went back to them a next time.

The participants were interested to know whether we had conducted laboratory tests to determine whether the medicinal plants we had inventoried had medicinal activity and also whether we had determined the doses. We informed them that we had not done this and discussed the reasons why.

The participants and institutions present requested for copies of the catalogue. According to some participants, this catalogue would go a long way in creating and fostering the collaboration of traditional and allopathic medicine practitioners.

5.3. Land for the botanical gardens

The participants were interested in having medicinal plants propagated around their areas. In all districts visited, the people pledged land for the botanical garden. Our team was ambitious here and requested for 10 ha of land from Pallisa District and Nakapiripirit. We explained that we were not changing the tenure of the land, but that we were establishing an activity already earmarked for the land.

1. In Pallisa the local leadership pledged land in Oduarata Local Forest Reserve (10 ha) for the botanical garden
2. In Nakapiripirit land was provided by the Pian-Ngimurue Traditional Livestock Healers Association
3. In Mukono Nabalanga primary school provided land
4. The Kanungu district administration headquarters offered Kibwetere's land

5.4. Management of botanical gardens

The people volunteered to manage the botanical gardens. In Pallisa and Nakapiripirit, the local communities formed steering committees to oversee the establishment and management of these gardens. In Mukono and Pallisa, land for the botanical gardens was identified outside community tenure. That is the land was provided by a school in one instance and the District Forest Services in another.

6. Key outputs

Five main outputs have been realized in this project:

1. a prioritized list of herbal medicine plants has been generated
2. a catalogue of the priority herbal medicine plants has been produced
3. four information sharing workshops have been conducted
4. four herbal medicine gardens one in each of the 4 districts have been established, and
5. output 3 and 4 have led to improved awareness about traditional medicine

7. Key outcomes

It is believed that because of this project that there will be increased conservation of medicinal plants through increased transfer of knowledge on propagation and domestication technology to interested community members. There will also be increased conservation of traditional medicine knowledge because when community members visit the botanic gardens they will appreciate more the value of medicinal plants and get to know the different uses of particular plants, their conservation status and how to propagate and domesticate them. In addition, use of traditional medicine is likely to increase and at least 10 priority medicine plants will be domesticated in each district.

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9. Appendices

Appendix 1: SSI schedule for interviewing key informants

1. What are the common ailments that afflict households?
2. Where do household members seek health care?
3. What ailments do people seek health care for from TMPs?
4. Above which age is a person considered an adult in this community?
5. How far is the local health care center?
6. What grade is this health care center?
7. Is traditional medicine popular?

Appendix 2: List of respondents showing village and district.

	Name	Village	District
1	Lotuke Anna	Aramaoi	Nakapiripirit
2	Korobe H	"	"
3	Lorren Pader	"	"
4	Lojalu Anna	"	"
5	Achia Emmanuel	"	"
6	Longorinyanga L	"	"
7	Korobe	"	"
8	Lokapa Francis	"	"
10	Lodia Mariko	"	"
11	Aringa Zacharia	"	"
12	Lokiru Emmy	"	"
13	Lobong Nameriko	"	"
14	Longoro Lemuja	"	"
15	Lokosowa Loma	"	"
16	Ayopo Aisaki	"	"
17	Damaki Felix Kodet	"	"
18	Longori Moses	"	"
19	Lomongin	"	"
20	Napoyon Basil	"	"
21	Narre Peter	"	"
22	Lommuria	"	"
23	Aleper Josephine	"	"
24	Achia Lokyoo	"	"
25	Lukebo Lokeris	"	"
26	Lomulen Apulatubokori	"	"
27	Aliche Alice	"	"
28	Lochoro Ann	"	"
29	Longing Aleper	"	"
30	Aleper Paul	"	"
31	Achia Lokoriita	"	"
32	Lorupui John	"	"
33	Lommuria Hellen	"	"
35	Nakoki Joy	"	"
36	Lokusawa Loma	"	"
37	Iriam Catherine	"	"
38	Eruma Namakori	"	"
39	Lorika Miriam	"	"
40	Lonyanyu Hellen	"	"
41	Mubiru Godfrey	Nkuragirire	Mukono
42	Topista Kaggwa	"	"
43	Nabatanzi Ruth	"	"
44	Ismail Kiberu	"	"
45	Mukibi Lawrence	"	"
46	Namugambe Firoce	"	"
47	Nampiima Christine	"	"
48	Nabukera Vina	"	"
49	Kakolo Vicent	"	"
50	Kizito John	"	"
51	Nandaula Cissy	"	"
52	Namulondo Maureen	"	"
53	Kagulire Christopher	"	"
54	Nakyansi Cerinah	"	"
55	Kaddu Kambuga	"	"
56	Nalonga Lydia Nabweteme	"	"
57	Nambolanyi Janet	"	"
58	Nabiru Ruth	"	"
59	Kabagarizo Joseph	"	"
60	Nabaka Milly	"	"
61	Nakabale Alex Billy	"	"
62	Pongo Moses	"	"
63	Kalungi Zachariah	"	"
64	Nakyejiwe Shamim	"	"
65	Buliri Shamim	"	"
66	Nasitanzia Ndagire. N	"	"
67	Kasita Nanfoka	"	"
68	Wakabi Paul	"	"
69	Mulasa Geoffrey	"	"
70	Kizza Peter	"	"
71	Nankumba Yonia	"	"
72	Nakanwagi Regina	"	"
73	Kedreth Jonah Mpirirwe	Karegye	Kanungu
74	Kabusheshe Odda	"	"
75	Byarugaba Emmy	"	"
76	Tumusime Agatha	"	"
77	Ayebare Justin	"	"
78	Turinawe Francis	"	"
79	Arinitwe Anah	"	"
80	Mugisha John	"	"
81	Tukamushaba Santurinah	"	"
82	Tumuhimbise Dinah	"	"
83	Kesande Fausta	"	"
84	Katabazi John	"	"
85	Ahimbisibwe Santrina	"	"
86	Besigye Alice	"	"
87	Bariraeryo Paul	"	"
88	Fiderensi Nyabuhara	"	"

	Name	Village	District
89	Kanyaraju Charles	"	"
90	Sanyu Rebbecca	"	"
91	Byamukama Christopher	"	"
92	Tumusiime Yudita	"	"
93	Besigye Geofrey	"	"
94	Tumukunde Johnson	"	"
95	Kyarisima Costance	"	"
96	Barisigara Petero	"	"
97	Kanyesiime Chrisentia	"	"
98	Byamugisha John	"	"
99	Tuhiriwe Judith	"	"
100	Kabakyenga Julius	"	"
101	Tumwesigye Seforoza	"	"
102	Atuheire shallon	Mashenga	"
103	Tuheirigwe Shallon	Mushasha	"
104	Akankwasa Olivia	Karegye	"
105	Twikirize Glorious	Mukinga	"
106	Nahurira Mackinoni	Kifunjo	"
107	Arineitwe Lydia	"	"
108	Kukundakwe Elizabeth	Nyarurambi	"
109	Nyesigire Edgar	Nyarurambi	"
110	Orikushaba Amon	Kifunjo	"
111	Kyarikunda Stellan	Karegye	"
112	Mugala Grace	Bubulanga A	Pallisa
113	Tyaga John	"	"
114	Kibapa Micheal	"	"
115	Takali Agnes	"	"
116	Kefa Night	"	"
117	Mutaara Wilson	"	"
118	Rukoba Julius	"	"
119	kaigo Nicholas	"	"
120	Efrance Nadera	"	"
121	Namima Wilberforce	"	"
122	Kanyi Mariam	"	"
123	kayendeke Eglansi	"	"
124	Mumbi Nicholas	"	"
125	Nakamya Topista	"	"
126	Nakirya Veria	"	"
127	Bolya Anthony	"	"
128	Kayedenke Lovisa	"	"
129	Muzeyi Eldad	"	"
130	Nsamanya Samiya	"	"
131	Dajali Benedict	"	"
132	Abudallah Nabyama	"	"
133	Mutaki Wilson	"	"
134	Nakyala Clostic	"	"
135	Lyada Stephen	"	"
136	Federesi Dambyo	"	"
137	Wasaleyune Ansereme	"	"
138	Nadoroto Florence	"	"
139	Kirya James	"	"
140	Kaako Efrance	"	"
141	Mutaki Yokolamu	"	"
142	Nankoma	"	"
143	Kauta Rogers	Buseta	"
144	Muzei Erika	Bubulanga A	"
145	Kintu Muhammad	Bubulanga B	"
146	Bumba Ronard	Buseta	"
147	Kamba Gasiter	Bukalijoko	"
148	Namuzungu Oliva	Bubulanga A	"
149	Nakipa Mary	Buseta A	"
150	Salamula Joan	"	"
151	Takoberwa Robinah	Bukalijoko	"
152	Bakita Josephine	"	"
153	Tamale Paul	Nkuragirire	Mukono
154	Sebuwufu Jane	"	"
155	Kasifa Nanyondo	"	"
156	Namusoke Halima	"	"
157	Nandaula Hadija	"	"
158	Mugula Peter	"	"
159	Nabakooza Pauline	"	"
160	Sempijja Boniface	"	"
161	Madaw Ibrahim	"	"
162	Ana Lokeris	Aramaoi	Nakapiripirit
163	Esther Lawon	"	"
164	Nakot Alice	"	"
165	Lokiru Kafee	"	"
166	Manana Manko	"	"
167	Lomilo Akoli	"	"
168	Nachuge Mary	"	"
169	Maritina Angel	"	"
170	Mana Aupari	"	"
171	Layolo Jolin	"	"

Appendix 3: Workplan

Date	Activity
First week of September	1. Preparation of report in simplified form for dissemination
	2. Preparatory meeting
	3. Acquiring communication materials e.g. flip charts
15 th – 17 th Sept. 2009	• Workshop held in Pallisa
18 th – 20 th Sept. 2009	• Workshop held in Nakapiripirit
22 nd – 23 rd Sept. 2009	• Workshop held in Mukono
	• Workshop held in Kanungu
Oct – November 2009	Report compilation
	Review of draft report by UNATCOM
	Final Report Compilation

Appendix 4: List of participants

Mukono	Pallisa
1. Ssemakula Betty Mukasa (RDC)	Dr. Muhofa Patrick (DPO)
2. Kansiime Seith (0774 062988)	Francis Okiror (DIO)
3. Lubega Bosco (0772 904064)	Putan Mary (DNO)
4. Kato Jim (DISTRICT CULTURAL OFFICER) (0712 742460)	Grace Hirya Negesa (Ag. DCDO)
5. Musisi Charles (DISTRICT INFORMATION OFFICER) 0752 610734	Kaiire W. Kitawu (DFO)
6. Omuse kitooke	Thomas Okoth Nyalulu (RDC)
7. Nabakooza Pauline	Mugala Grace
8. Nyakato Nalongo Jane	John Tyaga
9. Nakanwagi Regina	Michael Kibapa
10. Sebuwufu Jane	Agnes Takali
11. Nambolanyi Janet	Night Jessica Kefa
12. Nabukera Vina	Wilson Mutaala
13. Ssebuwufu John M.M (0776 490013/0753 490013)	Julius Rukoba
14. Ssenyimbwa Kaddu	Nicholas Kaigo
15. Obbo Alex	Efrance Nadera
16. Kawuki David	Wilberforce Namuma
17. Ssekamatte Denis	Mariam Kanyi
18. Ssentongo Dominic	Eglande Kayendeke
19. Kiberu Ismael	Nicholas Mumbi
20. Nalongo Kizito (0712 394961)	Teopista Nakamya
21. Nakyejjwe Shamim	Veria Nakirya
22. Nantongo Hope	Anthony Borya
23. Nakazzi Imelda	Lovisa Kayendeke
24. Wakabi Paul	Eldad Muzeyi
25. Mubiru Christopher	Samiya Nsamanya
26. Namuswe Namusoke J (0784 854881)	Benedict Dajali
27. Mukibi Lawrence	Abudallah Nabyama
28. Mubiru Godfrey	Wilson Mutaki
29. Ssekitoleko Veli	Clostic Nakyala
30. Nakafeero Ruth	Stephen Lyada
31. Kizito John	Federesi Dambyo
32. Nabaka Milly (0775 079707)	Ansereme Wasalayune
33. Semujju Mary (0775 455057)	Frolence Nadoroto
34. Nabilyo Ruth	James Kirya
35. Nansubuga Noola	Efrance Kako
36. Namuwaya Lucy	Yokolamu Mutaki
37. Abagalizo Joseph	Binalet Nankoma
38. Nakawuka Mary	Erick Muzeyi
39. Nampiima Christine	Gaster Kamba
40. Mutesi	Mary Nakimpa
41. Nandaula Cissy (0774 055543)	Josephine Bakita
42. Mutebi Marjorie (0774 500626)	Robinah Takoberwa
43. Namisi Sarah (0772 490721)	Oliva Namuzungu
44. Tamale Paul (0712 524122)	Richard Dungu
	Esther Tondoli
	Betty walama
	Ronald Bumba
	Mustafa Mohammed Kintu
	Lawrence Nyaigololo (0773559792)

Kanungu	Nakapiripirit	Contact
1. Kukundakwe Elizabeth	Munu Francis	075241865
2. Atuheirwe Shallon	Lomongin Johann	0782520740
3. Tuheririgwe Shallon	Lobong Peter	0783294045
4. Kyarikunda Stellah	Angella	
5. Arineitwe Lydia	Damac Felix Kodet	0754968073
6. Akankwasa Olivia	Matovu Bonny	077767944
7. Magezi Byarugaba	Alinga Zakaria	
8. Mpirirwe Jonah	Agero Peter	
9. Kobusheshe L.	Chumakori Wiliam	
10. Nyesigire Edgar	John Patan	
11. Nahurira Mackinoni	Paul Lodata	
12. Orikushaba Amon	Akol Peter	
13. Tukamushaba Saturina	Nakiru Lucy	
14. Arineitwe Annah	Akol Grace	
15. Byarugaba F Magezi (District Councilor)	Lokol Marino	
16. Kobusheshe Odda	Olum Peter	0753930301
17. Agaba B Simeo (District Information Officer)	Muge Julia	
18. Mugisha Roger (DFO)	Lomuria Kizito	
19. Ndizeye Ezra (SCDO)	Sagal Mauwa	
20. Asiiimwe Margret	Lowual Augustino	
21. Turinawe Francis	Wolimbwa Aziz	0392838191
22. Musiimire Francis (Chairman)	Lokut Joseph Tino	0755142149
23. Mpirirwe Kedress Joan	Mungasi Valentia	
24. Byamugisha John	Nayolo Maria	
25. Byarugaba Onesmus (Chairman LCI Karengye)	Lojaru Anna	
26. Tumusiime Agatha	Mukisa Ayub	0751573052
27. Byamukama Christopher	Atibu A Loesa	0753662164
28. Tumwesigye Seforoza	Nangiro Rachel	0782740149
29. Byarugaba Emmy	Sagala Mark Josua	0773968763
30. Besigye Godfrey	Odong Emmanuel R	0772831424
31. Tumuhimbise Dinah		
32. Kesande Fausta		
33. Katabazi Joni		
34. Tuherirwe Judith		
35. Kobusingye Lydia		
36. Kabakyenga Julius		
37. Kanyarufu Charles		
38. Kyarisima Costance		
39. Barimingo Paul		
40. Musiime Edida		
41. Barisigalana Petero		
42. Migisha J.		
43. Nyaburana Federensi		
44. Webare Justina		
45. Basigye Alice		
46. Katusiime Christine		
47. Koruha Molly		

Appendix 5: Workshop program

PROGRAMME FOR THE AWARENESS CREATION WORKSHOPS IN THE DISTRICTS OF NAKAPIRIPIT, MUKONO, KANUNGU AND PALLISA

DAY ONE		
TIME	Activity	Responsible
8.30- 9.00 a.m.	Registration of participants	
9.00 - 9.15 a.m.	Introductions	
9.15 - 9.35 a.m.	Opening remarks	Mr. Kaweesi/Prof. Tabuti
9.35 - 9.45 a.m.	Opening by Guest of Honor	RDC
9.45 – 10.00 a.m.	Traditional medicines used in the districts of Nakapiripirit, Pallisa, Kanungu and Mukono	Prof. Tabuti
10.00 - 10.10 a.m.	Discussion of presentation	Dr. Waako
10.10 – 10.40	Traditional medicine: their roles and values in health care and income generation.	Prof. Tabuti
10.40 - 11.00 a.m.	Discussion of presentation	Dr. Waako
11.00 - 11.30 a.m.	Tea break	
11.30 - 12.30 pm	Herbal medicine, utilization and patient care, and interactions of herbal and modern medicine.	Dr. Waako
12.30 - 01.00 pm.	Discussion of the presentation	Mr. Bukenya
01.00 - 2.00 p.m.	Lunch break	Prof. Tabuti
2.00 - 3.00 p.m.	Threats to Traditional medicine, conservation and domestication measures for sustainable utilization and economic development.	Mr. Bukenya
3.00 – 4.00 p.m.	Discussion on domestication and establishment of medicinal Gardens	Prof. Tabuti
DAY TWO		
9.00- 2:00PM	Discussion with district leadership and other stakeholders to explore and inspect possible sites for the medicinal gardens & management issues.	team

Appendix 6: Opening remarks by Mr. Daniel Kaweesi

UNESCO is undertaking many projects in the area of culture. For example, a little while ago, UNESCO undertook a project to improve the use and manufacture of barkcloth. UNESCO has a focus on the indigenous knowledge (IK) that our forefathers had and which they used to overcome many of the challenges that faced them. This included the innovation to create a fabric out of the bark of a tree. We do not want to lose this heritage.

The world is changing fast, but we insist that the local technologies which existed and are still useful to us be preserved. This includes also this local traditional medicine. Before modern doctors came here, our forefathers were treating themselves and managed to live healthy lives. Our forefathers used to go to the bushes and collect medicinal herbs to treat themselves. That IK, to be able to diagnose and treat ailments, is what we want to conserve here in this project.

Although, western based treatment is available, not everyone can access it. Sometimes hospitals are very far and people have to walk long distances to access them. On the other hand, people can access traditional medicine (TM) close to themselves. Furthermore, there are some ailments for which only TM is effective.

Forests are disappearing rapidly; however forests are the key sources of TMs. It is because of the above reasons that this project was implemented with the intention of:

1. promoting wider use of TM among communities, and
2. encouraging the people to plant and conserve important medicinal plants

It is because of this that Prof. Tabuti carried out a survey to document your IK in a book such that those present and future generations will know that these medicinal plants exist and that they are efficacious and can treat diseases.

Prof. Tabuti has now come back to inform you of the results of the survey and to also inform you about our

planned follow up activity of planting medicinal plants such that you, I and our descendants who will follow us will be able to access these medicinal plants. This issue will be emphasised in subsequent presentations by the facilitators.

I request that when you leave here and go back to your homes, that you share this information with members of your community. Tell them what we are doing. You, should also plant these medicinal plants around your home.

We all know that TM is very important, but more important still is the associated IK. This IK must be conserved. IK when well preserved will help us to overcome many of our challenges and will also make us rich. You have seen the many companies that have come (and more will come still), to bioprospect for TMs. At the same time the Government of Uganda is working hard to integrate both traditional and allopathic medicine systems.

We want to contribute to these aims. We agree that it is important to harmonise the government aims, with those of the bioprospectors and our local communities. We think that you should not only stop at using TM to cure your ailments, but that you should also cultivate medicinal plants and earn incomes from them. A good example of a medicinal plant that is earning people incomes is *Aloe* spp.

Thank you very much for listening.

Appendix 7: Traditional medicine: their roles and values in health care and income generation

By Prof. John R.S. Tabuti

1. Definition of TM

Traditional medicine includes **TM systems** such as traditional Chinese medicine, Indian ayurveda and Arabic unani medicine, and various forms of indigenous medicine. TM therapies include:

1. medication therapies — if they involve use of herbal medicines, animal parts and/or minerals, and
2. non-medication therapies — if they are carried out primarily without the use of medication, as in the case of acupuncture, manual therapies and spiritual therapies.

Traditional medicine consists of knowledge, skills and practices used in the maintenance of health, diagnosing, preventing, or eliminating physical, mental or social diseases and that have been accumulated locally over a long period of time. TM knowledge relies on past experience and observations handed down from generation to generation, either verbally or in writing.

The TM system is holistic in that its application usually covers the mind, body and soul. For most Africans, good health means not only physical health, but also a healthy situation in everything that concerns them. The concept of illness in traditional medicine includes health conditions caused by both seen and unseen forces such as ancestors, spirits and enemies. According to the users, TM cures both the physical/organic causes of a disease as well as its underlying causes, such as aggrieved ancestors or a neighbor's wrath.

2. The role of TM in primary health care

Traditional medicine (TM) occupies an important place in the health care systems of developing countries. It is estimated that between 60-80% of the primary health care needs are provided by TM.

Most people in developing countries use TM, because it is cheaper and more accessible than allopathic medicine (AM). TM is especially important, also, for chronic ailments and difficult to understand ailments. Research studies have shown that in some Ugandan communities the ratio of healers to population is 1:400 compared to 1:150 000 AMP to the population (Tabuti et al. 2003). TM also blends readily into the peoples' socio-cultural life; in addition to supplying herbal remedies, TMPs can also act against aggrieved ancestors, evil spirits or charms from one's enemies.

TM is also popular because of the personal way that TMPs provide medical care. Unlike the allopathic medicine (AM) system or western medicine system where care is often much more impersonal, Traditional Medicine Practitioners are experts at counseling and take time to get involved in the patients' illness. This could explain why they are considered effective against psychological maladies.

In Tanzania some of the reasons people gave for visiting TMPs included too short consultations with doctors or hospital staff often of less than 5 min, little opportunity to express their own concerns, and being given medicine without any explanation as to the cause of their illness (see Gessler et al., 1995).

The AM system is underdeveloped in Uganda. Poverty is the underlying cause of poor health in the country. The country has a heavy burden of disease, inadequate health services infrastructure and insufficient human. There are few hospitals and physicians; the ratio of doctors to people is 1:25,000. Many trained health workers are working abroad or are in private practice, and doctors are substituted for by trained medical assistants.

On the other hand, there are many TMPs in the country, and it is believed that these, if integrated into the health care delivery system, would improve health delivery in the country. By integrating TM and AM into the official health care system there would be an increase in manpower that could provide a higher degree of health coverage. The most effective way of extending benefits without great cost is to use and develop local resources.

3. TM conserves income and also generate incomes

Traditional medicine conserves households' assets and helps some people to earn incomes as gatherers of plant medicines or as healers. Many poor people who cannot afford to purchase allopathic medicines use plants that are near them and in this way save cash that would have been otherwise spent on buying these medicines. A large number of Ugandans is employed as traditional medicine practitioners (TMPs). In present day Kaliro district this number was estimated at 400 TMPs. Some other people are engaged in harvesting medicinal plants for sale.

4. TM is threatened

The existence of TM depends on plant species diversity and related knowledge of their use as herbal medicines. IK enables its holders to identify useful plants and to avoid dangerous ones. IK also equips holders with technologies of how to use plants. This species diversity and IK are important also, to the herbal medicine trade and the pharmaceutical industry, whereby the plants provide raw materials, and the IK the prerequisite information for bio-prospecting. Unfortunately both plant species and TK are threatened in various ways. The loss of IK is attributed to many factors that include globalization, modernization and **urbanization among others**. In urban centers people lose their connection with natural resources and are less dependant on them for their survival. Other factors include loss of plant diversity and low incomes earned by traditional medicine practitioners.

IK is not uniform amongst its custodians. This knowledge varies between individuals, households, and communities. For instance, some people like TMPs hold more of this knowledge than others. Some households especially those with an intimate relationship with plants because they are marginalized will usually have more of this knowledge than those with a low relationship with plants. Developing countries like Uganda are more diverse in IK compared to the north. This is because they are ethnically diverse and more dependant on natural resources.

Within communities, the **poor** are usually more dependant on natural resources than the rich and as a consequence have better knowledge about plants. **Women** also know more for instance about

medicinal plants because they are the ones normally concerned with health care in the family.

Threats to IK

IK is changing and is in some cases getting lost due to many factors. These include:

1. **Globalization:** Globalization is the worldwide integration of economic, cultural, political, religious, and social systems into a larger community. Globalization is seen as a global domination of western culture and values by some. This culture change has been fueled by Western education and Western religion. For example, in the last two decades there has been an upsurge of Christian fundamental religious beliefs and values in Uganda. Followers of these religious groups are intolerant of most traditional practices. For instance, they condemn traditional medicines.
2. **Urbanization**
3. ***The oral transmission.*** IK is transmitted orally by word of mouth, between generations and within the community, through songs, poems, and rituals. For example, knowledge related to TM is orally passed on from senior TM practitioners to their apprentices. However, this form of transmission is not effective because: Firstly, the old people who are the principal custodians of IK are dying with their knowledge before it has been adequately transferred or documented. Secondly, the young generation spends much of their time at school; they are missing this knowledge
4. **Inadequate documentation.** This is related to the oral transmission mode.
5. **Level of affluence**
6. ***Plant loss:*** The other reasons leading to loss of IK are related to disappearance of plant species. When a hitherto exploited species becomes rare, the users are deprived of the necessary experience to exploit the species and over time the associated TK erodes.

5. Medicinal plants are threatened

Medicinal plants species or their populations are threatened by habitat modification, habitat conversion, overexploitation, and unsustainable harvesting practices. The gravest threat to medicinal species is not from exploitation but from habitat conversion (NEMA, 1998). If access to TM is to be increased sustainably, the natural resource base upon which it often depends must be sustained. This calls for domestication of medicinal plants that are threatened. It is believed that the cultivation of widely used wild medicinal plants in home gardens can substantially reduce the pressure that such plants face in the wild and ensure their conservation.

Over-harvesting due to intensified local use or to meet export demand is a growing problem. In Eastern and Southern Africa, the sustainability of wild stocks of the African potato (*Hypoxis hemerocallidea* — syn. *H. rooperi*) is threatened because widespread publicity about the use of the plant in treatment of HIV/AIDS has boosted demand for it.

6. Suggested actions to conserve TM

In order to conserve TM it is necessary to conserve both the IK and biodiversity on which TM depends through documentation, policy and legal interventions, and also to vigorously campaign for its continued use and development.

In an attempt to conserve traditional medicine knowledge, it is necessary that inventories of plants with therapeutic value are carried out, and that the knowledge related to their use documented in systematic studies. These studies can have other values too for society besides conserving IK. They can for instance help to identify plants with market potential that can help generate incomes for local communities. Generation of incomes for local communities is seen as an important motivation for the conservation of local species.

Further, studies related to herbal medicines can help to stimulate confidence in TM and enhance appreciation of herbal medicines among local communities. As a consequence local communities

will have a higher appreciation of the value of their plant resources and take efforts to conserve them.

We should also strengthen and preserve traditional institutions and values by strengthening local traditional institutions. A good initiative is the *Ekisaakate* of Buganda.

Lastly, we need as a country to enact new laws and policies aimed at strengthening and promoting TM, and also apply international laws like the CBD (article 8j), local legislation like the Regulations on Access to genetic Resources and Benefit Sharing of Uganda and policies like the TK policy.

Appendix 8: Herbal medicine, utilization, patient care, and interactions of herbal and modern medicine

By Dr. Paul Waako

Widespread use of TM

There are two medical systems the allopathic or western medicine system and the traditional medicine systems. Our people use both. Some people first seek health care from traditional healers and later switch to physicians, while others start with physicians before turning to traditional healers. Many people self-medicate using herbs because of the available indigenous knowledge and interaction among local communities.

There are commonalities and differences between allopathic and traditional medicine systems. One similarity to the two systems is their role in improving the health conditions of patients.

All Ugandans at one time or another have used and will certainly continue to use herbal medicine partly because the medicinal plants are readily available and because traditional healers are readily available. There are more traditional medicine practitioners (TMPs) or healers than allopathic medicine practitioners. The TMPs have different specialisations. Some are specialised as bone setters, others as traditional birth attendants, herbalists, spiritual healers, diviners and traditional surgeons. All these differently specialised practitioners use herbal medicine plants (HMPs). TMPs use various methods of administration; these are oral, skin application, inhalation, bathing, steaming, wound application, subcutaneous and intramuscular injections.

TMs are widely used in the world and the government of Uganda recognizes the role of TMPS in primary health care as well its role in the treatment of various complicated ailments. Our government recognises traditional medicine but is interested in streamlining it to ensure that people are not harmed. The government is interested in investigating TM claims, safety of the drugs, improving the packaging of TMs, quality and standardization of the drugs/dosage.

Concerns with the use of TM

The HMPs are prepared and administered in a variety of ways. Some of these methods are unsafe. For example some healers administer herbal medicines through injections; this is dangerous. Others rape their patients in the guise that they are administering medicines to confer fertility to women. In the administration of herbal medicines some TMPs use dirty implements. This is of particular concern in incisions.

Another concern is the issue of wrong identification of medicinal species. An example is the poisoning that caused blindness in an entire household and was reported in Mulago hospital. It occurred because the mother mistook *Datura stramonium* for Nakati (*Solanum aethiopicum*).

A further concern is the issues of poorly trained or dishonest TMPs. These sometimes mix herbal medicines with allopathic medicines.

Both the TM and allopathic medicine (AM) systems have limitations. These limitations must be acknowledged. For instance some patients with cancer are misled by TMPs, that the TMPs can treat cancer. This results in the cancer to develop until it is incurable.

The simultaneous use of traditional and allopathic medicine may cause problems in patients. It is known that some traditional medicines antagonise allopathic medicine and may result in reduced efficacy of either allopathic or traditional medicine. In cases such as these, it is recommended that patients disclose their use of traditional medicines to hospital doctors. However, there has been a concern and it has been noted that many AMPs antagonise patients who have used TM. The medical profession in Uganda is now conducting awareness to convince doctors to encourage patients to disclose to them if they have taken TM.

During the administering of TMs, sometimes infections such tetanus are spread arising from use of sharp materials on patients during administering and poor treatments of wounds. All open wounds

should be cleaned and covered with clean cloth/material after any application of herbal drugs.

For TM to be safe and effective:

1. Be very careful when harvesting medicinal plants because some plants are poisonous yet there is some close resemblance among medicinal plants and poisonous plants
2. While healers can heal patients, they should not hold on to patients for too long if there is no improvement on administration of herbal drugs because there may be other causes of illnesses which may require laboratory tests commonly done in modern health centers
3. Patients should disclose any information related to use of herbal medicines when they visit health centers because there are interactions between western and herbal medicines
4. There are incidences of over dosages such as heavy metal poisoning found in plants and soils mixture given to patients which damage the internal organs of the patients.

Appendix 9: Threats to plants, their conservation and domestication measures for sustainable utilization and economic development

By Mr. Mohamed Bukenya

It is important to increase information and knowledge sharing and enhance capacity needed to improve rural livelihoods through more use and recruitment of indigenous trees on peoples' farmlands. It is important to focus on indigenous plants rather than medicinal plants alone because it is the combinations of all tree types that construct the livelihood of an individual. There are various niches for medicinal plants around farmlands and home gardens in agro-forestry systems, natural grass lands, forests, national parks and woodlands, wetlands, road reserves and municipal/ township parks.

Values of indigenous trees/plant

Indigenous trees are multifunctional as outlined below:

1. Home for many birds, insects and other living organisms
2. Source of food (Jackfruit, Mango, Pawpaw, Avocado), Medicine (*Prunus africana*, Mutuba, Musambya, Muyembe, Muwafu, etc); fodder for livestock (Ficus, Acacia); fire wood and charcoal from all local varieties; hand tools and crafts, fencing posts, timber for construction and furniture purposes,
3. Means of generating cash
4. Protection of the environment against erosion, wind breaks and improvement of climate
5. Boundary markers
6. Ritual practices including sacrifice and worshipping
7. Plant regulators and aid in production of honey
8. Pollination and seed production
9. Pest and disease control and increased crop yield
10. Shade in gardens and around homes

Threats to Indigenous plants

In spite of the numerous benefits of indigenous plants, there are various threats to plants which are evident in many parts of the country. The threats include deforestation in almost all tree niches, high population pressure mainly due to agricultural expansion, poverty and ignorance, rush for introduced/alien species/varieties, political instabilities, policy shifts and large industrial development, establishment of plantations: Cocoa, Tea, sugarcane, Palms for oil, etc, loss and limited use of indigenous knowledge and poor harvesting practices. While intervention measures may be expensive, informal education or indigenous knowledge is a very rich resource that people can use to minimize incidences of threats to sustainable use of medicinal and other useful plants in their environments.

Indigenous Knowledge for growing and conserving indigenous trees

The threats to sustainable use of medicinal plants and indigenous trees in general can be overcome by rethinking the role of indigenous knowledge which is readily available among communities. IK is a rich source of understanding, readily available with our relatives and friends, cheap and can easily be passed from one generation to generation.

Methods of recruiting indigenous plants on Peoples Farm lands

The various practices for increasing trees on people's farms using IK include:

- i. Retention during land clearing or management
- ii. Collection of wildings especially around forests, open grass and woodlands
- iii. Retention, protection and sustainable management of potential mother trees (exhibiting good genes for good seeds, better fruiting, very health, etc)
- iv. Collecting seeds from the wild and raising seedlings
- v. Buying from nursery sites: Government at districts, DFIs & private
- vi. Neighbors and extension agents

However, tree farmers were advised to:

- A. Increase their understanding about tree through consultations and workshops

- B. Know what tree to retain/plant for given purpose(s)
- C. Where to plant and with which mix of species and at what season of the year (preferably during the rains season)
- D. Manage the trees the same way they take care of other plants on the farm
- E. Protect tender, emerging branches from goats, chicken, mice and other animals
- F. Know when to cut off some branches and help it flower in fruit tree

Conclusions

Indigenous trees are disappearing and people's livelihoods are threatened. There have been limited traditional protection and conservation mechanisms for indigenous plants and therefore the need for increased domestication of the plants on farms for ease of access. This requires a multi-sectors approach (local people, government, researchers), careful selection of trees and use of indigenous knowledge, recognition of gender roles in management issues, training, and participation of older women to train young women and vice versa. Local people should seek knowledge and support from local governments, development workers/organizations and training institutions.

Appendix 10: Workshop Proceedings for Pallisa District

Opening session

Mr. Collins Kukunda, the workshop mobilizer in Pallisa district welcomed the participants to the workshop. He thanked them for coming to participate in the workshop despite their busy schedules. He then invited Mr. Kaweesi to make introductory remarks. This was followed by a presentation by Prof. Tabuti in which he gave a background of the project to the workshop.

Prof. Tabuti later requested the District Forest Officer, Mr. Kaiire Kitawu to invite the chief guest, Mr. Thomas Okoth Nyalulu, the Resident District Commissioner for Pallisa District to officially open the workshop.

Remarks by the Guest of Honor

The RDC expressed gratitude to the facilitators for coming back to give feedback results to the district leadership and to the local people who were consulted in the study. He noted the importance and relevance of the dissemination workshop because it gives timely information on status of medicinal plants in particular and indigenous plants for people's livelihoods. He was particularly grateful about the nature of the workshop attendants who included all age groups. He observed that this mix of old men and women, youth and school children was very important in enhancing utilization and sustainable use of TM in Pallisa and Uganda in general. The RDC informed the workshop that the Government of Uganda was interested in developing its human resource, security, economy, governance and in contributing to regional development.

With specific reference to human resources, the RDC stressed that government is committed to provision of education through Universal Primary and Secondary Education and providing improved access to health services. He stated that the government's plans for improved health care included immunization, construction of health centers throughout the country and government's recognition of the role of indigenous herbal medicine. There is overwhelming evidence that many local people use TM, the RDC said.

The RDC was however concerned with the increasing degradation of the environment such as deforestation in both managed and ecological landscapes which was threatening the availability of herbal medicines especially for the poor people who often can not afford modern medicines. He noted that sustainable use and conservation of TM requires networking between researchers, development workers, leaders and the local community.

He concluded by cautioning the attendants to be careful and honest in their traditional medical practices by avoiding indulging in unethical behaviors. He made reference to a workshop on TM policy that he had attended and called upon government to speed up the process of making and passing the Policy. Having made these remarks he declared the workshop open and wished the participants meaningful discussions.

After the workshop had been opened the workshops facilitators then made their presentations (appendix 7 – 9).

Reactions, Comments and questions to the Presentations

TM used by local people, role of TM and their role to livelihood improvement in the districts of Kanungu, Mukono, Nakapiripirit and Pallisa

- The District health workers, District information officer (Mr. Francis Okiror) and the community development officer (Grace Hilya) were thankful to the Makerere-UNESCO team for the very valuable report on TM. They requested for copies of the research findings and the catalogues for their resource centers and as a tool in their interactions with traditional medical practitioners.
- The local people were grateful for the feedback and learning about medicinal plants from other districts. They requested for the establishment of a local research centers where they can easily take their drugs for verification and be provided with medical plant materials from other parts

of the country. In response, Prof. Tabuti informed them that UNESCO will facilitate them in establishing a botanical garden and for conservation of local medical plants. Dr. Waako told them that establishing laboratory centers is very expensive and advised them to take their specimens to already established laboratories for such tests.

- The attendants wanted to know whether their medicaments were efficacious and what doses to administer. Dr. Wako told them that verification of plant-ailments claims is a process which requires money and expertise. He informed them that there have been some laboratory works on medicinal plants and whoever is interested can contact him for clarification on what progress has been made.
- The participants requested the district officials to help them form associations and access more support. This support had been earlier pledged by the RDC, Pallisa District. It however requires self mobilization and interest from the herbalists.
- The attendants were weary of the continuing loss of medicinal plants; traditional healers who advertise themselves on radio stations that they treat all diseases; limited availability of secondary literature about traditional medicines in their local languages in Uganda. Besides the establishment of the botanical garden, the participants requested for increased provision of information on medicinal plants and research findings in their local languages.

Herbal Medicine, utilization and patient care, and interactions between herbal and modern medicine

- The herbalists were happy to learn about their importance in delivering primary health care among western medical practitioners. The local people's main questions were related to prevailing unethical practices such as sacrificing humans, hawkers of herbal drugs including the Masai from Kenya who claim to treat every disease, lack of support from government and local administrators, and witchcraft among some practitioners.

- One healer requested government and researchers to do more research on medicinal plants and their expertise in treatments including alleged resurrection of the dead especially from snake bites and witchcraft
- They were also concerned that TMPs advertise themselves, and wondered why government allowed this. They were informed that government is fighting this practice and has designed guidelines for advertising TM. These guidelines are published by NDA and essentially require that one gets clearance from NDA before they can advertise themselves.
- The people wanted to clarification about the objective of this workshop. They wondered whether the workshop was to create awareness or to gather TM knowledge. They were informed that it was a feedback and awareness workshop.
- Suggestion by participants that we include a vote of thanks on the program

1.1 Threats to TM, conservation and domestication measures for sustainable utilization and economic development

The major questions and comments were related to limited availability of seedlings, long production cycle of trees, land scarcity, tenure issues, poverty, problems of trees to other farm components and which trees to plant in already exhibiting plant communities on the farm. People were advised on how to select trees and offered what agroforestry technologies to adopt without compromising other farm production objectives.

4. Discussion on domestication and establishment of medicinal Gardens

The objective of establishing a botanical garden for medicinal plants was presented to the participants. In general, this objective was welcomed very much by all actors as it was also requested by the local people. The LCV Chairperson for example had earlier promised that he will do everything possible to get land for the botanical garden.

There were several submissions on the location the botanical garden and its size. There was the option of using land belonging to government aided schools partly because the schools have been engaged in tree growing. Some traditional herbalists wanted it on their farmlands while other workshop participants wanted a botanical garden that can easily be accessed by all. One of the participants Mr. Nyaigolonya who is also the Chairperson Bubulanga village in Kituti parish, Buseeta sub-county offered a half an acre of land for the establishment of a common botanical garden for the local community.

A steering committee of five people comprising Mr. Nyaigolonya (Chairperson), Ms Natoloto Florence (V/C), Kaigo (Secretary), Mutala (Member) and the advisor Mr. Kaiire Kitawe, W (DFO), was created to oversee the establishment of the botanical garden.

Consultations with District Leadership

The idea of having a botanical garden on private land was contested especially by the local government officers including the RDC, District Chairperson, DFO and other officials. The LC V Chairman Mr. Taligola told the Makerere-UNESCO Team that about 10 Hectares of land can be provided from the district forest reserve for the botanical garden which shall serve the interests of all people in Pallisa and Ugandans in general. He organized a visit to the reserve which is located 3 km from the district headquarters.

In view of tenurial fears, interest of meeting public and future collaboration opportunities with key partners, our team opted for the above land. Arrangements are underway to formalize the process of getting this land through the right procedures of the district land board and the district council.

Appendix 11: Workshop Proceedings for Nakapiripirit District

1. Discussion with the district leadership

Before the workshop, courtesy visits were made to the district leadership and the workshop introduced. The LCV chairperson Mr. John Nangira said that Karamoja is rich in medicinal plants because the environment is almost intact. The potential threat is the increasing production of charcoal production and logging of trees for timber. He said that the Karamojong believe that traditional drugs have better curative properties than western medicine. Many people in the remote areas of Karamoja do not have access to western health services and therefore have to rely on herbal medicine.

The district is in the process of constituting a district land board that will have the mandate of allocating land for developments, such as the proposed botanical garden. He noted that the botanical garden will demystify the many cultural beliefs on medicinal plants and unethical traditional practices. He stated that Karamoja is very rich in medicinal plants and therefore emphasized the need to conduct extensive studies on medicinal plants of Karamoja, as a rationale for conserving them both in-situ and ex-situ.

2. Opening session

Mr. Mukisa, the workshop mobilizer in Nakapiripirit district welcomed the participants to the workshop. He invited Mr. Kaweesi to make introductory remarks. This was followed by a presentation by Prof. Tabuti in which he gave a background of the project to the workshop.

Prof. Tabuti later requested Mr. Munu Francis, the District Development Worker and Information Officer to invite the RDC. In his submission, the CDO was grateful to Prof. Tabuti and his team for the feedback on medicinal plants used in Karamoja and in the other three study sites. He was very happy with the report and emphasized the importance of TM in Karamoja. He highlighted the herb called '*Eperu*' which was used to treat meningitis in remote areas of Karamoja. He then invited the RDC to address the participants.

3. Remarks by the Guest of Honor

The Guest of Honor Mr. Andrew Napaja Keem, the RDC Nakapiripirit District was grateful to Prof. Tabuti and his colleagues for coming back to give feedback to district leadership and medical practitioners who were consulted in the study. He was particularly grateful to the composition of the workshop attendants who included elderly women and men, the middle aged and the youths.

The RDC then posed a rhetorical question to the audience asking whether the healers thought that their drugs are efficacious. He was answered in the affirmative. He then asked why then do people go to hospitals and not to traditional healers. The participants answered that it was because western medicine was readily available. In many of the answers, the herbalists in the meeting said that their drugs are very effective, original and that many patients in western medical units come to them for rescue when the former fail. Some of the patients go to health units for laboratory tests and comeback to herbal drugs especially when a proper diagnosis is made and information disclosed to patients.

They however said that their drugs are less appealing compared to western drugs due to poor packaging, marking and general lack of value additions to their products. Herbalists feel threatened by increasing presence of western medicines and health units.

The RDC strongly advised the herbalists to be more visible about their drugs partly because the Karamojong are lagging behind in herbal practice compared to herbalists in other parts of the country. He called upon them to form associations and lobby development workers and government to construct health centers where they can formally practices their medicines, add value and market herbal medicines to other parts of the country. Mr. Keem noted that the sustainable use and conservation of medicinal plants in Nakapiripirit, requires networking with researchers, development workers, leaders and the local community.

He concluded by requesting the practitioners to be careful and honest with their work. He called upon the local people to share knowledge and skills of TM and advise the young people to work with the elderly in promoting use of TM as well as conserving the medicinal plants both in field and on their farms.

4. Reactions, Comments and questions to the Presentations

Overall, the herbalists were happy with the workshop organizers for organizing the workshop. The comments, questions and needs of the herbalists were similar to those expressed by the people of Pallisa. These included laboratory tests for anticipated active ingredients.

The people of Karamoja do not have much concerns regarding loss of medicinal plants. The medicinal plants are, however, destroyed by livestock. Most people know what to use to treat themselves; this means that opportunities for commercialization of medicinal plants in Karamoja are few.

The herbalists have received some training on how to grow herbs in their farmlands by the Karamoja Christian Ethno-veterinary medicine Program (KACHEP). They were, however, constrained by lack of adequate rainfall resulting in loss of seedlings. They also decried the problem of livestock browsing on medicinal plants. Lastly, according to them the growing of trees is a major threat to food security.

5. Discussion on domestication and establishment of medicinal Gardens

The local people were keen to establish and manage botanical gardens. The people of Nakapiripirit wanted to have the botanical gardens developed on their private lands and to build on the work started by KACHEP. The major bottlenecks were tenure issues and Nakapiripirit like the rest of Karamoja has many tenure concerns that may affect the sustainability of the botanical gardens. Because of this it was agreed that land would be sourced from the district. A steering committee was formed and comprised the following people.

Steering committee

1. Mr. Joseph Lokut (Lolachat sub-county) Chair
2. Mr. Felix Damac Kodet (Nabiatuk Sub-county) V/C
3. Ms. Julia Muge (Lolachat sub-county), secretary
4. Mr. Peter Olum, (member)
5. Mr. Emmanuel Odong (DFO – member)

Appendix 12: Workshop Proceedings for Mukono District

1. Discussions with the District Leadership

In Mukono district, our team visited the RDC (Mrs. Ssemakula Betty Mukasa) and LC5 Vice Chairperson (Mr. Zziwa). Mr. Zziwa welcomed our team enthusiastically and promised all the support that he could muster. He was very grateful to UNESCO for funding the study and to Prof. Tabuti and his team for the inventory of medicinal plants. He said that this study was timely and complemented earlier efforts by Cadwell Industries Limited who are promoting on-farm cultivation and domestication of *Prunus africana*. He said that many people in Mukono like other parts of Uganda heavily depend on herbal medicine. He stated that Mukono has the largest number of traditional medical practitioners in Uganda. And that Mukono has a well organized body of traditional healers whose activities are organized from parish to district level. Indeed the TMPs have leadership boards at the district, sub-county and the parish level.

Mr. Zziwa asked UNESCO and SUPD to collaborate with the Department of Natural Resources and Production at the district to increase the recruitment of indigenous trees which meet multifunctional needs of local communities at household levels in Mukono since most of the forests and woodlands are increasingly threatened by anthropogenic pressures.

2. Opening session

Mr. Kato welcomed the participants to the workshop. He then invited Mr. Kaweesi to make introductory remarks. This was followed by a presentation by Prof. Tabuti in which he gave a background of the project to the workshop.

3. Remarks by the Guest of Honor

The guest of honor Mrs. Ssemakula Betty Mukasa the RDC, was officially invited by Mr. Kato, the District Cultural Officer to address the workshop participants. The cultural officer explained the benefits of the workshop, and thereafter invited the RDC to address the participants.

The RDC was happy for having been invited to officiate in the workshop on a very topical issue of TM in Uganda. She thanked UNATCOM and Prof. Tabuti and his team for organizing and conducting the workshop on information sharing and dissemination. She expressed happiness at the presence of women and the young children. She thanked the men and the head teacher of Nabalanga primary schools for allowing their wives and pupils respectively to come to the workshop.

She emphasized the need for conserving TM since almost all Ugandans have used and continue to directly and indirectly use and interact with traditional medicine. She said that government was fully behind any development programs for improvement of rural livelihoods and hoped that this project shall be very well received in the district. She then declared the workshop open and wished participants fruitful deliberations.

After her presentations the facilitators made their presentations (Appendix 7-9).

4. Reactions, Comments and questions to the Presentations

All participants including the district officials were happy for the feedback workshop. The District Cultural and Information Officers said that this workshop was rare because many researchers do not give feedback. They thanked the local people for providing information during field surveys and for their participation in the dissemination workshop. One respondent told the workshop that this workshop had helped to dispel the suspicion about the true motives of the previously concluded research. He was sure that if our team were to go to them we would receive more information the next time.

Many of the questions and comments are generally similar to those of Pallisa and Nakapiripirit workshop participants. However, the participants requested for clarification on the government's position on the use of TM. Dr. Wako clarified that the government encourages use of local herbal medicines and that the policy to formalize TM practice in Uganda is in advanced stages of development.

Prof. Tabuti and Mr. Kato Jim (the district cultural officer) responded to ethical questions from a 'Pentecost Faithful' who feared that TM and medical practice is related to witchcraft. They explained the various forms of traditional medical practices and the fact that differences exist between practitioners and users of TM. For example, the practice of harvesting parts of medicinal plants for treatment of various ailments is a very traditional practice and it may have nothing to do with witchcraft.

5. Discussion on domestication and establishment of medicinal Gardens

One respondent requested to know how they will benefit from the establishment of the garden. The facilitators explained that society had a lot to benefit from the garden. The immediate benefit would be the conservation of plants, information sharing, and research and education purposes.

The participants suggested that UNATCOM buy a piece of land for the garden. The facilitators explained that purchase of land had not been budgeted for in this project. The following steering management committee was created to look into possibilities of getting land for the botanical garden:

1. Chair – Mr. John Ssebufu
2. Vice Chair – Ms Namuswe
3. Secretary – Cissy Nandaula
4. Mobiliser – Lawrence Mukiibi
5. Members -
 - i. District Forest Officer Mr. Mujuni
 - ii. District Cultural Officer Mr. Kato Jim

Field Surveys for Botanical garden Land

On the following day, consultations were held with the National Forest Authority (NFA), the District Forest Service, the community, Nabalanga Primary school Head-teacher, and the National Forestry research Institute (NaFORRI) officials to identify land for the proposed botanical garden.

At the NFA headquarters, discussions were held with Mr. Godfrey Achaye and Ms. Phiona Drichi. We were informed that Mukono District owned Kasulo and Nakasenyi Forest Reserves in the sub-counties of Ntenjeru and Seeta-Namuganga, but that these were very far from Nakifuma, where the respondent community lives.

At the Mukono district headquarters we held discussions with the District Forestry Officer Mr. William Mujuni and his assistant, Mr. Moses Balimunsi. It emerged that the District Forest Service did not have land to allocate for the botanical garden. At NaFORRI we held discussions with Mr. Denis Mujuni and Dr. David Hafashimana. It was clear that NaFORRI had land but that it did not have labor to manage the garden.

Nabalanga Primary School, Head-teacher, Ms. Sylvia Mirembe promised our team land (about two acres) for the botanical garden. Nabalanga PS is a government aided school located within the community where respondents who participated in the inventory live. This site is ideal and provides a good opportunity for community members to share benefits associated with their TK. It was agreed that Ms. Mirembe would present the proposed activity to the Parents Teachers Association (PTA) of Nabalanga PS and that follow would be undertaken by Prof. Tabuti and Mr. Kukunda. The outcome from all these discussions was that the garden would be established at Nabalanga PS, subject to the approval by the PTA.

Appendix 13: Workshop Proceedings for Kanungu District

1. Opening Session

Mr. Collins Kukunda, the workshop mobilizer welcomed the participants to the workshop, thanked them for participating in the study and for coming to participate in the workshop. Prof. Tabuti introduced the team and the workshop objectives and briefly described the research findings.

2. Remarks by the Guest of Honor

The RDC, Reverend Canon Ben Rulonga was very grateful to the workshop facilitators for coming to give feedback to district leadership and local people who were consulted during the study. He was particularly grateful to the nature of the workshop attendants who included a mix of age groups, and different categories of people. He noted that this mix of old men and women, youth and school children, local and district leaders was very important in revitalising, utilization and sustainable use of TM in Kanungu.

Reverend Canon Rulonga informed the participants that this was the opportunity for the herbalists and users of traditional medicine in Kanungu to be known by Government. The RDC said that he was a regular user of TM and that his father was a well known herbalist in Kanungu. In the recent past, the RDC was for example hit by mild stroke that left him with mild speaking problems and it was the wonders of TM that had improved his health much as he also uses western medicines.

The RDC cautioned the participants and the herbalists especially, to avoid false and unbecoming herbal practices including camouflaging fortune tellers, witchcraft and that the law would catch up with bad practitioners of traditional medicine. He appealed to the herbalists and western medical practitioners to work together to promote the use of indigenous medicines which are cheap and readily available compared to conventional western medicines. The RDC asked participants to share knowledge with others, participate in TM awareness programmes and form associations which could easily be supported by government and other development agencies.

He also said that in Uganda, there was overwhelming evidence that many local people use TM, for a number of health and spiritual problems. He was grateful for the proposed botanical garden and advised participants to also increase domestication of indigenous useful plants. The RDC is the chairperson of the district security committee and the district is very sensitive to suspicious traditional and religious practices some of which deter people from using traditional medicine. He informed the meeting that all traditional medicine practitioners should register with the RDC's office.

After those remarks, the RDC officially opened the workshop and wished both the organizers and participants to have fruitful deliberations.

3. Reactions, Comments and questions to the Presentations

Following the presentation, the workshop participants expressed gratitude for the feedback and the opportunity to learn about medicinal plants from other districts. They requested the researchers to avail them copies of the research findings and knowledge on herbal research centers where they can take their drugs for verification and be provided with medical plant materials from other parts of the country. Dr. Wako responded by informing the participants that the National Drug Authority has set up guidelines for conducting research on all herbal medicines in Uganda and that regional laboratory tests can be made at Mbarara, Gulu and Mbale hospitals. In addition, the National Chemotherapeutic Research Laboratory was instituted to ensure effective quality delivery of TM practice in Uganda.

Dr. Wako told the participants that verification of medicinal plants is a process which requires money and expertise. He informed them that there have been some laboratory works on medicinal plants and whoever is interested can contact him for clarification on what progress has been made.

The participants were concerned about the continuing loss of medicinal plants. They noted that many indigenous plant species are almost extinct on people's farms and exist only in Bwindi National

Park. Most people have concentrated on growing of exotic species. Mr. Kaweesi re-asserted the importance of the botanical garden where local medicinal plants would be cultivated, conserved and accessed. Mr. Kaweesi said that UNESCO will provide the seed money as soon land is made available for this exercise.

The participants complained about negative reception and attitudes of western medical practitioners when they report about prior use of TM. Regarding this concern, Dr. Wako explained that physicians are being trained to accept the simultaneous use of TM and that patients should not fear to express their right when they visit the health centers because it helps the physician to predict potential drug interactions effects.

The participants were also concerned about prevailing unethical practices such as sacrificing humans, hawking of herbal drugs, mushrooming traditional herbal clinics, and doctors who advertise on local radio stations and claim to treat every disease. They were concerned by the apparent inability of the government and local administrators to stop these activities.

The traditional medical practitioners called on government and researchers to do more research on medicinal plants and their expertise in treatment of complicated ailments which cannot be treated using western medicine.

Threats to TM, conservation and domestication measures for sustainable utilization and economic development

The major questions and comments were related to the limited availability of seedlings, long production cycle of trees, land scarcity, tenure issues, poverty, problems of trees to other farm components and which trees to plant on farm. In light of the above, several strategies and to problems were discussed. People were advised on how to select trees and offered agroforestry technologies to adopt without compromising other farm production objectives.

4. Identification of Land for Botanical Garden

The objective of establishing a botanical garden for medicinal plants was presented to the workshop participants. In general, this objective was readily welcomed by all workshop participants.

The participants were in agreement with what had been suggested by the district leadership, to have the botanical garden established on former Kibwetere's land. A botanical garden establishment committee to be supervised by the DFO and district cultural officer was formed. Its composition was as follows:

1. Mr. Byamugisha John – Chairperson
2. Mr. Magezi Byarugaba – Vice chairperson
3. Mr. Byamukama Christopher – Secretary
4. Mr. Jonah Mirirwe – Committee member
5. Ms. L. Kobusheshe - Committee member

The role of the committee was to work with the DFO, to follow up the formal process for the acquisition of land and to mobilize people to participate in the establishment of the botanical garden.

The DFO Mr. Rogers Mugisha officially closed the workshop and echoed the importance of the awareness workshop and the need to work together with Makerere University and UNESCO to establish the botanical garden.

5. Survey of botanic garden land and follow up meetings

On the following day, the facilitators were taken around the former Kibwetere's land which is about 1km from the Kanungu District administration headquarters by the district administration. Arrangements are underway to formalize the process of getting this land through the right

established procedures of the district land board and the district council.

Meeting Senior Mobiliser RDC's Ms. Peace Kakira

The visiting team met with Ms. Peace Kakira who is a Senior mobilizer in the Resident District Commissioner's office for Kanungu District. Peace was very grateful first of all for the research on indigenous medicines in Kanungu and promised her support as a senior mobilizer in RDC's office to rally support for any efforts toward domestication and popularization of traditional medicines in Kanungu. Peace oversees the activities of traditional healers in Kanungu and she is in close contact with the chairperson of the traditional herbalists in Kanungu district.

Meeting the Chief Administrative Officer (CAO)

Mr. Joseph Byaruhanga, the CAO for Kanungu district was equally happy for the research findings and to the team for giving feedback to respondents and district leaders. The CAO noted that over time, Kanungu has lost much of her natural forests and there is increased scarcity of medicinal and multi-purpose indigenous trees on farms except in Bwindi Impenetrable National Park where access is highly restricted and regulated by park authorities. He blamed the western culture and religion for eroding indigenous culture and knowledge on traditional medicines which have always been readily available to poor folks. The CAO welcomed the proposed establishment of botanical garden and promised to join district leaders in supporting the project.

Appendix 14: The 40 species planted in the demonstration gardens

Species	Ganda	Nkore	Soga	Karamojong
<i>Vernonia amygdalina</i>	Mululuza	Mubirizi	Mbiriri	
<i>Aloe</i> spp.	Kigagi	Rukaka		Ecucukwa
<i>Azadirachta indica</i>	<i>Neem tree</i>			
<i>Cassia nigricans</i>				Eperu
<i>Mangifera indica</i>	Muyembe	Muyembe	Muyembe	
<i>Carica papaya</i>	Papali	Kipapali	Papali	Epaipai
<i>Momordica foetida</i>	Bombo			
<i>Chasmanthera dependens</i>				Lodwar
<i>Acacia nilotica</i>				Ekaperimen
<i>Psidium guajava</i>	Mapera	Mapera	Mupera	
<i>Warburgia ugandensis</i>	Abaki			Emuka
<i>Senna occidentalis</i>	Mutanjoka		Kasagalansasi	
<i>Vernonia lasiopus</i>		Mujuma, Nyakajuma		
<i>Albizia anthelmintica</i>				Ekapangiteng
<i>Bidens pilosa</i>	Sere	Enyabarashana	Kalala	
<i>Zanthoxylum chalybeum</i>	Munyenye		Musuku	Eusugu
<i>Aristolochia elegans</i>	Nakasero			
<i>Abrus precatorius</i>			Nsiti	
<i>Lantana camara</i>	Kayukiuki (Akato)	Muhima	Kapanga	
<i>Leonotis nepetifolia</i>	Kifumufumu		Susuni	
<i>Plectranthus barbatus</i>		Ecicuncu		
<i>Callistemon citrinus</i>	Mwambalabutonya			<i>Bottlebrush</i>
<i>Cymbopogon nardus</i>		Mutete		
<i>Indigofera arrecta</i>		Mushoroza		
<i>Jatropha curcas</i>	Kirowa	Ekyomora	Ejurunga	
<i>Lantana trifolia</i>	Kasekera	Muhukye	Musekera	
<i>Ocimum gratissimum</i>	Mujaja	Mujaja	Nyonyi Mujaja	
<i>Persea americana</i>	Ovacado			
<i>Conyza sumatrensis</i>		Kizimyamuriro	Kukayala	
<i>Cuprussus lusitanica</i>		Karwenda		
<i>Digitaria abyssinica</i>	Lumbugu	Lumbugu	Lumbugu	
<i>Erythrina abyssinica</i>	Girikiti	Kiko/Endubaruba		
<i>Physalis peruviana</i>	ntuntunu enene	Entutu/Mututu	Ntutunu	
<i>Saba comorensis</i>			Mavongo	Ekimune
<i>Tagetes minuta</i>		Mukazi Murofa		
<i>Zizyphus mauritiana</i>				Ekare
Lam. <i>Citrus sinensis</i>		Mucungwa	Muchugwa	
<i>Eucalyptus</i> spp.	Kalitusi	Kalitusi		
<i>Melia azedarach</i>				Elira
<i>Aspilia mossambicensis</i>	Makayi			
<i>Moringa oleifera</i>	Moringa			

Appendix 15: Contacts of lead collaborators in the establishment of the domestication gardens

1. Ms. Sylvia Mirembe 0776 998557; 0712 210589, Head teacher Nabalanga Primary School, P.O. Box 22032, Naggalama.
2. Ms. Olive Nachomo, 0777 184657, Head teacher Kaucho Primary School, P.O. Box 12 Pallisa
3. Fr. Michael Apirio, 0752 242 678, in charge St. Theresa, Nabilatuk Parish Church, P.O. Box 46, Moroto
4. Mr. Nazarius Byaruhanga, 0772861654, San Geovani High School, Makiro. P.O. Box 74 Kanungu

Collaborators

1. Mr. Mukisa Ayub, Manager KACHEP, Nabilatuk, 0772573052, 0751573052
2. Mr. Kaiire Kitawu, District Forest Officer, Pallisa, 0782838333
3. Mr. Rogers Mugisha, District Forest Officer, Kanungu 0772581151

Appendix 16: List of medicinal plants reported by respondents from the districts of Nakapiripirit, Pallisa, Kanungu, and Mukono

Species/Local name	Family	Collection Number	Ganda	Nkore	Soga	Karamojong	English
<i>Justicia betonica</i> L.	Acanthaceae	KCB 149		Rusharira			
<i>Thunbergia alata</i> Bojer ex Sims	Acanthaceae	KCB 169		kishayula			
<i>Allium cepa</i> L.	Alliaceae						
<i>Aloe</i> sp.	Alaceae	KCB 70	Kigagi	Rukaka	Ecucua	Ecucukwa	
<i>Achyranthes aspera</i> L.	Amaranthaceae	KCB 82	Muzukizi				
<i>Mangifera indica</i> L.	Anacardiaceae		Muyembe	Muyembe	Muyembe		
<i>Rhus vulgaris</i> Meikle	Anacardiaceae		Kakwansokwanso				
<i>Steganotaenia araliacea</i> Hochst.	Apiaceae	KCB 182			Kimudumudu		
<i>Alstonia boonei</i> De Wild.	Apocynaceae						
<i>Carissa edulis</i> (Forssk.) Vahl.	Apocynaceae	KCB 147	Mubajangalabi	Echerere		Ekamuria	
<i>Saba comorensis</i> (Boj) Pich.	Apocynaceae					Ekimune	
<i>Aristolochia elegans</i> Mast.	Aristolochiaceae	KCB 72	Nakasero				
<i>Asparagus racemosus</i> Willd.	Asparagaceae				Mukila gwango		
<i>Ageratum conyzoides</i> L.	Asteraceae	KCB 163, 43	Namirembe	Buka Buka			
<i>Aspilota mossambicensis</i> (Oliv.) Wild	Asteraceae	KCB 49	Makayi				
<i>Bidens pilosa</i> L.	Asteraceae	KCB 74	Sere	Enyabarashana	Kalala		
<i>Blumea alata</i> (D.Don) DC.	Asteraceae		Ssetaaba				
<i>Bothriocline longipes</i> (Oliv. & Hiern) N. E. Br.	Asteraceae			Kyoga-nyanja			
<i>Erlangea tomentosa</i> (Oliv. & Hiern) S. Moore	Asteraceae			Kyoganyanja			
<i>Conzaya sumatrensis</i> (Reitz.) Walker	Asteraceae	KCB 122, 177		Kizimyumuro	Kukayala		

<i>Crassocephalum crepidioides</i> (Benth.) S.Moore	Asteraceae	KCB 157, 87	Seziwundu	Bifurabende		
<i>Dicrocephala integrifolia</i> (L.f.) O. Kuntze	Asteraceae	KCB 39	Buza			
<i>Emilia coccinea</i> (Sims) G. Don	Asteraceae	KCB 184			Mukasa	
<i>Galinsoga parviflora</i> Cav.	Asteraceae	KCB 91	kafumbe	Empunika		
<i>Gutenbergia cordifolia</i> Benth. ex Oliv	Asteraceae	JRST 764				Ekoutapem
<i>Microglossa pyrifolia</i> (Lam.) O. Ktze.	Asteraceae	KCB 189			Kabiriri akatono	
<i>Sphaeranthus suaveolens</i> (Forsk.) DC.	Asteraceae					Abir
<i>Tagetes minuta</i> L.	Asteraceae	KCB 135		Mukazi Murofa		
<i>Vernonia amygdalina</i> Delile	Asteraceae	KCB 75	Mululuza	Mubirizi		
<i>Vernonia lasiopus</i> O. Hoffm.	Asteraceae	KCB 130		Mujuma, Nyakajuma		
<i>Balanites aegyptiaca</i> (L.) Delle	Balanitaceae	JRST 759				Ekorette
<i>Kigella africana</i> (Lam.) Benth.	Bignoniaceae		Kibere			
<i>Markhamia lutea</i> (Benth.) K. Schum.	Bignoniaceae				Musambya	
<i>Canarium schweinfurthii</i> Engl.	Burseraceae	KCB 79	Muwafu			
<i>Commiphora africana</i> (A. Rich.) Engl.	Burseraceae					Ekadeli
<i>Cassia nigricans</i> Vahl.	Caesalpinaceae					
<i>Senna didymobotrya</i> (Frisen.) Irwin & Barneby	Caesalpinaceae			Mugabagaba	Eperu	
<i>Senna occidentalis</i> (L.) Link	Caesalpinaceae	KCB 181	Mutanjoka		Kasagalanisasi	
<i>Senna siamea</i> (Lam.) H.S. Irwin & Barneby	Caesalpinaceae				Gassia seed	
<i>Warburgia salutaris</i> (G. Bertol.) Chiov.	Canellaceae	JRST 752				Emuka

<i>Cannabis sativa</i> L.	Cannabinaceae					Njavi	
<i>Cleome gynandra</i> L.	Capparaceae					Yobyoy	
<i>Carica papaya</i> L.	Caricaceae	Papali	Kipapali			Papali	Epaipai
<i>Chenopodium opulifolium</i> Schrad. ex Koch & Ziz	Chenopodiaceae					Namuvu	
<i>Combretum Collinsum</i> Fresen.	Combretaceae					Mukola	
<i>Terminalia brownii</i> Fres.	Combretaceae						Epie
<i>Commelina africana</i> L.	Commelinaceae	KCB 132	Akatija Akakye				
<i>Ipomoea batatas</i> (L.) Lam.	Convolvulaceae					Lumonde	
<i>Kalanchoe densiflora</i> Rolfe	Crassulaceae	KCB 73	Kiyondo				
<i>Cucurbita pepo</i> L.	Cucurbitaceae	KCB 77	Sunsa				
<i>Lagenaria sphaerica</i> (Sond.) Naud.	Cucurbitaceae	KCB 143	Mutanga				
<i>Melothria punctata</i> Cogniaux	Cucurbitaceae	KCB 137	Kabindizi/Kihura				
<i>Momordica foetida</i> Schumacher.	Cucurbitaceae		Bombo				
<i>Zehneria scabra</i> (L.f.) Soud.	Cucurbitaceae	KCB 199				Wolye	
<i>Cupressus lusitanica</i> Mill.	Cupressaceae		Karwenda				
<i>Dracaena steudneri</i> Engl.	Dracaenaceae		Kajolyenjovu			Kajolyenjovu	
<i>Bridelia micrantha</i> (Hochst.) Baill.	Euphorbiaceae	KCB 154	Emiji				
<i>Erythrococca bongensis</i> Pax	Euphorbiaceae		Mushongi				
<i>Euphorbia heterophylla</i> L.	Euphorbiaceae					Kafandaga	
<i>Euphorbia</i> sp.	Euphorbiaceae						Emus
<i>Euphorbia tirucalli</i> L.	Euphorbiaceae	KCB 136, 191	Ruyenje			Kakone	
<i>Jatropha curcas</i> L.	Euphorbiaceae	KCB 119, 89	Kirowa			Ejuringa	
<i>Manihot esculenta</i> Crantz	Euphorbiaceae		Ekyomora			Mwogo	
<i>Phyllanthus guineensis</i> Pax	Euphorbiaceae	KCB 41	Mutulika/Mutunuka				
<i>Hoslundia opposita</i> Vahl	Lamiaceae	KCB 50	Kamunye				
<i>Hyptis suaveolens</i> (L.) Poir.	Lamiaceae	KCB 187				Kifunyatunya	
<i>Leonotis nepetifolia</i> (L.) Ait.f.	Lamiaceae	KCB 185	Kifumufumu			Susuni	

<i>Ocimum basilicum</i> L.	Lamiaceae	KCB 183	Mujaja	Mujaja	Ensoga	
<i>Ocimum gratissimum</i> L.	Lamiaceae	KCB 94	Mujaja	Mujaja	Mujaja	
<i>Ocimum lamifolium</i> Benth.	Lamiaceae	KCB 44	Kakubansiri			
<i>Plectranthus barbatus</i> Andr.	Lamiaceae	KCB 150		Eicuncu		
<i>Tetradenia raparia</i> (Hochst.) Codd	Lamiaceae	KCB 110, 196		Muravunga	Kiongo owera	
<i>Persea americana</i> Mill.	Lauraceae		Ovocado			
<i>Hibiscus fuscus</i> Garcke	Malvaceae	KCB 133		Musinga		
<i>Sida acuta</i> Burm. f.	Malvaceae	KCB 125		Mucundezi		
<i>Sida cuneifolia</i> auct. non Roxb.	Malvaceae	KCB 173		Code 002		
<i>Azadirachta indica</i> A. Juss.	Meliaceae					Neem tree
<i>Melia azedarach</i> Linn.	Meliaceae				Elira	
<i>Chasmanthera dependens</i> Hochst.	Menispermaceae				Lodwar	
<i>Cissampelos mucronata</i> A. Rich.	Menispermaceae	KCB 160	Kavawala	Ruskasikye		
<i>Acacia abyssinica</i> Hochst. Ex Benth.	Mimosaceae				Eminit	
<i>Acacia mearnsii</i> De Wild.	Mimosaceae	KCB 141		Burikoti		
<i>Acacia mellifera</i> (Vahl) Benth ssp. <i>Mellifera</i>	Mimosaceae				Eregei	
<i>Acacia nilotica</i> (L.) Willd. ex Delile	Mimosaceae				Ekaperimen	
<i>Acacia oerfote</i> (Forssk.) Schweinf.	Mimosaceae				Epetet	
<i>Acacia polyacantha</i> Willd.	Mimosaceae	KCB 201				
<i>Acacia</i> sp.	Mimosaceae				Namunonko	
<i>Acacia spirocarpa</i> Hochst. ex A. Rich.	Mimosaceae				Muwa	
<i>Albizia anthelmintica</i> Brongn.	Mimosaceae				Etirere	
<i>Albizia coriaria</i> Welw. ex Oliv.	Mimosaceae	KCB 80	Mugavu		Ekapangiteng	
<i>Albizia gummifera</i> (J.F. Gmel.) C.A.Sm.	Mimosaceae			Mushebeya	Musita	

<i>Mollugo cerviana</i> (L.) Ser.	Molluginaceae	KCB 120		Ihoza	Nalukiko	
<i>Mollugo nudicaulis</i> Lam.	Molluginaceae				Katebe Ketaka	
<i>Artocarpus heterophyllus</i> Lam.	Moraceae		Fene		Fene	
<i>Ficus asperifolia</i> Miq.	Moraceae		Ekitonto			
<i>Ficus natalensis</i> Hochst.	Moraceae	KCB 71	Mutuba	Katoma		
<i>Ficus saussureana</i> DC.	Moraceae			Kitoma		
<i>Moringa oleifera</i> Lam.	Moringaceae		Moringa			
<i>Musa acuminata</i> Colla	Musaceae		Mbidde	Endere		
<i>Myrica salicifolia</i> Hochst. Ex A. Rich.	Myricaceae	KCB 134		Mujeje		
<i>Callistemon citrinus</i> (Curt.) Stapf.	Myrtaceae		Mwambalabutonya			Bottlebrush
<i>Eucalyptus</i> spp.	Myrtaceae		Kalitusi	Kalitusi		
<i>Psidium guajava</i> L.	Myrtaceae	KCB 78	Mapera	Mapera	Mupera	
<i>Syzygium cumini</i> Linn.	Myrtaceae	KCB 86	Jambula			
<i>Ximenia americana</i> L.	Oleaceae			Nyarubatura	Musumwe	
<i>Oxalis corniculata</i> L.	Oxalidaceae	KCB 138		Bunyanyambuzi		
<i>Abrus precatorius</i> L.	Papilionaceae	KCB 186			Nsiti	
<i>Cajanus cajan</i> (L.) Millsp.	Papilionaceae	KCB 158		Mutondigwa		
<i>Desmodium adscendens</i> (Sw.) DC.	Papilionaceae			Endebula		
<i>Erythrina abyssinica</i> Lam.	Papilionaceae	KCB 81	Girikiti	Kiko/Endubaruba		
<i>Indigofera arrecta</i> Hochst.	Papilionaceae	KCB 124		Mushoroza		
<i>Indigofera garckeana</i> Vatke	Papilionaceae				Mukitimbo	
<i>Sesbania sesban</i> (L.) Merr.	Papilionaceae			Munyeganyagye		
<i>Tephrosia vogelii</i> Hook. f.	Papilionaceae					
<i>Vigna unguiculata</i> (L.) Walp.	Papilionaceae		Kyindiru	Mulukuluku		
<i>Passiflora edulis</i> Sims	Passifloraceae	KCB 166		Mitunda		simsim
<i>Sesamum indicum</i> L.	Pedaliaceae					
<i>Phytolacca dodecandra</i> L'Her.	Phytolaccaceae	KCB 128		Muhoko		
<i>Cymbopogon nardus</i> (L.) Rendle	Poaceae	KCB 127		Mutete		

<i>Cynodon</i> spp.	Poaceae		Lumbugu	Karandarugo		
<i>Digitaria abyssinica</i> (A. Rich.) Stapf	Poaceae	KCB 92	Lumbugu	Lumbugu		Lumbugu
<i>Imperata cylindrica</i> (L.) P.Beauv.	Poaceae	KCB 192				Ibembe
<i>Melinis repens</i> (Willd.) Zizka	Poaceae	KCB 139		kirandura		
<i>Pennisetum purpureum</i> K. Schumach.	Poaceae	KCB 126		Kibingo		
<i>Saccharum officinarum</i> L.	Poaceae				Kikajo	
<i>Oxygonum sinuatum</i> (Meisn.) Dammer	Polygonaceae	KCB 200			Nkenge	
<i>Rumex usambarensis</i> (Dammer) Dammer	Polygonaceae	KCB 167		Kafumbagizi		
<i>Portulacca quadrifida</i> L.	Portulacaceae	KCB 180			Otando	
<i>Gouania longispicata</i> Engl.	Rhamnaceae			Mufurura		
<i>Zizyphus mauritiana</i> Lam.	Rhamnaceae					Ekare
<i>Eriobotrya japonica</i> (Thunb.) Lindl.	Rosaceae	KCB 172				
<i>Coffea canephora</i> Pierre ex A. Froehner	Rubiaceae		Mwanyi	Omwani		
<i>Rytigynia</i> spp.	Rubiaceae			Nyakibazi		
<i>Sarcocephalus latifolius</i> (Smith) Bruce	Rubiaceae	KCB 198			Muaama	
<i>Citrus limon</i> (L.) Burm.f.	Rutaceae		Nimu	Endimu		
<i>Citrus sinensis</i> (L.) Osbeck	Rutaceae			Mucungwa	Muchugwa	
<i>Zanthoxylum chalybeum</i> Engl.	Rutaceae					Eusugu
<i>Zanthoxylum lepreurii</i> Guill. & Per.	Rutaceae	KCB 195			Busuku	Eusugu
<i>Cardiospermum halicacabum</i> L.	Sapindaceae	KCB 176			Wambula	
<i>Nicotiana tabacum</i> L.	Solanaceae	KCB 88	Taba		Taaba	
<i>Physalis peruviana</i> L.	Solanaceae	KCB 144, 174	ntuntunu enene	Entutu/Mututu	Ntutunu	

<i>Solanum aculeastrum</i> Dunal	Solanaceae	KCB 83	Tengo tango (Enume yekyalo)			
<i>Solanum aethiopicum</i> L. Gilo group	Solanaceae			Entula		
<i>Solanum giganteum</i> Jacq.	Solanaceae				Elerae	
<i>Solanum incanum</i> L.	Solanaceae				Eulelo	
<i>Solanum lycopersicum</i> L.	Solanaceae		Nyanya	Nyanya		
<i>Triumfetta rhomboidea</i> Jacq.	Tiliaceae	KCB 156		Ruhigura		
<i>Clerodendrum rotundifolium</i> Oliv.	Verbenaceae	KCB 84, 168	Kisenkeseke	Enziteimwa		
<i>Lantana camara</i> L.	Verbenaceae	KCB 152	Kayukiuyuki (Akatonono)	Muhima	Kapanga	
<i>Lantana trifolia</i> L.	Verbenaceae	KCB 151	Kasekera	Muhukye	Musekera Nyonyi	
<i>Priva cordifolia</i> Druce	Verbenaceae	KCB 85	Enkami			
<i>Vitex fischeri</i> Gurke	Verbenaceae	KCB 178			Mukyolokobi	
<i>Cyphostemma cyphopetalum</i> (Fresen.) Desc. Ex Wild & Drumm.	Vitaceae	KCB 193			Bombo (enene)	
<i>Zingiber officinale</i> Roscoe	Zingiberaceae	KCB 197		Ntangawuzi		
Unidentified		KCB 121		Kitinwa		
Unidentified		KCB 142		Musasizi		
Unidentified		KCB 159		Kitabatabe		
Unidentified		KCB 161		Ekimara		
Unidentified		KCB 165		keeza		
Unidentified		KCB 170		Mushura		

NOTES:

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