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The Role of Indigenous Knowledge in Forest Management

A Case Study from Masol and Sook Division, West Pokot, Kenya

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Abstract

Indigenous knowledge (IK) concerning forestry is, in many societies around the world, in danger of being lost, since western science has lately been controlling the development of forest management practices to such a large extent. It is therefore of the greatest importance to record and assess such IK before it becomes extinct. The objective of the study was to do this for the traditional knowledge that the local population in Masol and Sook Division, Kenya, possessed regarding the use, reproductive processes and deliberate dispersal of trees. Furthermore, to examine the current balance between the people and the forest resource and to put the result in relation to the role of future forest development interventions in the area. The result of the study is based on 40 interviews with both women and men. The lifestyle in Masol Division is still traditional and they are pastoralists, the lifestyle in Sook Division has been undergoing changes lately and they are now more settled and are cultivating the land to greater extent than in the past.

The study revealed that the IK was limited to meeting the direct needs which the population in the study area had experienced. The respondents proved to have great understanding concerning the use of the trees. Trees useful as fodder and sources of medicine and fruits were valued highly since illness and shortage of food and fodder were problems seriously affecting everyday life. Only a few species were reported to be used as firewood. There was limited deeper understanding, in both Masol and Sook, of the reproductive characteristics of the trees and of how the regeneration of important tree species could be improved.

The forest resources in Masol proved to be well maintained under prevailing practices and conditions. In Sook, however, where the lifestyle had changed and the land was cultivated more intensively and to greater extent, the overall balance of the forest cover was being disturbed, as shown in the changing composition of species. The results of the study show that IK was not enough for sustainable management when a society was in transition and development exerts new pressure on the forest resource.

Since no societies can, or should, be conserved intact, it is necessary to provide inputs and support from the outside when new needs, if the new needs presented by changing situations, are to be met. Western science and IK can complement each other. Recognition of both forms of knowledge would allow for development of more site-specific, efficient and sustainable forest management methods to meet future needs.

Keywords: Indigenous knowledge, reproductive processes, tree cover, sustainable forest management, West Pokot, Kenya.

Preface

It has been a great privilege to get the opportunity to share some of the highly precious knowledge that the local population in Sook and Masol Division, West Pokot District, Kenya, possess. This was possible by generous funds from Anna Whitlooks minnesfond and Magda och Folke Carlssons stipendiefond.

No man is an island; I therefore want to thank all of you who have made this study reality. My acknowledgements are first of all, reserved to all the amazing people that I met during the fieldwork and everyone who have so kindly participated in the survey.

I also want to direct special thanks to the all the people at the VI-agroforestry project in Kitale, for sharing your impressive knowledge and experiences. Additionally I want to direct some very special thanks to Ulf Lindgren for saving me some great worries by making it possible for me to come to Kenya with very short notice.

A number of other people have also been involved in contributing to the result, in all ways, from encouragement and assistance in field to proof reading the draft. I want to thank (in alphabetical order): Arne Albrektson, Isaac Kaitalem, Sally Kapkony, Poghisio Y. Kopeyon, William Makokha and Kefas Okach.

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Ida Wigrup

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Contents

List of Abbreviations

CBS	Central Bureau of Statistics
IDRC	International Development Research Centre
IK	Indigenous Knowledge
PRA	Participatory Rural Appraisal
RRA	Rapid Rural Appraisal
SciDev	Science and Development Network

Introduction

Forests and trees, combined with agricultural production, have a significant role to play in food security and environmental protection (Jøker 2000) in many rural communities around the world. Forest products, such as food, fodder, herbal medicines and firewood, contribute to the livelihoods in a direct way, but forest products do also contribute in an indirect way when wood, for example, is used for farm implements and even traded to meet basic subsistence needs (Antonsson-Olge 1995). Forests and trees are important constituents in the local ecosystem, playing a major role in soil and water conservation and nutrient cycling (Gonzales *et al.* 2004). Furthermore, deforestation and more intense land use often result in severe degradation of production sites, which will likely have negative impact on local peoples' livelihoods.

Sustainable[1] management of forests is complex, and it is crucial to adopt an interdisciplinary approach to research in the field. It is essential to consider both the biophysical and socioeconomic dimensions of the problem when attempting to identify the components of the system and show how they are interrelated (Bhattarya and Tripathi 2004).

Scientific and indigenous knowledge (IK) [2] have, in the process of modernization, often been progressively more separated or 'alienated' from each other. It has been widely assumed that there is a vast difference between these two types of knowledge. IK has earlier been seen as backward, static and a hindrance to modernisation (Appleton *et al.* 1995).

Cleveland and Soleri (2002) raise the highly relevant question of determining just "how similar or different scientific knowledge and indigenous knowledge are, and how they might work together to help solve the problems of development". Science and IK differ in their capacity to deal with local problems (Appleton *et al.* 1995). IK is often based on observations and experience gathered over a long timeframe while scientific knowledge is more often describing detailed processes and not often based on observations over such a long timeframe. Another significant difference is the emotional relationship that the local people have to their observations; scientific research more often aims to be unbiased. Furthermore, IK is based on the fact that the natural resources, i.e. the forests are managed by the users of the knowledge (Appleton *et al.* 1995).

Bhattarya and Tripathi (2004) claimed that scientific knowledge has in fact contributed very little to the development of rural communities and societies around the world. Therefore, local participation and IK have an important role to play in improving this situation and achieving sustainable management in many parts of the world (Prado and Weber 2003). Global processes of rapid changes as well as lack of capacity and facilities needed to document, evaluate, validate and protect such knowledge, put IK in danger of being lost (SciDev 2002).

Participative approaches in development have gained more and more importance and lately become part of the mainstream of thought guiding in development interventions (Cleaver 2004). The importance and value of indigenous knowledge have therefore come into the

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1 The term 'sustainability' will in this study be employed in the widely-used sense of "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Bruntland 1987).

2 The term 'indigenous knowledge' is defined as knowledge "unique to a particular culture and society" (World Bank 1998) which has been acquired within a community and passed on from one generation another (Bhattarya and Tripathi 2004) by people who have had "direct experience and contact with the environment" (Kristensen 2005).

limelight and increasingly gained a central position. Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA) approaches are tools whose values are widely recognized (Chambers 1997) and they are nowadays nearly always used in development interventions.

IK is now widely recognized to be an extensive, diverse, unique, complex and sophisticated body of knowledge that the people have gained over many generations. It is believed that incorporating the local people, by recognizing and embracing their knowledge in planning processes, will create a feeling of local ownership and responsibility in development projects and thereby create greater participation and better prospects for a successful project (Kristensen 2004). It is thought that a greater recognition of IK in the development process will always have a positive impact in preserving valuable skills, technologies and problem-solving strategies among local communities (Bhattarya and Tripathi 2004). Furthermore, IK can be a useful source of information when setting realistic goals and priorities in planning development interventions (Kristensen 2004).

Even though, it can be highly risky to group together all and uncritically call it IK. If IK is separated from the context, it is close to impossible to avoid generalizations and oversimplifications. The unique and potentially important contribution that the IK can contribute to the development risks to be jeopardized by such generalizations since it is the way that IK is rooted in the local conditions that makes it so valuable (SciDev 2002).

In the 1990s a general critique came forward in reaction to the strong belief that people tended to have in participatory approaches (Cleaver 2004). The critics pointed to the obvious danger of over-romanticizing IK and exaggerating the potential value of participatory approaches. Seeing IK and local peoples' involvement simply and unquestioningly as a "good thing" and considering communities as endlessly resourceful, ran the danger of leading to a misunderstanding and underestimation of the complexities of the situations in which local people are involved (Cleaver 2004).

Furthermore, Trawick (2005) states that local knowledge has to develop over a long period of time during which the forest resources in question are of great significance to human adaptation but could not simply be taken for granted (which was the case in Masol), to have real potential to inform scientists. Trawick (2005) states that IK, if it is only a recently emerging phenomenon is individualistic rather than forming a coherent and valued local tradition. This might be part of the truth but the local knowledge has nevertheless the value of being the true perception of the local people and therefore highly relevant when planning development interventions.

It is likely, however, that the two kinds of knowledge can complement each other and compensate for each others' strengths and weaknesses in many fields (Bhattarya and Tripathi 2004), not least in the development of sustainable forestry practices. Using indigenous knowledge can be of perhaps greatest importance when new solutions are searched for. A fruitful dialogue between researchers, professionals and the local population can perhaps result in a new ways of thinking and the discovery of novel and unexpected solutions to natural resource management problems.

A further dimension of the highly complex resource of IK is the property rights. There is a risk of exploitation from outsiders such as western scientists. Protection of IK by existing patent and copyright laws is very difficult since the inventor is, in many cases, impossible to identify; traditional culture is in the "public domain" (Appleton *et al.* 1995). Greaves (1994) argues that IK "now far more than in the past, is under real or potential assault from those who would gather it up, strip away its honoured meanings, convert it to a product, and sell it. Each time that happens the heritage itself dies a little, and with it its people".

All societies around the world are undergoing continuous transformations. Societies cannot, and should not, simply be conserved, since some degree of change is inevitable and natural. Nevertheless, the changes underway in many societies today are creating an increasing

pressure on the forest cover. The theories of how we shall meet the pressure that the increased population and its changing consumption patterns will create on the forest resources are many. There are doubtless many sources of knowledge out there to draw upon; this study aims to examine in detail the potential of one of them: indigenous knowledge. The study was based on participant observation in case studies from Sook and Masol Division, West Pokot District, Kenya[3] during a two-month period.

Objectives

The objective of the study was to record indigenous knowledge regarding the use, reproductive processes and deliberate dispersal of trees growing in Sook and Masol Division, West Pokot District, Kenya, by interviewing people living in the area. The main focus was on the situation in Masol, however with the interviews in Sook being used to examine the situation in that area but also to be used comparatively as a reference in order to describe the impact of agricultural development on the forest resource. The development in Masol can, to some extent, be expected to follow similar trends as Sook, since the people in both areas traditionally had similar lifestyles but Sook has lately become more affected by outside influences. Based on the results of the study, attempts were made to draw conclusions regarding the possible future role of IK in further development interventions.

Aim

This study aims to examine, critically and in detail, the IK of local population in Sook and Masol Division, West Pokot District, Kenya, regarding the use, the human-assisted reproduction processes, and the deliberate dispersal of trees. The aim was also to examine the current balance between the people and the forest resource and to put the result in relation to the role of future forest development interventions in the area.

Methods

Study Area

West Pokot District is situated in the western part of Kenya (between latitudes 24º40'N-1º7'N and longitudes 34º37'E-35º49'E), in the Rift Valley Province. West Pokot District covers an area of 9100 km^2 and shares border with Uganda. The southeastern part of the district consists of the mountainous Cherangani Hills (>3000 meters above sea level) and the northeastern part, which includes Masol, is situated at an altitude of less than 900 meters above sea level on the hot and dry plains. There is not only a rich variety of geographical features; also the rainfall varies widely throughout the region, from 400 mm per year in the lower areas (Masol) to 1500 mm in the higher areas (Sook). The rainfall reliability is very low in Masol. All streams in the area, except Suam, Muruny and Weiwei Rivers, are seasonal. Drought and disease outbreaks occur at least once in every 5-7 years.

[3] Kenya is divided into eight provinces which are subdivided into districts. Each district is divided into administrative divisions (six in West Pokot District) made up of locations that, in turn, are made up of sublocations (Makokha *et al.* 1999).

Only 3% of the land in the district has been identified to have high potential for agricultural production, 6% has medium production potential, 28% is marginal land and 44% is considered as rangeland. The remaining 19% of the land is covered by forests or unsuitable for agricultural use (Makokha *et al.* 1999). Development of this area started relatively late in comparison with other regions in Kenya. The population in the district was in 1993 estimated to be 320 000 persons, and the annual growth rate is 4.2% per annum, according to CBS (1996).

The population in the study area, the Pokots, are predominantly pastoralists[4] and their traditional extensive grazing system is based on movements of both people and animals over vast areas. The herds are generally dominated by cattle but do also include goats and sheep. However, this lifestyle is declining and like most pastoralist peoples throughout the world, the Pokots are slowly adopting a more and more settled lifestyle (Makokha *et al.* 1999). Trees and tree products play an important role in the local society in a number of ways, mainly as medicine for the people and as fodder for the animals. Improving the productivity of the forest land in the area is believed to result in better possibilities to improve the standard of living for the local people. One way to achieve this is by promoting and improving regeneration of trees. The local population was believed to possess a valuable and site-specific knowledge about what was relevant to this goal, and concerned with the use and regeneration of tree cover in the area.

Masol Division

Masol is situated in the dry lowlands of West Pokot. The land in the area is communally owned and controlled by the local communities. The herders in the area move their herds to seasonal grazing and water due to the changing availability. The herds are usually divided during the dry season. Some animals normally remain with the women, children and old people to provide milk, while some are moved farther away by the men according to availability of grazing, shrubs and water (Makokha *et al.* 1999). This nomadic lifestyle is crucial for the survival of the people and their animals in this dry area. Milk is the main diet in Masol. If there is a shortage of milk blood is taped from a live animal and mixed with the milk. Meat is only consumed in small amounts and only at very special occasions.

The traditional semi-nomadic lifestyle that the Pokots living in Masol are practicing limits their interest to actively managing the land. The people in the area utilize products from the land to a great extent, but are doing almost nothing to improve the productivity of the land.

Sook Division

Sook Division is situated in the highlands of West Pokot. The people living in the Sook Division have largely left their nomadic lifestyle behind and are living and cultivating the land to a greater extent than those in Masol Division.

Private tenure is practiced in the division. The average farm landholding in the division was in 1999 11 ha (Makokha *et al.* 1999). Each farmer has been given the rights of a plot of land from the government. The ownership is not registered yet (Kopeyon 2005), which makes the tenure situation insecure. Private tenure is typically found in areas with higher agricultural

[4] Pastoralism is, according to Diez (1987), a livestock-based economy. With livestock-based means that products from the livestock provide more than half of the food production in a household. Pastoralists can be nomadic but does not need to.

potential and is often associated with some form of cultivation or protection, such as enclosures that restrict or prevent any uncontrolled grazing by cattle.

Interviews

The main criteria when deciding the study site was to choose an area where there had been minimal impact of outside influences, particularly on forest exploitation. Sook and Masol Division were identified to be areas which had not previously been targets for much development interventions; little had been done in the field of forest and tree management. This improved the possibilities of assessing the traditional knowledge of the people living in the area, without getting confused by knowledge and practices that had come from other sources outside the local community.

The interviews in this study were conducted with the aim of limiting the imposition of "Western" values and keeping the intrusion of exogenous ways of thinking to a minimum. Each interview was carried out individually with one respondent at a time, in extended face-to-face interviews. The interviews were semistructured[5], to great extent based on a set of questions prepared beforehand (Appendix 1), but the respondent was also encouraged to freely give additional input. Each interview included time for the respondent to show, in the field, if he or she regarded certain phenomena or certain issues as being especially important.

The study aimed to put equal emphasis on women's and men's knowledge and observations. It was believed that experience and observations might show significant gender differences, since men and women usually have different tasks and roles within a traditional society. A maximum of two interviews were carried out in each village. The aim in these cases was to interview one woman and one man in each place. The language spoken in the study areas was mainly Pokot. Translators were therefore necessary when caring out the interviews. A translator was used in all the interviews except one, where English was spoken.

Each interview started with the interviewee ranking the five tree species that he/she found most important and useful. The respondent was free to choose any tree species growing in the area. Each interview was thereafter based on the chosen species. The respondents answered questions about frequency of the production of seeds, time of flowering, which animals that were involved in the pollination, which month the seed matured, how the seeds were spread, where and when the plants from the concerned species dispersed. 40 interviews, 25 (11 with men and 14 with women) in Masol Division and 15 (7 with men and 8 with women) in Sook Division, were carried out.

The score in Figure 1. a) and c) is the sum of the total score that each species has been given in the survey. Each respondent ranked the five species (any tree species growing in their surroundings) in order of importance on a scale from 1 to 5 (1 was most important). A rank of 1 scored 5, 2 scored 4, 3 scored 3, 4 scored 2 and 5 scored 1 when calculating the total rank from all interviews. The numbers in Figure 1. b) and d) is the sum of the total number of respondents who have ranked the actual species as one of the five most important.

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[5] Semistructured interviews are based on a list of questions and topics organized in a set order. The interviewer and the respondent are free to follow up new questions that are raised along the interview (Russel 2002). Semistructured interviews are important tools in Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA) approaches (Chambers 1997).

Results

Ranking and Uses

A total of 74 species were mentioned in the interviews (Appendix 2). A maximum of 200 (40*5) species could, in theory, have been mentioned.

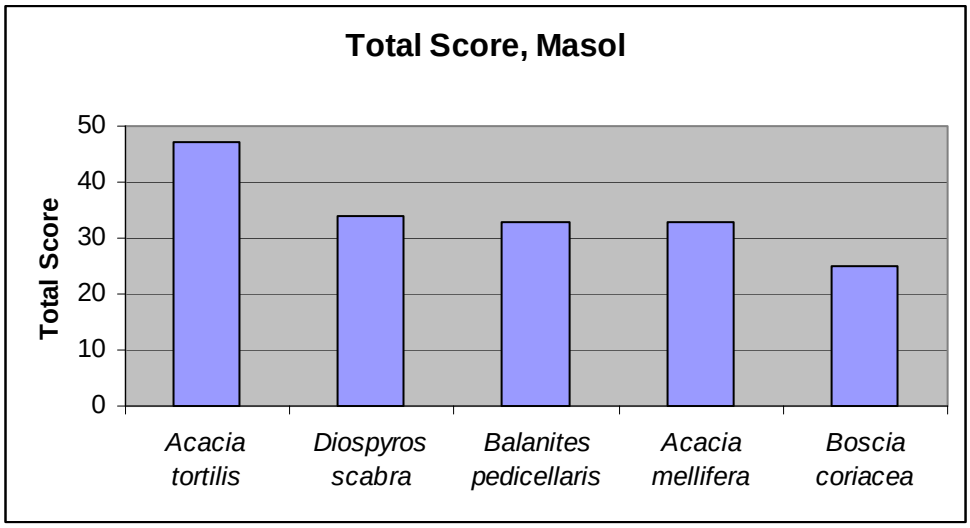
The species that were ranked highest, and thereby assumed to be highest valued, in Masol were *Acacia meillifera, Acacia tortilis, Balanites pedicellaris, Boschia coriacea* and *Diospyros scabra* according to the scoring system (Figure 1). Exactly the same species came out as the highest ranked if looking at the number of respondents who ranked each species as one of the most important five. The order varied, however, as the figure reveals.

All of these five species had an important role to play in the Masol society. They had in common that they all had multiple human uses (Table 1.). They were all used for medicine, fodder and shade. All except *Diospyros scabra* were said to produce edible fruits and also to be suitable for honey production. *Acacia meillifera, Acacia tortilis* and *Diospyros scabra* were used for house construction. Only two of them *Acacia meillifera* and *Acacia tortilis* were mentioned because of their value as sources of firewood.

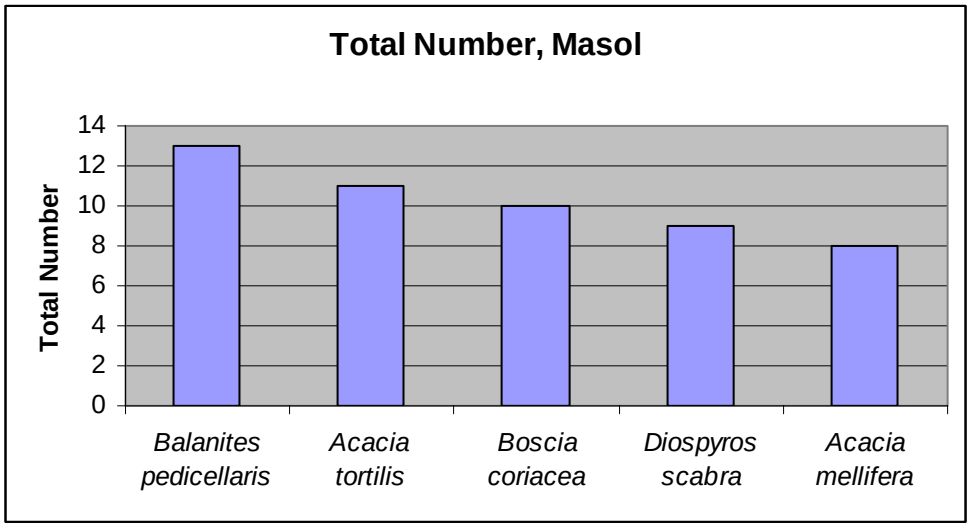
The six species that were ranked highest in Sook were *Balanites aegyptiaca, Dodonaea viscosa, Euclea divinorum, Grewia bicolour, Olea africana* and *Zanthoxylum chalybeum* according to the scoring system (Figure 1). When looking at the most frequently chosen species, the trend was slightly different; the three first species were the same but *Dodonaea viscosa* and *Grewia bicolour* were replaced by *Euphorbia abavatifolia* and Kaptolongwo (pokot name) *(*Figure 1.). *Grewia bicolor* was ranked as number eight and *Dodonaea viscosa* as number nine (Appendix 3). *Dodonaea viscosa* was characterized by many of the respondents as a useless weed, but the few (three) who mentioned *Dodonaea viscosa* valued it highly for its use as fodder and construction. Kaptolongwo (pokot name) and *Euphorbia abavatifolia* were scored as number seven and eight (Appendix 3). They both got an average score of 2.5.

Balanites aegyptiaca, Dodonaea viscosa, Euclea divinorum, Grewia bicolour, Olea africana and *Zanthoxylum chalybeum* were all valued for their usefulness as fodder. All except *Balanites aegyptiaca* and *Euclea divinorum* were said to be used for construction. *Balanites aegyptiaca, Euclea divinorum, Zanthoxylum chalybeum* and Kaptolongwo (pokot name) were used as medicine. None of these species were mentioned as sources of firewood.

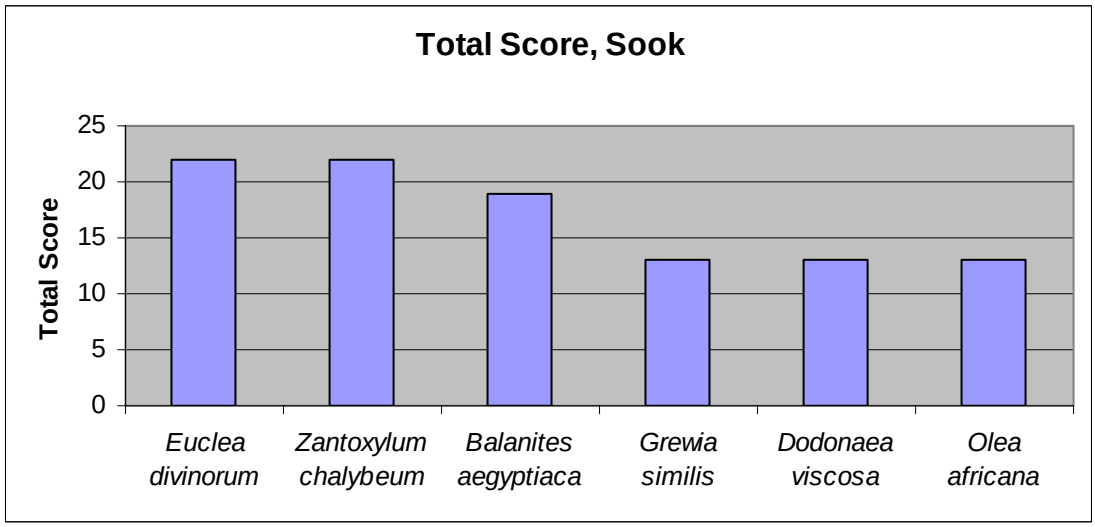
A commonality among the species that were given the highest score, in both Masol and Sook, was that they were all recognised as good sources of fodder. Most of them (nine out of eleven) were also used for different medicinal purposes. Only two tree species were said to be used as firewood.


Total Score, Masol
Total Score
50
40
30
20
10
0
Acacia tortilis
Diospyros scabra
Balanites pedicellaris
Acacia mellifera
Boscia coriacea

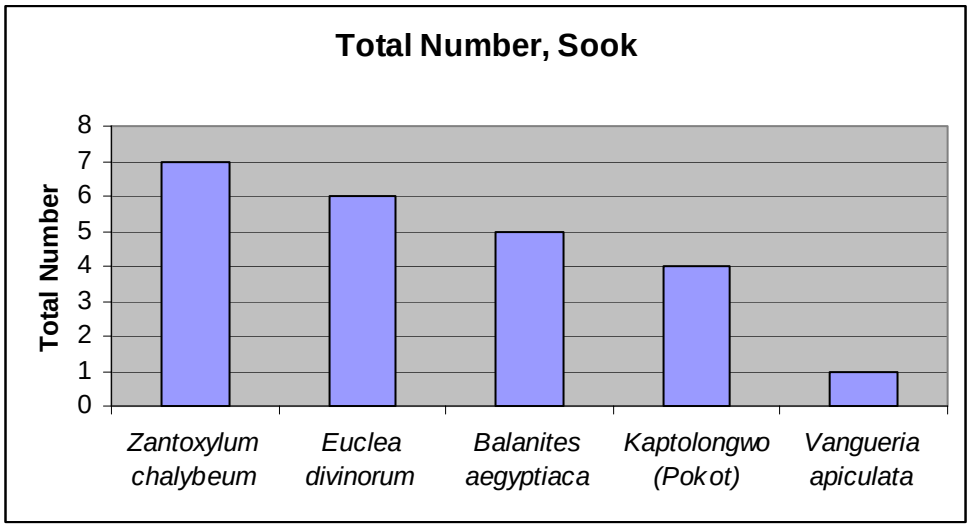
a)


Total Number, Masol
Total Number
14
12
10
8
6
4
2
0
Balanites pedicellaris
Acacia tortilis
Boscia coriacea
Diospyros scabra
Acacia mellifera

b)


Total Score, Sook
Total Score
25
20
15
10
5
0
Euclea divinorum
Zantoxylum chalybeum
Balanites aegyptiaca
Grewia similis
Dodonaea viscosa
Olea africana

c)



d)

Figure 1. *a) Five species identified as the most important in Masol Division according to score, b) Five species identified as the most important in Masol Division according to number, c) Six species identified as the most important in Sook Division according to score, d) Five species identified as the most important in Sook Division according to number.*

The score in Figure 1. a) and c) is the sum of the total score that each species has been given in the survey. Each respondent ranked the five species (any tree species growing in their surroundings) in order of importance on a scale from 1 to 5 (1 was most important). A rank of 1 scored 5, 2 scored 4, 3 scored 3, 4 scored 2 and 5 scored 1 when calculating the total rank from all interviews. The number in Figure 1. b) and d) is the sum of the total number of respondents who have ranked the actual species as one of the five most important.

Trees are an important part of the livelihoods for the people living in Masol and Sook division. Trees are sources of medicine, fodder, fruit, firewood, construction, fencing material and shade; many trees were used in various ways, as illustrated in Table 1. Most of the species that were mentioned in the interviews were either valued as sources of medicine (43), fodder (38) or fruits (28), 66 out of the 74 mentioned species were said to be used in, at least, one of these ways. Only seven were mentioned because of their value as firewood.

Table 1. Uses in Masol and Sook Divisions

The table shows the uses, in Masol and Sook, for each tree species

Uses		
Pokot name	**Botanical name**	**Use**
Adomoyon	*Cordia sinensis*	fruits, fodder (leaves), construction
Akwicha	*Maytenus heterophylla*	fencing
Aron	*Tamarindus indica*	fruits, honey, medicine, ash is used to protect wounds (on goats) from being affected by insects, shade

Uses *(continued)*		
Pokot name	**Botanical name**	**Use**
Asiokonion	*Salvadora persica*	fruits, medicine for cold (fruits, roots), ash is used to protect wounds (on goats) from being affected by insects, toothbrush making, fodder (leaves), shade
Atat	*Acacia eliator*	tea (bark), fodder (fruits), firewood, construction
Aywapetion°		medicine, fodder, construction
Chelowo	*Pittosporum viridiflorum*	medicine for malaria (bark) and nausea, fencing, shade
Chepenorkwo°		medicine for cough (roots), construction
Chepkorok°		medicine
Cheptuya	*Euclea divinorum*	fruits, medicine for malaria (roots) and stomach ache, fodder (leaves), fencing (poles), shade
Chepulswo	*Maerua subcordata/decumbens*	fruits, medicine (roots), fodder
Kapkop*		medicine
Kapkwo	*Acacia nilotica*	fodder, fencing, construction
Kaptolongwo°		fruits, medicine for cough, nausea and as painkiller (bark, leaves, roots), construction
Katagh	*Commiphora africana*	fodder (leaves)
Kembirwo°		fodder
Ketpoarur*		medicine (vaccination for animals)
Kimolwo	*Vangueria madagascariensis*	fruits
Kinyotwo	*Ximenia americana*	fruits
Kokochwo	*Premna resinosa*	medicine for head ache and children (roots), fodder for goats and sheep (leaves), construction, shade
Kolion	*Acokanthera oppositifolia*	fruits, shade
Koloswo	*Terminalia brownii*	medicine for eye diseases (bark), fodder, construction, shade
Komol	*Combretum molle*	firewood, construction
Komolwo	*Vangueria apiculata*	fruits, medicine, construction
Komonowo°		fruits, fodder
Kopulwo*	*Gardenia volkensii*	medicine (roots and fruits), fodder (leaves), shade
Korosion	*Dobera glabra*	fruits, fodder, shade
Kreswo	*Euphorbia candelabrum*	live fence, construction, construction of beehives
Kriteswo*	*Trichilia emetica*	used for skin care, shade
Kuryon	*Teclea nobilis*	shade
Lakatet/Lekotetwo	*Carissa edulis*	fruits, medicine for stomach ache and diarrhoea (roots and bark), fodder for goats and cows (leaves)

Uses *(continued)*		
Pokot name	**Botanical name**	**Use**
Lolotwo	*Lannea fulva*	fruits
Lomyion/Loma	*Balanites pedicellaris*	fruits (has to be boiled for a whole day before it is edible), vegetables, honey, medicine for malaria (bark and roots), fodder for cows, goats and donkeys (fruits and leaves), fencing, glue making for construction, (too weak for construction), shade
Losikiria	*Bersama abyssinica*	medicine for diarrhoea (roots), fodder for goats
Manampelion	*Vepris glomerata*	medicine (roots), fodder, construction, shade
Marsitet/sitot/sitet	*Grewia similis*	fodder for goats, sheep and cows (leaves), fencing, rope making, construction, construction of beehives, shade
Mokongwo	*Ficus sycamorus*	fruits, fodder, shade
Muchukwo	*Berchemia discolor*	fruits, construction, shade
Mukurkong	*Harrisonia abyssinica*	tea (by grinding the roots), medicine (bark)
Ngówin	*Zyziphus abyssinica*	fruits, eats the seeds, medicine (bark), fencing
Ntermen°		medicine for stomach ache and worms
Panan	*Albizia amara*	medicine (bark)
Panyirit	*Acacia reficiens*	medicine (bark), fodder for goats (leaves, fruits), firewood, whip making for men to beat women (woman ranked this tree as fifth most important!), fencing, construction, shade,
Pkata	*Lycium europaeum*	medicine for skin diseases and back ache (roots)
Poywoto	*Ficus spp.*	medicine for stomach ache (bark), fodder for goats and cows (leaves), construction
Priokwo	*Pappea capensis*	fruits, fodder for goats and cows (leaves and fruits), shade
Rotin	*Kigelia africana*	brewing
Sarachan		shade
Ses	*Acacia tortilis*	honey, medicine, fodder (fruits, leaves and seed pods), firewood, rope making (bark), fencing, construction, making roof for houses for cattle, shade
Simotwo	*Ficus thonningii/natalensis*	fodder, shade
Siriowo	*Rhus natalensis*	fruits, medicine (leaves and roots)
Sition		medicine for polio
Songowo	*Zantoxylum chalybeum*	tea (by grinding dry fruits), medicine for hart diseases, head and stomach ache (bark and roots), fodder, construction, shade
Sonkopwo°		tea, medicine (painkiller) (bark), fodder (leaves)
Sorchon	*Boscia coriacea*	fruits, honey, medicine (roots), fodder (leaves and bark), shade
Sungululwo	*Boswellia neglecta*	medicine (bark)
Talamoghion	*Acacia mellifera*	honey, medicine for stomach ache (bark), fodder (leaves and fruits), firewood, fencing, construction, shade

Uses *(continued)*		
Pokot name	**Botanical name**	**Use**
Tapirpir	*Vangueria volkensii/infaustan*	fruits, fodder (cows and goats eats the fruits during the dry season)
Tapoyo	*Lannea schimperi*	fruits, medicine (roots)
Taran	*Grewia tenax*	fruits, fodder
Tikit/Apeta	*Terminalia spinosa*	fodder (leaves), construction
Tilak	*Acacia spp*	fencing
Tingass	*Flacourtia indica*	fruits
Tingwo	*Acacia etbaica*	rope making, fencing (poles), construction
Tirokwo	*Zyziphus mucronata*	fruits, fodder, construction
Tolkos*	*Aloe vera**	medicine for eye diseases and typhoid
Topolokwo	*Dodonaea viscosa*	fodder for goats and cows (leaves), construction
Torokwo	*Juniperus procera*	medicine for cough (bark), construction
Tuyunwo	*Balanites aegyptiaca*	fruits, vegetables (leaves), honey, medicine (bark) for treating eye diseases, fodder for goats and cows
Tulungwo	*Meyna tetraphylla*	fruits, honey, medicine for humans and goats (leaves), firewood, fencing, shade
Tumwon	*Euphorbia tirucalli*	medicine, fodder, firewood, construction
Turti		medicine for malaria (bark)
Tuwot	*Diospyros scabra*	medicine (roots), fodder (leaves and flowers), broom making, construction, shade
Yemtii	*Olea africana*	medicine for stomach ache (bark), fodder for goats and cows (during dry season) (leaves), fencing, construction, shade

* shrub

° Not identified, possible because it might be a shrub

Reproductive Processes

Observations were in each case made about how the natural reproduction of the trees was altered or managed by the local people. The respondents answered questions about frequency of the production of seeds, time of flowering, which animals that were involved in the pollination, which month the seed matured, how the seeds were spread, where and when the plants from the concerned species dispersed. It turned out later though, when compiling the results, that the time that was given for flowering and maturity of seeds varied widely among the informants, independent of biological or botanical facts (Appendix 4). It would therefore be risky to draw any conclusions upon this.

Most species were said to produce seeds once a year, with the exceptions of Chepenorkwo (pokot name), *Ficus thonningii/natalensis, Pittosporum viridiflorum, Premna resinosa* and *Ximenia Americana,* which were said to only produce seeds every other year (Appendix 4). *Boswellia,* Kapkop (pokot name), Ketpoarur (pokot name) and Sarachan (pokot name) were not believed to produce any seeds. *Acacia mellifera, Acacia reficiens, Balanites pedicellaris, Diospyros scabra* and *Vepris glomerata* produced seeds twice a year; note that these species were also said by some respondents to produce seeds once a year. *Grewia similes,*

Kaptolongwo (pokot name), *Olea africana*, *Salvadora persica* and *Zanthoxylum chalybeum* were said to produce seeds every second year in addition to once a year and every third year for Kaptolongwo (pokot name). *Euphorbia candelabrum* reportedly produces seeds throughout the whole year, but it was also said to produce seeds only once a year, at a specific month, by some informants.

In general, the respondents agreed that germination was taking place in the beginning and middle of the rainy season with only a few exceptions. Chepkorok (pokot name) and *Diospyros scabra* were said to germinate the whole year by one respondent and *Euphorbia tirucalli* and *Terminalia brownii* were both said to germinate during the dry season by one respondent. *Euphorbia candelabrum* was said to germinate any time by one respondent, note that other respondents said, in addition, that it germinates during the rainy season.

Bees were mentioned to be the main pollinator, but also birds, butterflies, insects and vivels were mentioned (Table 2). *Colius striatus kikuyuensis, Criniferodes leucogaster, Indicator indicator,* Kachichin (pokot name), Lochichi (pokot name), *Lonchura griseicapilla, Merops b. bullockoides, Musophaga rossea, Pycnonotus barbatus tricolour, Streptopelia reichenowi, Tauraco schalowi, Tockus e. erythrorhynchu* and *Turtur chalcospilos* (all birds) were mentioned as pollinators of *Aloe vera, Balanites pedicellaris, Carissa edulis*, Chepenorkwo (pokot name), Chepkorok (pokot name), *Combretum molle, Diospyros scabra*, *Euclea divinorum*, *Euphorbia candelabrum*, *Ficus spp*., *Grewia similes*, *Juniperus procera*, Kaptolongwo (pokot name), *Lycium europaeum, Meyna tetraphylla, Olea africana, Salvadora persica*, *Vangueria volkensii/infaustangueria* and *Zanthoxylum chalybeum*. Nothing was said to pollinate *Gardenia volkensii*, since the flower was believed to be very bitter and not attractive to animals or insects.

Seeds were reported to be spread in a number of different ways such as by floods, wind and various animals: baboons, birds, camels, cows, goats, monkeys, sheep, elephants, climbing squirrel, foxes, hyenas and humans. Birds that were mentioned were Cheptengworoch (pokot name), *Colius striatus kikuyuensis, Criniferodes leucogaster, Indicator indicator*, Kachichin (pokot name), Kasindition (pokot name), *Lonchura griseicapilla, Merops b. bullockoides, Musophaga rossea, Plocaus velatus uluensis, Pycnonotus barbatus tricolour, Streptopelia reichenowi, Streptopelia senegalensis, Tauraco schalowi* and *Tockus e. erythrorhynchus.*

The majority of the respondents believed that nothing could damage the germination ability of the seeds since they were too small and hard. Baboons, birds, elephants, flies, goats, droughts, monkeys, termites, insects, stalkborer, black ants (by piercing the seeds), pests, vivels and humans (by chewing the seeds) were anyhow mentioned as threats to seeds of some of the tree species.

The opinions about the effects of browsing varied widely. Here no obvious differences could be observed between the two study areas. The attitude among the majority of informants was that browsing did not affect the plant negatively. Since one of the main uses of trees in the area was fodder, browsing was not seen as a threat to the plant, it was simply a use. Even though some of the respondents stated that it does not affect the plant at all, browsing was even reported by a few people to make the plants grow quicker, especially after being browsed by goats. Other respondents said that browsing made the trees grow slowly or at the same pace as before, while still others said that "the plant stops growing for a while then continues as before", or that "the plant stops growing until the rain comes, then it starts growing again". Some people said that the plant stoped growing for tree weeks if it was browsed by goats and for one week if it was browsed by cows. *Boscia coriacea* was said by one respondent to be killed if browsed by goats. *Albizia amara*, *Aloe vera*, Ketpoarur (pokot name), Sition (pokot name) and *Vangueria apiculata* were not browsed. *Carissa edulis*, *Euphorbia candelabrum* and Sonkopwo (pokot name) were by some respondents said not to be browsed while others said that they were browsed. Apparently there is a significant amount of variation here in the

perceived utility of these tree species. For specific details about threats to the plants see Table 2. The majority of the respondents did agree that a plant does sprout more branches after it has been browsed.

Table 2. Factors Influencing Reproduction Success

The table illustrates the answers that have been given on questions 4.1, 6.1, 6.2, 11.1 and 11.3 from the questionnaire (Appendix 1). Each answer has only been listed once if repeated.

Pollination, dispersal, site and threats						
Pokot name	**Botanical name**	**Pollinated by**	**Dispersal by**	**Site**	**Seed predators**	**Seedling predators**
Adomoyon	*Cordia sinensis*	bees	floods, baboons, birds (*Streptopelia reichenowi*)	everywhere in the lowlands	termites	cows, goats
Akwich	*Maytenus heterophylla*	-	-	-	-	-
Aron	*Tamarindus indica*	bees	floods, baboons, birds, monkeys, humans	riverbanks	insects (in the trees and on the ground), vivels (in the trees and on the ground), the seeds are very hard and nothing can thereby affect them	goats, elephants
Asiokonion	*Salvadora persica*	Bees, birds (*Streptopelia reichenowi*, *Tauraco schalowi*, *Criniferodes leucogaster*, *Indicator indicator*), butterflies, insects	floods, wind, birds (*Tockus e.erythrorhynchus*, *Criniferodes leucogaster*, *Colius striatus kikuyuensis*, *Indicator indicator*), humans	dry plains, mountains, open areas, riverbanks	insects (in the trees), termites (on the ground), the seeds are small and hard and nothing can thereby affect them	cows, goats
Atat	*Acacia eliator*	bees	floods, all animals	riverbanks	the seeds are very hard and nothing can thereby affect them	goats
Aywapetion°		bees	-	everywhere in the lowlands	nothing	goats
Chelowo	*Pittosporum viridiflorum*	bees	floods, wind	highlands	droughts, insects (in the trees)	goats, nothing
Chepenorkwo°		bees, birds (*Turtur chalcospilos*)	birds (*Lonchura griseicapilla*, *Streptopelia reichenowi*)	highlands	insects (*Busseola fusca*) (in the trees)	cows, goats, sheep
Chepkorok°		bees, birds (*Merops b. bullockoides*)	floods, wind, birds (*Merops b. bullockoides*)	dry open plains, mountains	vivels (on the ground)	goats, donkeys, monkeys
Cheptuya	*Euclea divinorum*	bees, birds (*Streptopelia reichenowi*)	floods, wind, birds, goats, wild animals (foxes and hyenas)	everywhere in the highlands	droughts, pests (on the ground), birds (*Streptopelia reichenowi*, *Merops b. bullockoides*), goats, insects (in the trees and on the ground), nothing	cows, goats, insects (eat the leaves) sheep, Dik dik, nothing

Pollination, dispersal, site and threats						
Pokot name	**Botanical name**	**Pollinated by**	**Dispersal by**	**Site**	**Seed predators**	**Seedling predators**
Chepulswo	*Maerua subcordata/decumbens*	bees, butterflies	birds (*Tockus e.erythrorhynchus*), humans	dry open areas, eroded areas, everywhere in the lowlands	birds, insects, nothing	goats, insects, droughts, nothing
Kapkop*		-	floods	mountains	nothing	humans (cut the roots for medicine)
Kapkwo	*Acacia nilotica*	-	-	-	-	-
Kaptolongwo°		bees, birds (Snubird**,** *Colius striatus kikuyuensis*), vivels	floods, wind, birds (*Colius striatus kikuyuensis*), cows, goats, humans	highlands, open areas	droughts, humans (chew the seeds as medicine for cold), nothing	cows, goats, insects (eat the leaves)
Katagh	*Commiphora africana*	bees	birds (*Tauraco schalowi, Tockus e.erythrorhynchus, Criniferodes leucogaster*)	everywhere in the lowlands	the seed pods are very hard and nothing can thereby affect the seeds	goats
Kembirwo°		bees	floods, cows, goats	lower highlands	Stalkborer (in the trees)	cows, goats, sheep
Ketpoarur*		the respondent has not seen any insects or animals on the flowers	-	open plains	nothing	not browsed
Kimolwo	*Vangueria madagascariensis*	bees	floods, humans	lower highlands	nothing	nothing
Kinyotwo	*Ximenia americana*	bees	floods, humans	lower highlands	nothing	nothing
Kokochwo	*Premna resinosa*	bees	floods, wind, (animals do not eat the seeds)	highlands, plains	nothing	cow, goats
Kolion	*Acokanthera oppositifolia*	bees, birds	-	everywhere in the highlands	nothing	goats
Koloswo	*Terminalia brownii*	bees	wind, baboons, climbing squirrel	everywhere in the highlands and lowlands	nothing	goats
Komol	*Combretum molle*	bees, birds (*Pycnonotus barbatus tricolor*)	floods, wind	open areas	vivels (in the trees)	goats
Komolwo	*Vangueria apiculata*	bees, butterflies	birds (*Pycnonotus barbatus tricolor*), humans	scrubby areas	nothing	is not browsed since it smells badly
Komonowo°		birds	floods, goats, humans			

Pollination, dispersal, site and threats						
Pokot name	**Botanical name**	**Pollinated by**	**Dispersal by**	**Site**	**Seed predators**	**Seedling predators**
Kopulwo*	*Gardenia volkensii*	nothing since the flowers are very bitter	floods	plains, riverbanks	the seed pods are protecting the seeds and nothing can thereby affect the seeds	camels, goats
Korosion	*Dobera glabra*	bees, butterflies	floods, birds	mountains	birds	goats
Kreswo	*Euphorbia candelabrum*	bees, birds (Sunbird, Lochichi (pokot name)	floods, wind, birds, humans (cut branches and plant them)	everywhere in the highlands	nothing	monkeys, not browsed
Kriteswo*	*Trichilia emetica*	birds		riverbanks	nothing	goats
Kuryon	*Teclea nobilis*	-	-	-	-	-
Lakatet/Lekotetwo	*Carissa edulis*	bees, birds (Sunbird**,** *Pycnonotus barbatus tricolor, Merops b. bullockoides*), butterflies	floods, (to heavy to be carried by wind), birds (*Streptopelia senegalensis*), humans	highlands, riverbanks	insects (in the trees), nothing	cows, goats, insects (eat the leaves), sheep, not browsed
Lolotwo	*Lannea fulva*	bees	floods, animals, birds, humans	lower highlands	goats	nothing
Lomnyion/Loma	*Balanites pedicellaris*	bees, birds (*Indicator indicator, Tockus e.erythrorhynchus*), butterflies	floods, wind (the seed pod explodes when it gets dry), birds (*Streptopelia reichenowi, Tockus e.erythrorhynchus, Criniferodes leucogaster, Indicator indicator*) , goats	dry plains, mountains, riverbanks, everywhere in the lowlands	birds, goats, insects (in the trees), the seed pods are very hard and nothing can thereby affect the seeds	all animals, camels, cows, goats
Losikiria	*Bersama abyssinica*	butterflies	-	open plains	nothing	cows, goats
Manampelion	*Vepris glomerata*	bees	birds (*Tockus e.erythrorhynchus*)	open plains, everywhere in the lowlands	animals, nothing	all animals, cows, goats
Marsitet/sitot	*Grewia similis*	bees, birds (*Lonchura griseicapilla, Streptopelia reichenowi, Colius striatus kikuyuensis*), butterflies	floods, birds (Kasindition (pokot name), *Indicator indicator, Colius striatus kikuyuensis*), goats	highlands, riverbanks, everywhere in the lowlands	Black ants and Stalkborer (in the trees), nothing	cows, goats, sheep
Mokongwo	*Ficus sycamorus*	bees, birds	floods, animals, birds, humans	lower highlands, riverbanks, everywhere in the highlands and the lowlands	goats, nothing	goats, nothing
Muchukwo	*Berchemia discolor*	bees	floods, birds, monkeys	open areas, everywhere in the lowlands	the seeds are very hard and nothing can therefore affect them	goats, nothing

Pollination, dispersal, site and threats						
Pokot name	**Botanical name**	**Pollinated by**	**Dispersal by**	**Site**	**Seed predators**	**Seedling predators**
Mukurkong	*Harrisonia abyssinica*	bees	birds (*Indicator indicator*)	riverbanks	nothing	elephants, goats
Ngówin	*Zyziphus abbysinica*	bees	goats	everywhere in the highlands	children (chews the seeds)	goats
Ntermel		bees	-	mountains	nothing	goats
Panan	*Albizia amara*	bees	floods	highlands	nothing	not browsed
Panyirit	*Acacia reficiens*	bees	floods, birds (*Tockus e.erythrorhynchus, Indicator indicator*), cows, goats	open areas, plains	the seeds are very small and nothing can thereby affect them	all animals, cows, donkeys, goats
Pkata	*Lycium europaeum*	bees, birds (*Criniferodes leucogaster*)	-	mountains, plains	nothing	goats
Poywto	*Ficus spp.*	bees, birds (*Streptopelia reichenowi*)	floods, wind, birds (*Plocaus velatus uluensis, Musophaga rossea, Colius striatus kikuyuensis*), goats	everywhere in the highlands	insects (in the trees), nothing	cows, goats
Priokwo	*Pappea capensis*	bees	floods, birds, humans	everywhere in the highlands	insects (in the trees), nothing	cows, goats
Rotin	*Kigelia africana*	-	floods	riverbanks	nothing	goats
Sarachan°		bees	wind, birds (*Merops b. bullockoides*)	dry open areas	nothing	goats
Ses	*Acacia tortilis*	bees, birds, butterflies, insects	floods, wind, birds, cows, elephants, goats, monkeys, sheep, humans (when swiping the homestead)	dry open areas, dry plains, riverbanks	baboons (on the ground), birds, elephants, insects (in the trees), monkeys, the seeds are very hard and nothing can thereby affect them	droughts, cows, goats, insects, sheep, nothing due to thorns
Simotwo	*Ficus thonningii/ natalensis*	bees, birds	birds (*Streptopelia reichenowi*)	highlands	insects (in the trees)	nothing
Siriowo	*Rhus natalensis*	bees	floods, foxes	scrubby areas	nothing	nothing
Sition°		-	-	rocky areas	nothing	not browsed
Songowo	*Zanthoxylum chalybeum*	bees, birds (Sunbird)	floods, wind, birds (Sunbird) (poisonous for birds)	riverbanks, lower highlands, everywhere in the highlands	droughts, pests (on the ground), goats, Stalkborer (in the trees and on the ground), nothing	cows, goats, sheep, wild animals, Dik dik, nothing
Sonkopwo°		bees	floods	highlands, rocky areas	insects (on the ground), nothing	goats, not browsed

Pollination, dispersal, site and threats						
Pokot name	**Botanical name**	**Pollinated by**	**Dispersal by**	**Site**	**Seed predators**	**Seedling predators**
Sorchon	*Boscia coriacea*	bees, birds, butterflies, insects	floods, baboons, birds (*Tauraco schalowi, Streptopelia reichenowi, Tockus e.erythrorhynchus, Indicator indicator, Criniferodes leucogaster*)	open areas, mountains, plains, riverbanks, scrubby areas, everywhere in the lowlands	birds, goats (if goats eats the seed it does not germinate), the seeds are very small and the seed pods are very hard and nothing can thereby affect the seeds	camels, cows, donkeys, goats (kills the plant)
Sungululwo	*Boswellia neglecta*	bees	-	rocky areas	nothing	goats
Talamoghion	*Acacia mellifera*	bees, insects	floods, wind, birds (*Tockus e.erythrorhynchus, Indicator indicator*), cows, goats	dry open areas, dry plains, riverbanks, everywhere in the lowlands	insects (on the ground), vivels (on the ground), the seeds are very hard and nothing can thereby affect them	droughts, all animals, camels, cows, goats, insects
Tapirpir	*Vangueria volkensii/infausta*	bees, birds (*Pycnonotus barbatus tricolor*)	floods	highlands	pests (on the ground), insects (in the trees and on the ground), humans (children chew the seeds)	cows, goats, sheep, wild animals, Dik dik
Tapoyo	*Lannea schimperi*	bees	birds (*Tockus e.erythrorhynchus, Indicator indicator*)	everywhere in the lowlands	insects (in the trees), nothing	cows, goats
Taran	*Grewia tenax*	bees		dry open areas	nothing	goats
Tikit/Apeta	*Terminalia spinosa*	bees, butterflies	floods	open, rocky areas	termites (on the ground), vivels (in the trees)	camels, goats
Tilak	*Acacia spp*	bees	wind	everywhere in the highlands		cows, goats
Tingass	*Flacourtia indica*	birds	floods	highlands	nothing	cows, goats, insects (eat the leaves)
Tingwo	*Acacia etbaica*	bees	wind	everywhere in the highlands	nothing	goats
Tirokwo	*Zyziphus mucronata*	bees	birds, animals	plains in the lowland, riverbanks	animals	cows, goats
Tolkos*	*Aloe vera*	bees, birds (*Merops b. bullockoides*), insects	birds	dry, open plains	nothing	not browsed, nothing
Topolokwo	*Dodonaea viscosa*	bees, butterflies, insects	floods, birds (*Indicator indicator*), wind	open areas in the highlands, rocky places in the highlands	insects (in the trees), nothing	cows, donkeys, goats, insects (eat the leaves)

Pollination, dispersal, site and threats						
Pokot name	**Botanical name**	**Pollinated by**	**Dispersal by**	**Site**	**Seed predators**	**Seedling predators**
Torokwo	*Juniperus procera*	bees, birds (*Musophaga rossea*)	floods, wind, humans (cut branches and plant them)	everywhere in the highlands	insects (in the trees and on the ground), pests (on the ground), nothing	cows, goats, sheep, wild animals, Dik dik, nothing
Tuyunwo	*Balanites aegyptiaca*	bees, insects	floods, birds, goats, humans	mountains, dry open areas, plains, riverbanks, everywhere in the highlands and the lowlands	droughts, goats, insects (in the trees and on the ground), the seeds are very hard and nothing can thereby affect them	camels, cows, goats, donkeys, nothing
Tulungwo	*Meyna tetraphylla*	bees, birds (*Streptopelia reichenowi, Tauraco schalowi, Criniferodes leucogaster, Indicator indicator*)	floods, baboons, birds (Cheptengworoch (pokot name), *Tockus e.erythrorhynchus, Criniferodes leucogaster*), monkeys, humans	open areas, riverbanks	insects (in the trees), nothing	antelopes, camels, cows, elephants, goats, nothing
Tumwon	*Euphorbia tirucalli*	bees	floods, birds	plains in the lowlands	animals	cows, goats
Turti°		-	-	-	-	-
Tuwot	*Diospyros scabra*	bees, birds (*Indicator indicator, Tockus e.erythrorhynchus*), butterflies	floods, birds (*Streptopelia reichenowi, Tauraco schalowi, Tockus e.erythrorhynchus, Indicator indicator, Criniferodes leucogaster*)	mountains, dry open areas, plains, riverbanks, rocky areas, everywhere in highlands and lowlands	birds (*Streptopelia senegalensis*), insects (in the trees), the seeds are very small and hard and nothing can thereby affect them	all animals, camels, cows, donkeys, goats (kill the plant), nothing
Yemtii	*Olea africana*		floods, wind, birds, sprouts through their roots	rocky areas, everywhere in the highlands	droughts, pests (on the ground), flies (in the trees), insects (in the trees and on the ground)	cows, goats, sheep, wild animals, Dik dik

* herb

° Not identified, possible because it might be a shrub

Little was done by the local people, neither in Masol nor in Sook, to collect seeds, improve their germination or to protect the seed from damage. However one respondent, in Sook, was reportedly collecting, protecting and storing seeds; it later came to light that he had been in contact with Ministry of Agriculture and his methods of managing the trees were thus not based on his own knowledge, observations and experience. Only a few interviews revealed any deliberate attempts to protect wildings. Although rare, this was done by fencing-off

important species within the homestead or by prohibiting children from cutting down the actual tree. This was only done to limited extent in both Sook and Masol. A few respondents, exclusively in Sook, mentioned that they put together a pile of soil around the wilding to improve the chances of its survival until the plant was well established.

Tree Cover

Both Sook and Masol were said to have been bare in the past before trees started to get established and provided cover in the area. It was said that there was more grass in both areas earlier.

Among the respondents in Masol all, except one (who had started to cultivate the land), agreed that the tree cover had increased and the grass cover had decreased over time. *Acacia reficiens* was said to have spread because there were more goats nowadays to spread the seeds; it was also said to be a dominating species and did not allow other species to become established close by. *Acacia mellifera, Acacia tortilis, Agave sisalana, Balanites pedicellaris, Bersama abyssinica, Boscia coriacea, Commiphora Africana, Diospyros scabra, Grewia similis, Maerua subcordata/decumbens* and also *Salvadora persica*, Tapodin (pokot name) and *Terminalia brownii* were said to have increased, but no species were mentioned to have decreased. One man simply made a simile between the development of the tree cover and the ratio between child births and child deaths, "some die but more come". A large number of the respondents stated that the composition of species was roughly the same as before. Many of the respondents mentioned increased rainfall as the reason to why the tree cover had increased; improved soil fertility was also sometimes mentioned but not explained. None mentioned the human influence as the reason to why the forest cover had increased.

The opinions about the state of the tree cover in Sook were more diverse. Some respondents stated that the tree cover had decreased, in response to increased cultivation and increased pressure from the population and cattle. Others, the majority, stated that the tree cover had increased, mainly *Dodonaea viscosa*, but also *Acacia etbaica, Croton dichogamus* and *Vangueria*. *Dodonaea viscosa* had, according to the local elders, not been growing in the area in their youth. A number of respondents stated that seeds had been spread by wind from Sekeer, a neighboring division. Kembirwo (pokot name) was mentioned as having decreased because of its usefulness as fodder and *Combretum molle* because of increased cultivation of the land. Even *Acacia etbaica, Acacia spp, Carissa edulis, Erythrina abyssinica, Euphorbia spp* and *Pappea capensis* were mentioned to have decreased. Note that *Acacia etbaica* and *Combretum molle* were, by different respondents, said to have increased and decreased.

Many of the respondents expressed their worries about the rapid increase of *Dodonaea viscosa*; only few mentioned that they found the tree useful. The majority saw it as weed and a nuisance. Two respondents expressed their concern about its competition with grass. Most respondents said that not even the cattle grazed on its leaves. This proved to be a notable contradiction, since two of the respondents in Sook ranked *Dodonaea viscosa* as the most important and third most important species (therefore the high rank shown in Figure 1). The three of them all mention that it could be used for construction, but only one mentioned it as a source of fodder for the animals.

There were a number of indications that the population in Sook was interested in starting nurseries and planting seedlings in order to use the trees for fencing. Only few real initiatives could be seen in this direction, however. The only visible sign of actual initiative was fencing out animals from cultivated areas. There were no such signs or attempts, visible to us, in Masol, with one exception, *Agave sisalana* had by one respondent been planted for construction, by the respondents own initiative.

Discussion

Survey Results

The study indicated that the local knowledge was limited to the direct needs that the population in the area experienced and the known uses of the trees in meeting those needs. People had a great understanding of the use of the trees, particular the ones that were useful for medicine, fodder and fruit production since they were valued highly. This can be explained by the fact that illness and shortage of fodder have long caused serious problems in everyday life. All tree species that were ranked highest in Masol, for example, were used for medicines.

Surprisingly, trees used for firewood were not ranked very highly (only three out of the ten highest ranked tree species in Masol were said to be used as firewood). A possible reason might be that there were enough trees in the area to cover the demand for firewood, and that little time was thus spent to fetch firewood.

A high number (74) of different species were mentioned in the interviews (Appendix 2). A maximum of 200 (40*5) species could, in theory, have been mentioned. The high number of species mentioned in the interviews proves that the population living in the area find uses for most of the species and values many different species highly.

Almost all respondents in Masol stated that the tree cover had increased; with only one exception in an area were the trees had been cleared for cultivation. The respondents explained the change in terms of increased rainfall lately and also pointed to the increased number of goats and cows present nowadays, which helped the dispersal.

The study indicated that the current living pattern in Masol was in balance with the forest resource. The tree cover was increasing but no particular species were dominating, even though there were small changes in the tree composition. The balance between the population and the trees, and also the balanced composition of species, might be explained by the diversified use of different trees that was practiced in Masol. Most trees were used, and most of them were also used in several ways; none species were therefore overused, which might have led to other species taking over and starting to dominate the area.

The belief that the tree cover was increasing can possibly explain the lack of practices to improve the regeneration of important trees. One respondent in Masol said that “we are migrating all the time and there are so many of them” and another respondent said that “God is taking care of that”. The people simply relied on the nature to take care of these issues.

The situation in Sook differed. A few said that the tree cover had decreased lately due to increased cultivation and increased pressure from the population and cattle, but most of the respondents said that the tree cover had increased. The majority of respondents expressed worries about the invasion of *Dodonaea viscosa* and how the species competed with desired grasses.

An explanation of why it had been possible for *Dodonaea viscosa* to establish to such an extent may possibly have been the lack of use for this tree in the area. Furthermore, conservative attitudes towards use of trees can possibly explain why the tree is not used to greater extent. A few respondents mentioned the tree as useful; yet at the same time the majority stated that it was useless. This can be explained by the fact that *Dodonaea viscosa* is unpalatable to cattle, which means that cattle stick to the plants that they are used to and only try other species when they are forced to. This indicates that there might be a potential to use *Dodonaea viscosa* as fodder for cattle. This would also be a way to control and limit the dispersal of this tree species.

There were a number of indications in Sook that the population was interested in actively taking part in the management of the forest resources by starting nurseries, planting seedlings

and starting to use protective fencing, but only a few initiatives could be seen in the area. The respondents expressed that they needed and wanted assistance and guidance from the outside to be able to start managing the trees. They also expressed their concern about not knowing what to do with the increased number of *Dodonaea viscosa*. A visible sign of self-generated initiatives was fencing out animals from cultivated areas and one respondent who had actually bought and planted *Cupressus lusitanica* plants. There were no such signs, attempts or examples of individual initiative in Masol, with the exception of one respondent who had planted *Agave sisalana* for construction. The population in Sook had, in general, a higher level of education and had also been in contact with some development projects before, even though the projects had not been directed at forestry. This may explain why the people were emphasizing the possibility of getting help from outside instead of taking own initiatives. Knowing that there were other sources of knowledge and support to get from aid organizations and the Ministry of Agriculture seemed to create a feeling of insecurity over own potential for independent action. The people therefore seemed to feel more secure to wait until someone else came along and to tell them what to do about the situation.

The differences in level of development in the two areas were reflected, in terms of tree cover, tree composition and people's attitudes. In Masol, where the population still was, to a large extent, living a traditional lifestyle, the forest cover was maintained well and the prevailing lifestyle seemed to be in balance with the forest resource. The people did not therefore express a need of changing the use of the trees in the area; nor did the lifestyle in Masol promote long-term investment such as nurseries and tree planting.

In Sook, on the other hand, where the traditional nomadic lifestyle was changing towards a more settled life and cultivation of food crops was gaining popularity, the situation was different. Increased cultivation of land had led to increased pressure on the forest resource. The composition of trees had been thrown out of balance and one species, *Dodonaea viscosa*, which had not been growing in the area before, was now spreading and competing with the grasses needed for grazing. The population expressed their interest in taking control of the management of trees. The ownership pattern of the land in Sook, where there was private tenure, arguably promoted and encouraged a more proactive attitude towards improving the situation.

Knowledge from outside sources could be used to teach the people, how to use the existing tree species in new, better, and sustainable ways. Some of the species that were growing in the area had the potential of being used in various other ways in addition to the already recognized uses. This would improve the possibilities of using the resources more efficiently without compromising with the sustainability, if it was done in the correct way. To make such a scheme sustainable in the long term, efforts would have to be put into improving regeneration and providing more protection for the trees. This would help compensate for the increased pressure which, with high probability, would be created if new ways of using the trees were adopted and spread.

Applicability of the Results

"Western" scientific approaches cannot value local practises to a full extent, since there are aspects (e.g. spiritual) that outsiders cannot fully understand and appreciate (World Bank 1998). In addition "Western" values and ways of thinking might, unintentionally, be enforced or imposed through the interview process itself by introduction of bias or selectivity in giving answers. There is always a risk that the results from interviews and questionnaires reflect, to some extent, the answer that the respondents believe that the interviewer wants, rather than the truth that each respondent knew and experience. There is also a risk that the respondent just gives any answer instead of admitting that he/she does not know, or simply that respondents became bored and therefore just answered the questions without thinking about the question

carefully. Men generally seemed to have more patience throughout the interviews than the women.

The number of interviews conducted in the study was limited, due to time constraints, and do not allow for more general conclusions about the indigenous knowledge in the area of Sook and Masol Division in West Pokot District in Kenya. However, the study gives a good insight in thinking, knowledge, observations and beliefs coming strictly from the interviewed people, knowledge that is likely to be shared to some extent by some of their neighbors and fellow village members.

Translators were used for all the interviews except one. This was because the greater parts of people living in the area spoke only the local language, Pokot. The translators also played an important role as informants since they were familiar with local traditions. The use of translators could have been a source of error, partly because the translators had no prior training in such work. There was a risk that information may have been lost, misinterpreted or accidentally altered in the course of translation. Even though use if a translator was necessary for the area, it also meant that compromises had to be made in the degree of control of the researcher over the way questions were asked.

The study sites were chosen with the intention of working in an area where little development interventions had earlier been carried out. There was nevertheless, a small risk of earlier influence from outside. The responses would then tend to reflect a mixture of indigenous knowledge with facts that have been learned from outsiders. This risk was, by the choice of study sites, minimized but not eliminated.

Conclusions

IK is a valuable source of information in forestry management because it is site specific. The population in Masol and Sook division possessed highly valuable knowledge concerning the use and reproduction of a great variety of species growing in the area, even though little efforts had been made, in any of the areas, to actively regenerate and protect useful trees.

The study indicated that the current living pattern in Masol was in relatively balanced relationship with the existing forest resource. The tree cover was increasing and no particular species were taking over. The situation in Sook differed significantly, however; a few people said that the tree cover had decreased due to increased cultivation and growing pressure from the human population and from cattle, but most respondents said that the tree cover had increased. The tree cover had reportedly increased, mainly because of one species that had previously not grown in the area, *Dodonaea viscosa*, which was competing with useful grasses.

The pressure from the development in Sook had disturbed the balance between the population and the forest resources. The knowledge about managing the trees was no longer sufficient or effective because conditions had changed. Many of the respondents wanted help from outside to create sustainable management of forest resources and to allow them to produce products from the trees to meet their new and changing needs.

IK is highly valuable since it is based on traditions, observations and experience that are site specific, but it also has limitations in a society and an environment that is in a rapid state of transition. The IK was built up over generations and based on many years of experience and observations, but it was not extensive or adaptable enough to meet the changing conditions produced by a local society in transition. These changes created insecurity among the people about how to manage their forest recourse under these new conditions, and people doubted the value of their traditional knowledge and practices. Such customary knowledge clearly is not always enough. Development is to some extent natural and or inevitable, and it cannot, and

should not, be avoided entirely. To create a truly sustainable forest management in a changing context it might therefore be necessary to add information coming from outside the community, at the same time recognizing the continued value and the adaptability of the knowledge that local people have long possessed as part of their cultural heritage.

References

Published References

Andersson, S. (2005) Spread of the introduced tree species Prosopis juliflora (Sw.) DC in the Lake Baringo area, Kenya. Swedish University of Agricultural Sciences, Institutionen för skoglig vegetationsekologi, Umeå, Examensarbete nr 5, 31p.

Antonsson-Olge, B. (1995) People's dependency on forests for food security. In: Isaksson, N-I (eds). Swedish University of Agricultural Sciences, Uppsala. *IRDCurrents* 10, 17-20.

Appleton, H., Fernandez M-E., Hill C L.M. and Quiroz, C. (1995) Claiming and using indigenous knowledge. In: Missing links, Gender Equity in Science and Technology for Development. International Development Research Centre (IDRC), 55-83.

Bruntland, G. (1987) Our common future: The World Commission on Environment and Development. Oxford University Press, 87p.

CBS (1996) Central Bureau of Statistics, Kenya, Nairobi.

Chambers, R. (1997) Whose reality counts? Putting the last first. Intermediate Technology Publications: London, 297p.

Cleaver, F. (2004) The limits of participation in development. In: Kirkebjerg Due, M., Kristensen, M., Lykke, A.M. and Nielsen I. eds. *SEREIN Occasional Paper*, 17. Aarhus, 67-82.

Cleveland, D.A. and Soleri, D. (2002) Indigenous and scientific knowledge of plant breeding: Similarities, differences, and implications for collaboration. In Sillitoe, A.B. and Pottier J (eds). *Participating in Development: Approaches to Indigenous Knowledge.* ASA Monographs, 39. Routledge: London, 206-234.

Gonzalez, P., Hamady, S. and Compton J.T. (2004) Local knowledge and remote sensing of forest biodiversity and forest carbon across the Sahel. In: Kirkebjerg Due, M., Kristensen, M., Lykke, AM. and Nielsen I. (eds). SEREIN Occasional Paper, 17. Aarhus, 23-36.

Jøker, D. (2000) *Vitellaria paradoxa* Gaertn. f. Seed Leaflet, 50. Danida Forest Seed Centre: Humlebaek.

Kristensen, M. (2004) The importance of local knowledge in natural resource management – a case study among the Gourounsi people in Burkina Faso. In: Kirkebjerg Due, M., Kristensen, M., Lykke, AM. and Nielsen I. (eds). SEREIN Occasional Paper, 17. Aarhus, 53-66.

Makokha, W., Lonyakou, S. and Nyang, M. (1999) We Work Together. Land rehabilitation and household dynamics in Chepareria Division West Pokot District, Kenya. Technical Report No.22. The Regional Land Management Unit: Nairobi, 81p.

Russel, B. (2002) Research Metods in Antropology: Qualitatine and Quantitative approach. AltaMira Press: Oxford, 753p.

On-Line References

Bhattarya, S. and Tripathi, N. (2004) Integrating Indigenous Knowledge and GIS for Participatory Natural Resource Management: State-of-the-Practice. The Electronic

Journal on Information Systems in Developing Countries. http://.ejisdc.org (assessed 23 October 2005). City University of Florida and University of Nebraska at Omaha.

Prado, J. and Weber, C. (2003) Facilitating the Way for Implementation of Sustainable Forest Management. The Case of Chile. Instituto Forestal (INFOR), Santiago, Chile. http://www.maf.govt.nz/mafnet/unff-planted-forestry-meeting/conference-papers/facilitating-the-way-for-implementation.htm (assessed 1 May 2005)

SciDev (2002) http://www.scidev.net/dossiers/index.cfm?fuseaction=dossierfulltext&Dossier=7 (assessed 25 October 2005)

Svensk Kulturväxtdatabas (2005) http://skud.ngb.se/index.php?option=com_frontpage&Itemid=1 (assessed 1 September 2005)

World Bank (1998) Indigenous Knowledge For Development – A Framework For Action. Knowledge and Learning Center, Africa Region, World Bank. http://www.worldbank.org/afr/ik/ikrept.pdf (assessed 1 May 2005)

Personal Communication

Kopeyon, P (2005) personal communication. Vi Agroforestry Project, Kitale, Kenya.

Makokha, W (2005) personal communication. Vi Agroforestry Project, Kitale, Kenya.

Trawick, P (2005) personal communication. Cranfield University, United Kingdom.

Appendix 1 Questionnaire

Interview number	
Name of interviewer	
Name of translator	
Name of respondent	
Man/Woman	
Age	
Size of farm	
Marital status	
Number of children	
Size of household	
Education level	
Location	
Name of village	

1 Ranking

1.1 Please rank the five tree species that you find most important in your everyday life.

2 Forecast/prediction

2.1 With which periodicity do seeds occur (e.g. every second year)?

3 Flowering

3.1 Which month does species X flower?

4 Pollination

4.1 Which animals have you seen pollinating the flowers of species X?

5 Maturation

5.1 Which month do the seeds mature?

6 Dispersal

6.1 How are the seeds spread? (e.g. by animals/humans/wind/water)

6.2 Where do plants occur?

6.3 When do plants occur?

7 Seed trees

7.1 Are the seeds collected to control the germination of the seed?

If 7.1 yes, then 7.1.1, 7.2, 8 & 9. If 7.1 no then 10.

7.1.1 If so, when?

7.2 How are the seed trees selected? Characteristics, e.g. age, size etc.

8 Collection

8.1 Which harvesting techniques are used i.e. how are the seeds collected?

9 Storage

9.1 How are the seeds stored? Show or describe (Temp, light etc).

10 Germination

10.1 Is anything done to improve the germination of the seeds? If so, what?

11 Treatment to protect the seeds and seedlings

11.1 Which factors can threaten the seeds (e.g. humans, insects and pests)?

11.2 Is something done/has been done to protect the seeds?

11.3 Which factors can threaten the wilding (e.g. browsing, if so, by which animals)?

11.4 If so, what is done to protect the wilding?

11.5 How does browsing affect the plants?

12 Tree cover

12.1 Have there been any changes concerning the tree cover over time?

12.2 Have you noticed any changes in the composition of species over time?

12.3 If so, which species have increased/decreased?

13 Additional information

13.1 Do you have any information, which has not been raised during the interview, that you would like to add?

Appendix 2 List of Species

List of species that have been mentioned in the report. Botanical name and the pokot name are given for all tree species except Aywapetion, Chepenorkwo, Chepkorok, Kapkop, Kaptolongwo, Kembirwo, Ketpoarur, Komonowo, Ntermel, Sarachan, Sition, Sonkopwo, Tapodin and Turti which could not be identified by botanical names. The names were, in the interviews, given in Pokot and thereafter translated into the botanical name by Isaac Kaitalem and William Makokha. Other sources, such as Andersson (2005) and the online data base "Svensk Kulturväxtdatabas " have also been used for the translation.

Trees	
Pokot	**Botanical name**
Adomoyon	*Cordia sinensis*
Akwicha	*Maytenus heterophylla*
Aron	*Tamarindus indica*
Asiokonion	*Salvadora persica*
Atat	*Acacia eliator*
Aywapetion°	
Chelowo	*Pittosporum viridiflorum*
Chepenorkwo°	
Chepkorok°	
Cheptuya	*Euclea divinorum*
Chepulswo	*Maerua subcordata/decumbens*
Kapkop*	
Kapkwo	*Acacia nilotica*
Kaptolongwo°	
Katagh	*Commiphora africana*
Kekelwo/Kerelwa	*Croton dichogamus*
Kembirwo°	
Ketpoarur*	
Kimolwo	*Vangueria madagascariensis*
Kinyotwo	*Ximenia americana*
Kokochwo	*Premna resinosa*
Kolion	*Acokanthera oppositifolia*
Koloswo	*Terminalia brownii*
Komol	*Combretum molle*
Komolwo	*Vangueria apiculata*
Komonowo°	
Kopulwo*	*Gardenia volkensii*
Korkowo	*Erythrina abyssinica*
Korosion	*Dobera glabra*
Kreswo	*Euphorbia candelabrum*
Kriteswo*	*Trichilia emetica*

Trees (*continued*)	
Pokot name	**Botanical name**
Kuryon	*Teclea nobilis*
Lakatet/Lekotetwo	*Carissa edulis*
Lolotwo	*Lannea fulva*
Lomnyion/Loma	*Balanites pedicellaris*
Losikiria	*Bersama abyssinica*
Manampelion	*Vepris glomerata*
Mokongwo	*Ficus sycamorus*
Muchukwo	*Berchemia discolor*
Mukurkong	*Harrisonia abyssinica*
Ngewin	*Zyziphus abbysinica*
Ntermel°	
Ongorwo	*Acacia spp*
Panan	*Albizia amara*
Panyirit	*Acacia reficiens*
Pkata	*Lycium europaeum*
Poywto	*Ficus spp.*
Priokwo	*Pappea capensis*
Rotin	*Kigelia africana*
Sarachan°	
Ses	*Acacia tortilis*
Simotwo	*Ficus thonningii/natalensis*
Siriowo	*Rhus natalensis*
Sition°	
Songowo	*Zantoxylum chalybeum*
Sonkopwo°	
Sorchon	*Boscia coriacea*
Sungululwo	*Boswellia neglecta*
Talamoghion	*Acacia mellifera*
Tapirpir	*Vangueria volkensii/infausta*
Tapodin°	
Tapoyo	*Lannea schimperi*
Taran	*Grewia tenax*
Tikit/Apeta	*Terminalia spinosa*
Tilak	*Acacia spp*
Tingass	*Flacourtia indica*
Tingwo	*Acacia etbaica*
Tirokwo	*Zyziphus mucronata*
Tolkos*	*Aloe vera**
Topolokwo	*Dordonea viscosa*
Tulungwo	*Meyna tetraphylla*
Tumwon	*Euphorbia tirucalli*
Turti°	

Trees (*continued*)	
Pokot name	**Botanical name**
Tuwot	*Diospyros scabra*
Tuyunwo	*Balanites aegyptiaca*
Yemtii	*Olea africana*

*herb

Birds	
Pokot name	**Botanical name**
Chepayii	*Lonchura griseicapilla*
Cheprum	*Streptopelia reichenowi*
Cheptengworoch	
Cheptukwo	*Streptopelia senegalensis*
Chiwiw	*Tauraco schalowi*
Kachichin	
Kanyirput	*Pycnonotus barbatus tricolor*
Kasindition	
Kasodok	*Merops b. bullockoides*
Kayundu	*Turtur chalcospilos*
Kipeny	*Plocaus velatus uluensis*
Kopkop	*Tockus e.erythrorhynchus*
Kosodok/Kasodok	
Lochichi	
Mbao	*Criniferodes leucogaster*
Merewo	*Musophaga rossea*
Sawach	*Indicator indicator*
Sitien	*Colius striatus kikuyuensis*

Insects		
Pokot name	**Botanical name**	**Common name**
Morchon	*Busseola fusca*	Stalkborer
Yiell		Black ants

Other animals		
Pokot name	**Botanical name**	**Common name**
Cheptirkich		Dikdik
Kinkina		Climbing squirrel

Appendix 3 Ranking

The score is the sum of the total score that each species has been given in the survey. Each respondent ranked the five species (any tree species growing in their surroundings) they found most important from 1 to 5 (1 was most important). A rank of 1 scored 5, 2 scored 4, 3 scored 3, 4 scored 2 and 5 scored 1 when calculating the total rank from all interviews.

The number is the sum of the total number of respondents who have ranked the actual species as one of the five most important.

Ranking Masol (total score)				
Pokot name	**Botanical name**	**Rank** **Total score**	**Men**	**Women**
Ses	*Acacia tortilis*	**47**	26	21
Tuwot	*Diospyros scabra*	**34**	9	25
Lomyion/Loma	*Balanites pedicellaris*	**33**	20	13
Talamoghion	*Acacia mellifera*	**33**	20	13
Sorchon	*Boscia coriacea*	**25**	9	16
Asiokonion	*Salvadora persica*	**18**	11	7
Tuyunwo	*Balanites aegyptiaca*	**18**	6	12
Panyirit	*Acacia reficiens*	**16**	5	11
Aron	*Tamarindus indica*	**13**	9	4
Chepkorok		**13**	2	11
Sonkopwo		**10**	0	10
Tulungwo	*Meyna tetraphylla*	**9**	6	3
Pkata	*Lycium europaeum*	**8**	5	3
Manampelion	*Vepris glomerata*	**6**	2	4
Muchukwo	*Berchemia discolor*	**5**	3	2
Sitot	*Grewia bicolor*	**5**	0	5
Tikit/Apeta	*Terminalia spinosa*	**5**	5	0
Tolkos	*Aloe vera*	**5**	1	4
Atat	*Acacia eliator*	**4**	0	4
Kapkop		**4**	0	4
Katagh	*Commiphora africana*	**4**	0	4
Kriteswo	*Trichilia emetica*	**4**	0	4
Sition		**4**	4	0
Sungululwo	*Boswellia neglecta*	**4**	0	4
Tapoyo	*Lannea schimperi*	**4**	0	4
Chepulswo	*Maerua subcordata/decumbens*	**3**	1	2

Ranking Masol (total score) *(continued)*				
Pokot name	**Botanical name**	**Rank Total score**	**Men**	**Women**
Ketpoarur		**3**	0	3
Kopulwo	*Gardenia volkensii*	**3**	3	0
Korosion	*Dobera glabra*	**3**	0	3
Mukurkong	*Harrisonia abyssinica*	**3**	3	0
Ntermel		**3**	3	0
Rotin	*Kigelia africana*	**3**	0	3
Sarachan		**3**	3	0
Tumwon	*Euphorbia tirucalli*	**3**	3	0
Losikiria	*Bersama abyssinica*	**2**	2	0
Mokongwo	*Ficus sycamorus*	**2**	0	2
Manampelion	*Vepris glomerata*	**2**	0	2
Panan	*Albizia amara*	**2**	0	2
Taran	*Grewia tenax*	**2**	2	0
Adomoyon	*Cordia sinensis*	**1**	0	1
Aywapetion		**1**	0	1
Koloswo	*Terminalia brownii*	**1**	1	0
Komonowo		**1**	0	1
Lakatet/Lekotetwo	*Carissa edulis*	**1**	0	1
Tirokwo	*Zyziphus mucronata*	**1**	1	0
Topolokwo	*Dodonaea viscosa*	**1**	0	1
Sum		**375**	**165**	**210**

Ranking Masol (total number)				
Pokot name	**Botanical name**	**Rank Total number**	**Men**	**Women**
Lomyion/Loma	*Balanites pedicellaris*	**13**	7	6
Ses	*Acacia tortilis*	**11**	6	5
Sorchon	*Boscia coriacea*	**10**	4	6
Tuwot	*Diospyros scabra*	**9**	2	7
Talamoghion	*Acacia mellifera*	**8**	5	3
Asiokonion	*Salvadora persica*	**7**	5	2
Panyirit	*Acacia reficiens*	**6**	2	4
Tuyunwo	*Balanites aegyptiaca*	**5**	2	3
Aron	*Tamarindus indica*	**4**	2	2

Ranking Masol (total number) ***(continued)***				
Pokot name	**Botanical name**	**Rank** **Total number**	**Men**	**Women**
Chepkorok		**4**	1	3
Tulungwo	*Meyna tetraphylla*	**4**	3	1
Chepulswo	*Maerua subcordata/decumbens*	**3**	1	2
Manampelion	*Vepris glomerata*	**2**	1	1
Muchukwo	*Berchemia discolor*	**2**	1	1
Pkata	*Lycium europaeum*	**2**	1	1
Sitot	*Grewia bicolor*	**2**	0	2
Sonkopwo		**2**	0	2
Tapoyo	*Lannea schimperi*	**2**	0	2
Tolkos	*Aloe vera*	**2**	1	1
Adomoyon	*Cordia sinensis*	**1**	0	1
Atat	*Acacia eliator*	**1**	0	1
Aywapetion		**1**	0	1
Kapkop		**1**	0	1
Katagh	*Commiphora africana*	**1**	0	1
Ketpoarur		**1**	0	1
Koloswo	*Terminalia brownii*	**1**	1	0
Komonowo		**1**	0	1
Kopulwo	*Gardenia volkensii*	**1**	1	0
Korosion	*Dobera glabra*	**1**	0	1
Kriteswo	*Trichilia emetica*	**1**	0	1
Lakatet/Lekotetwo	*Carissa edulis*	**1**	0	1
Losikiria	*Bersama abyssinica*	**1**	1	0
Mokongwo	*Ficus sycamorus*	**1**	0	1
Mukurkong	*Harrisonia abyssinica*	**1**	1	0
Manampelion	*Vepris glomerata*	**1**	0	1
Ntermel		**1**	1	0
Panan	*Albizia amara*	**1**	0	1
Rotin	*Kigelia africana*	**1**	0	1
Sarachan		**1**	1	0
Sition		**1**	1	0
Sungululwo	*Boswellia neglecta*	**1**	0	1
Taran	*Grewia tenax*	**1**	1	0
Tikit/Apeta	*Terminalia spinosa*	**1**	1	0
Tirokwo	*Zyziphus mucronata*	**1**	1	0

Ranking Masol (total number)				
Pokot name	**Botanical name**	**Rank** **Total number**	**Men**	**Women**
Topolokwo	*Dodonaea viscosa*	**1**	0	1
Tumwon	*Euphorbia tirucalli*	**1**	1	0
Sum		**125**	**55**	**70**

Ranking Sook (total score)				
Pokot name	**Botanical name**	**Rank** **Total score**	**Men**	**Women**
Cheptuya	*Euclea divinorum*	**22**	7	15
Songowo	*Zanthoxylum chalybeum*	**22**	14	8
Tuyunwo	*Balanites aegyptiaca*	**19**	12	7
Marsitet	*Grewia similis*	**13**	5	8
Topolokwo	*Dodonaea viscosa*	**13**	3	10
Yemtii	*Olea africana*	**13**	8	5
Kaptolongwo		**10**	2	8
Kreswo	*Euphorbia candelabrum*	**10**	7	3
Lakatet/Lekotetwo	*Carissa edulis*	**9**	2	7
Chelowo	*Pittosporum viridiflorum*	**8**	0	8
Poywoto	*Ficus spp.*	**8**	0	8
Priokwo	*Pappea capensis*	**7**	4	3
Tingwo	*Acacia etbaica*	**7**	7	0
Mokongwo	*Ficus sycamorus*	**6**	2	4
Komolowo	*Vangueria apiculata*	**5**	5	0
Kokochwo	*Premna resinosa*	**5**	0	5
Koloswo	*Terminalia brownii*	**5**	5	0
Simotwo	*Ficus thonningii/natalensis*	**5**	0	5
Torokwo	*Juniperus procera*	**5**	4	1
Turti		**5**	5	0
Kembirwo		**4**	0	4
Komol	*Combretum molle*	**3**	3	0
Kapkwo	*Acacia nilotica*	**3**	3	0
Tingass	*Flacourtia indica*	**3**	0	3
Akwicha	*Maytenus heterophylla*	**2**	2	0
Kinyotwo	*Ximenia americana*	**2**	0	2
Tilak	*Acacia spp*	**2**	0	2
Chepenorkwo		**1**	0	1

Ranking Sook (total score) ***(continued)***				
Pokot name	**Botanical name**	**Rank** **Total score**	**Men**	**Women**
Kimolwo		**1**	0	1
Kolion	*Acokanthera oppositifolia*	**1**	1	0
Kuryon	*Teclea nobilis*	**1**	1	0
Lolotwo	*Lannea fulva*	**1**	0	1
Ngówin	*Zyziphus abbysinica*	**1**	1	0
Siriowo	*Rhus natalensis*	**1**	1	0
Topolokwo	*Dodonaea viscosa*	**1**	0	1
Tapirpir	*Vangueria volkensii/infausta*	**1**	1	0
Sum		**225**	**105**	**120**

Ranking Sook (total number)				
Pokot name	**Botanical name**	**Rank** **Total number**	**Men**	**Women**
Songowo	*Zanthoxylum chalybeum*	**7**	4	3
Cheptuya	*Euclea divinorum*	**6**	2	4
Tuyunwo	*Balanites aegyptiaca*	**5**	3	2
Kaptolongwo		**4**	2	2
Komolowo	*Vangueria apiculata*	**1**	1	0
Lakatet/Lekotetwo	*Carissa edulis*	**4**	1	3
Yemtii	*Olea africana*	**4**	2	2
Marsitet	*Grewia similis*	**3**	1	2
Topolokwo	*Dodonaea viscosa*	**3**	1	2
Torokwo	*Juniperus procera*	**3**	2	1
Chelowo	*Pittosporum viridiflorum*	**2**	0	2
Kokochwo	*Premna resinosa*	**2**	0	2
Komol	*Combretum molle*	**1**	1	0
Mokongwo	*Ficus sycamorus*	**2**	1	1
Poywoto	*Ficus spp.*	**2**	0	2
Priokwo	*Pappea capensis*	**2**	1	1
Tingwo	*Acacia etbaica*	**2**	2	0
Akwicha	*Maytenus heterophylla*	**2**	1	1
Chepenorkwo		**2**	1	1
Kapkwo	*Acacia nilotica*	**2**	1	1
Kembirwo		**1**	0	1
Kimolwo	*Vangueria madagascariensis*	**1**	0	1

Ranking Sook (total number) *(continued)*				
Pokot name	**Botanical name**	**Rank** **Total number**	**Men**	**Women**
Kinyotwo	*Ximenia americana*	**1**	0	1
Kolion	*Acokanthera oppositifolia*	**1**	1	0
Koloswo	*Terminalia brownii*	**1**	1	0
Kreswo	*Euphorbia candelabrum*	**1**	1	0
Lolotwo	*Lannea fulva*	**1**	0	1
Ngówin	*Zyziphus abbysinica*	**1**	1	0
Simotwo	*Ficus thonningii/natalensis*	**1**	0	1
Siriowo	*Rhus natalensis*	**1**	1	0
Topolokwo	*Dodonaea viscosa*	**1**	0	1
Tapirpir	*Vangueria volkensii/infausta*	**1**	1	0
Tilak	*Acacia spp*	**1**	0	1
Tingass	*Flacourtia indica*	**1**	0	1
Turti		**1**	1	0
Kuryon	*Teclea nobilis*	**1**	1	0
Sum		**75**	**35**	**40**

Appendix 4 Time Frame

Following table illustrates the answers that has been given on questions 2.1, 3.1, 5.1 and 6.3 (Appendix 1). The number in brackets indicates number of respondents. No number indicated equals one respondent for *flowering (month), seed mature (month)* and *for germination,* no number indicated equals remaining respondents for *frequency in producing seeds.* For total number of respondents for each species see Appendix 3.

Time for Seed Production and Germination

Time frame					
Pokot name	**Botanical name**	**Frequency in producing seeds**	**Flowering (month)**	**Seed mature (month)**	**Germination**
Adomoyon	*Cordia sinensis*	once a year	May	Aug	beginning of the rainy season
Akwicha	*Maytenus heterophylla*	once a year	Jan	Feb	-
Aron	*Tamarindus indica*	once a year	Feb, July, Oct, Dec	Jan, Feb (2), Aug	beginning of the rainy season, middle of the rainy season
Asiokonion	*Salvadora persica*	once a year, every second year	March (3), April, Aug, Oct, Dec	Jan, Feb (2), May (2), June, Nov	beginning of the rainy season, middle of the rainy season
Atat	*Acacia eliator*	once a year	Aug	Oct	beginning of the rainy season
Aywapetion°		once a year	Aug	Sept	beginning of the rainy season
Chelowo	*Pittosporum viridiflorum*	every second year	Oct	Nov	beginning of the rainy season
Chepenorkwo°		every second year	March	Sept	beginning of the rainy season
Chepkorok°		once a year	May, June, July	May, July (2), Aug	beginning of the rainy season, middle of the rainy season, whole year
Cheptuya	*Euclea divinorum*	once a year	Jan, March/April, April, June (2), Aug	Feb, March, May, July, Aug, Sept/Oct	beginning of the rainy season
Chepulswo	*Maerua subcordata/decumbens*	once a year	March, May, Aug	May, July, Sept	beginning of the rainy season, middle of the rainy season

Time frame *(continued)*					
Pokot name	**Botanical name**	**Frequency in producing seeds**	**Flowering (month)**	**Seed mature (month)**	**Germination**
Kapkop*		does not produce seeds	May	July	beginning of the rainy season
Kapkwo	*Acacia nilotica*	once a year	Nov	Dec	-
Kaptolongwo°		once a year, every second year, every third year	Feb, March/April, June, July	Jan, March/April, July, Oct	beginning of the rainy season, April
Katagh	*Commiphora africana*	once a year	June	July	middle of the rainy season
Kembirwo°		once a year	Aug	Sept	beginning of the rainy season
Ketpoarur*		does not produce seeds	during rainy season	does not produce seeds	beginning of the rainy season
Kimolwo	*Vangueria madagascariensis*	once a year	Dec	April	beginning of the rainy season
Kinyotwo	*Ximenia americana*	every second year	April	July	beginning of the rainy season
Kokochwo	*Premna resinosa*	every second year	April	May	beginning of the rainy season
Kolion	*Acokanthera oppositifolia*	once a year	Oct	April	March
Koloswo	*Terminalia brownii*	once a year (if enough rain)	April, June	June, Sept	beginning of the rainy season, Sept/Oct (when it is dry)
Komol	*Combretum molle*	once a year	Oct	Nov/Dec	beginning of the rainy season
Komolwo	*Vangueria apiculata*	once a year	Aug	Dec	beginning of the rainy season
Komonowo°		once a year	June	April	
Kopulwo*	*Gardenia volkensii*	once a year	Sept	Oct	beginning of the rainy season
Korosion	*Dobera glabra*	once a year	March	May	beginning of the rainy season
Kreswo	*Euphorbia candelabrum*	once a year, whole year	Jan (2), Sept, Dec	Jan, March, Sept, Nov/Dec	beginning of the rainy season, during the rainy season, April, any time
Kriteswo*	*Trichilia emetica*	once a year	July	July	beginning of the rainy season
Kuryon	*Teclea nobilis*	once a year	Sept	Oct/Nov	-

Time frame (*continued)*					
Pokot name	**Botanical name**	**Frequency in producing seeds**	**Flowering (month)**	**Seed mature (month)**	**Germination**
Lakatet/Lekotetwo	*Carissa edulis*	once a year	April (2), June (3)	April, July (2), Aug, Oct	beginning of the rainy season, middle of the rainy season
Lolotwo	*Lannea fulva*	once a year (if enough rain)	May	July	during the rainy season
Lomnyion/Loma	*Balanites pedicellaris*	twice a year, once a year	Jan/April, May/July, Feb, March, May (2), June (2), July, Aug (2)	Feb/May, Jan, Feb, April, May, June (2), July (4), Sept, Nov	beginning of the rainy season, middle of the rainy season
Losikiria	*Bersama abyssinica*	once a year	May	June	beginning of the rainy season
Manampelion	*Vepris glomerata*	twice a year, once a year	June/Dec, Aug	Jan/July, Aug, July	beginning of the rainy season, during the dry season
Marsitet/sitot	*Grewia similis*	once a year, every second year	Feb, May, June, July, Aug	March, May, July, Aug, Sept	beginning of the rainy season, March
Mokongwo	*Ficus sycamorus*	once a year	(April/July/Dec), Oct, Nov	April (2), (May/Aug)	beginning of the rainy season, during the rainy season, March
Muchukwo	*Berchemia discolor*	once a year	April, May	June (2)	beginning of the rainy season, middle of the rainy season
Mukurkong	*Harrisonia abyssinica*	once a year	Feb	April	beginning of the rainy season
Ngówin	*Zyziphus abbysinica*	once a year (if enough rain)	Sept	Oct	Dec/Jan
Ntermel°		once a year	Feb	April	beginning of the rainy season
Panan	*Albizia amara*	once a year	during rainy season	Sept	beginning of the rainy season
Panyirit	*Acacia reficiens*	twice a year, once a year	May/Aug, July, Aug (2), Oct (2)	July, August (2), Sept (2), Oct	beginning of the rainy season, Oct
Pkata	*Lycium europaeum*	once a year	April, Aug	Jan, April	beginning of the rainy season
Poywto	*Ficus spp.*	once a year	Aug, Sept	Sept, Oct	beginning of the rainy season

Time frame (*continued)*					
Pokot name	**Botanical name**	**Frequency in producing seeds**	**Flowering (month)**	**Seed mature (month)**	**Germination**
Priokwo	*Pappea capensis*	once a year	Oct, Nov	Dec (2)	beginning of the rainy season
Rotin	*Kigelia africana*	once a year	May	the respondent does not know	beginning of the rainy season
Sarachan°		does not produce seeds	Jan	-	beginning of the rainy season
Ses	*Acacia tortilis*	once a year	Jan, Aug (4), Sept, Oct, Nov (2), Dec (2)	Dec, Feb (4), Aug, Nov, Jan (3), Sept	beginning of the rainy season, middle of the rainy season
Simotwo	*Ficus thonningii/natalensis*	every second year	Aug	Sept	beginning of the rainy season
Siriowo	*Rhus natalensis*	once a year	Sept	Jan	beginning of the rainy season
Sition°		once a year	does not flower	-	beginning of the rainy season
Songowo	*Zanthoxylum chalybeum*	once a year (if enough rain), every second year	April (2), May, June (2), July, Aug/Sept	Jan, July, July/Aug, Aug, Sept, Oct, Nov/Dec	beginning of the rainy season, during the rainy season, March, Aug
Sonkopwo°		once a year	May, July	Aug (2)	beginning of the rainy season
Sorchon	*Boscia coriacea*	once a year	Feb, March, June, July (2), Aug (3)	Jan, Feb (3), Apr, May, Aug(2), Nov	beginning of the rainy season, Feb
Sungululwo	*Boswellia neglecta*	does not produce seeds	July	does not produce seeds	beginning of the rainy season
Talamoghion	*Acacia mellifera*	twice a year (2), once a year (if enough rain)	May/Aug, Jan, June, July, Aug (3)	June/Aug, March, July, Sept (3), Nov, Dec	beginning of the rainy season, middle of the rainy season
Topolokwo	*Dodonaea viscosa*	once a year	May, July (3)	July (4)	beginning of the rainy season
Tapirpir	*Vangueria volkensii/infausta*	once a year (if enough rain)	July	Aug	beginning of the rainy season
Tapoyo	*Lannea schimperi*	once a year	April, June	May, Aug	beginning of the rainy season
Taran	*Grewia tenax*	once a year	May	Jan	beginning of the rainy season

Time frame (*continued*)					
Pokot name	**Botanical name**	**Frequency in producing seeds**	**Flowering (month)**	**Seed mature (month)**	**Germination**
Tikit/Apeta	*Terminalia spinosa*	once a year	April	June	beginning of the rainy season
Tilak	*Acacia spp*	the respondent has not seen any seeds	Sept	Nov	beginning of the rainy season
Tingass	*Flacourtia indica*	once a year	April	April	during the rainy season
Tingwo	*Acacia etbaica*	once a year (if enough rain)	Sept, Oct	Jan, Nov/Dec	March, Dec
Tirokwo	*Zyziphus mucronata*	once a year	Sept	Feb	during the rainy season
Tolkos*	*Aloe vera**	once a year	May (2), Aug (2)	July (2), Sept (2)	beginning of the rainy season
Topolokwo	*Dodonaea viscosa*	once a year	Aug	Oct	beginning of the rainy season
Torokwo	*Juniperus procera*	once a year	whole year, have never seen the flowers	March, Sept, whole year	beginning of the rainy season, middle of the rainy season, April
Tuyunwo	*Balanites aegyptiaca*	once a year	Aug/Nov, Jan, Feb (2), March, July, Nov (2), Dec/Jan	Jan, Feb, April (2), May, Sept, Sept/Nov, Nov, Dec (2)	beginning of the rainy season, middle of the rainy season, Feb, Dec
Tulungwo	*Meyna tetraphylla*	once a year	April, May (2), June	June (2), July (2)	beginning of the rainy season, middle of the rainy season
Tumwon	*Euphorbia tirucalli*	once a year	May	June	during the dry season
Turti°		once a year	-	-	-
Tuwot	*Diospyros scabra*	twice a year, once a year	Jan, April, June, Aug (4), Oct, whole year	March, May (2), July (2), Aug, Oct (2), Nov	beginning of the rainy season, during the rainy season, during the dry season, whole year (2)
Yemtii	*Olea africana*	once a year, every second year	Aug, does not flower (2)	Sept, Oct	beginning of the rainy season, middle of the rainy season, Feb

Explanations					
Pokot name	**Botanical name**	**Frequency in producing seeds**	**Flowering (month)**	**Seed mature (month)**	**Germination**
*herb °not identified, possible because it might be a shrub		* Number in brackets indicates number of respondents, no number indicated equals remaining respondents.	* Number in brackets indicates number of respondents, no number indicated equals one respondent.	* Number in brackets indicates number of respondents, no number indicated equals one respondent.	* Number in brackets indicates number of respondents.

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