

# TREE USE IN GULU, UGANDA

*Research about the Tree-use of the local people of Gulu District*



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- Herveld

- December 2011

**TreeTalk**

**Straight  
TALK  
FOR BUSTON**



Hogeschool

**VAN HALL  
LARENSTEIN**

ONDERDEEL VAN WAGENINGEN UR



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## Summary

In this thesis the indigenous tree-use of the local population of Gulu district, Uganda, will be discussed. How do people use their natural surrounding? Which trees do they use and for which purposes? The local population of Gulu is dependent on the natural resources from the surrounding area. Yet forest and nature degrade at high speed due to population growth, bad agriculture methods, and over-exploitation. Tree Talk is a foundation promoting tree-planting all over Uganda but especially in the north. The north is developing at a high rate due to the fact that the area is no longer a warzone. For Tree Talk it is important to have knowledge about the mindset of the population on their natural surroundings. The research is mostly done by interviewing and Observation. Local farmers have been interviewed about their tree-use. Also 8 tree rankings were done to get a picture on which trees are most valued. A list of most important tree species has been made as a result. Local farmers are for a great deal dependent on the natural resources such as firewood, building materials, and food. The indigenous tree species are still valued for many reasons. People do not know how to grow these species although in most cases they are interested in planting these indigenous trees. Spreading knowledge on these issues could be one of the strategies to improve the situation.

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## List of abbreviations

AIDS	Acquired immune deficiency syndrome
FAO	Food and Agriculture organization
HIV	Human Immunodeficiency Virus
IDP	Internally displaced person
IRIN	Integrated Regional Information Network
LC3	Local Chief 3
NFA	National Forest Authority
NGO	Non-governmental Organization
NTFP	Non-timber forest products
RDC	Resident District Commissioner
STF	Straight talk foundation
TT	Tree Talk Foundation
UBOS	Uganda bureau of statistics
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
US	United states
WCS	Wildlife conservation society

## Foreword

As a child I was always fascinated by the stories of missionaries reaching tribes to tell the good news. I also loved nature. Now what is more amazing than combining both; helping people by practical means and offering them eternal life from a God who loves? God promised that he who finds joy in the Lord shall be like a tree whose leaves will never wither (psalm 1). Working with an organization that is planting trees and improving the livelihood of many people and being able to share about Christ made this thesis worthwhile.

I hope this final thesis is to the full satisfaction of Tree Talk Foundation, the host organization for this research, and offers sufficient and specific information to use in the field. I also hope this report will meet the requirements of the Tropical Forestry department of Van Hall Larenstein, part of Wageningen University, University of applied science.

First of all I want to thank God, my Father and Savior, the Giver of joy, for He has blessed me in incredible ways during my stay in Uganda. He is a good God and he has provided fully in all my needs.

I also want to thank Josje de Bel, my girlfriend, who has encouraged me with prayer and advice. Although we were a great distance apart from each other she always had time for me.

Furthermore I want to thank Ezra and Jessie with whom I could live for 1,5 month. They encouraged me and arranged a translator in some cases. I could also accompany them to a village and had a beautiful opportunity to learn more about the Acoli culture.

Finally I want to thank Tree Talk for offering me the opportunity to do the research in Gulu district and for allowing me to use the needed equipment for doing the research. Especially I want to thank Lucy Edea for being my mentor and for guiding me in the process of the research.

In this report I tried to be concise yet complete. I hope you enjoy reading this research.

Herveld, December 2011

Simeon Derksen

# 1. Introduction

## 1.1. Research subject

As tree talk is mostly focusing on livelihood, tree-planting and climate, the question that has been researched was: *how do local people interact with their natural surroundings and the trees in their surroundings in Gulu district, Uganda?*

## 1.2. Background of the research

Tree Talk is an organization working in Uganda especially Northern Uganda. As Tree Talk (TT) is working with local community groups in northern Uganda it is important to have a general understanding of how the people of these regions think about their climate, vegetation, forest and trees.

Gulu is a region of special interest. Tree Talk has only this year started to fully operate in Gulu district. This region is also especially interesting as it has been a warzone area for over 20 years and as the war has only been over for 5 years now. Because of this recent development of not being a war afflicted area anymore, the area is now fast growing in population.

Especially in this phase that there is so much development it is important to know how local people think and want with their land, vegetation, forest and trees. It is important to know how these local people work their land and how they deal with the forest. It is important to know what local people value. For Tree Talk this is important so that they can interact with this information.

## 1.3. Relevance of the research

To understand why the research is important it must be made clear that forest plays a huge role in the lives of the local people in Gulu district.

About 25% of the total land area of Uganda is in some degree covered with trees. 90 % of all people in Uganda live in rural areas. In the rural areas people depend on forest for their livelihood.

About 90% of all energy in Uganda is produced from fuel wood. It is estimated that almost 500.000 tons of charcoal and 18 million tons of firewood are used every year. About 2 % of the rural population has access to electricity. Fuel wood is therefor of crucial importance.

It is because of this importance that TT is focusing on trees, nature, environment, and people.

For TT it is important to be fully aware of how people see their forest and the trees on their land because with this knowledge they can more effectively work with the community groups in the region. TT should for example know which trees are most wanted and which trees are most needed. TT wants to train people, educate people and make people aware. For this it should be known what people already know and what they do not know.

To know how the people think, what the background is of certain ideas is important when dealing and operating in the field with this people.

This research gives depth and information on how people think and act concerning forest and trees.

#### **1.4. Frame and motive for the thesis subject**

As stated below, forests are of crucial importance for Uganda. A great deal of the population is in some way dependent on the forests. As poverty is higher in the north, people there depend on the forest even more. Tree Talk as organization wants to work on getting the pressure of the bush and stimulate and motivate people, schools, communities, and other groups of people to plant trees. In this way they are contributing to the people's lives and the environment of Uganda.

This as a frame provides an excellent opportunity to get deeper in the way people in the north think about their forest. If this knowledge can be integrated with how Tree Talk operates in the field, this can contribute to the lives of people and can make the work of Tree Talk more efficient. To know how the people think, what the background is of certain ideas is important when dealing and operating in the field with this people.

## **2. Problem description/ analysis**

### **2.1. Importance of forest**

To better understand the problem regarding the forests of Uganda, the use of the Ugandan forest should be made clear. The forest of Uganda plays a big role in the daily lives of most of Uganda's population.

Forest, meaning tree-covered land, is of great important to Uganda. It fulfills many functions and is of enormous value. About 25% of the total land area is covered with some kind of forest. (FAO, Forestry Sector Outlook Studies, 2001)

About 90% of the population lives in the rural areas and depend on the Ugandan forest for their livelihood. Uganda is dependent on the forest for the livelihood. The number of Jobs created in the forestry sector is enormous. About 1 million Jobs are created. (Byarugaba, May, 2003)

## **2.2. Forest values and importance:**

### **2.2.1. Forest products**

- Collection of fuel wood in the form of firewood and charcoal production.
- Collection of medicines
- Construction material and timber
- NTFP's like baskets made from palm leaves. Fruits, nuts
- Hunting
- Energy

About 90% of all energy in Uganda is produced from fuel wood. It is estimated that almost 500.000 tons of charcoal and 18 million tons of firewood are used every year. About 2 % of the rural population has access to electricity. Fuel wood is therefor of crucial importance. (Byarugaba, May, 2003)

For many people, selling of fuel wood is a great source of income and employment.

Other uses for the wood are the making of furniture, the building of huts and other constructions. Also bamboo is used for construction material, as is split palm stems. (Observations)

Also NTFP's are collected from the forest such as medicines, fruit and nuts. Products such as poles, beehives are also taken from the bush. Baskets are made from palm leaves.

The forest is also used for hunting.

### **2.2.2. Subsistence needs**

- Agricultural use
- Shade
- Wind
- Food security

As already stated a large proportion of the population is rural population. Most of the rural population is dependent on the resources the forest offers. This can be in the way of using the land or getting product like food out of the forest. Forest and tree vegetation play an important role in agriculture as the trees act as wind protection and soil conserver. The forests offer food security to the rural population. (Byarugaba, May, 2003)

### 2.2.3. Environmental services

- Soil conservation
- Watershed
- Carbon sequestration,
- Climate regulation

The forests in Uganda have a lot of environmental value. They play a big role in Soil conservation, watershed, carbon sequestration and climate regulation. The value of this service is not easy to be quantified. (Byarugaba, May, 2003)

## **2.3. Pressure from**

### **2.3.1. Agriculture**

For Agricultural purposes forest is cleared. The Agricultural sector, even though Uganda depends on it as the main source of livelihood, is largely undeveloped. This means that the efficiency is low. There is little knowledge of improved and efficient agriculture practices. This results in bad management of the land (J. Olson, May, 2003)

### **2.3.2. Exploitation**

Another issue is over exploitation. As stated above a great number of products are collected from the forest. The increasing production of charcoal and the collection of firewood contribute to deforestation. Charcoal contributes to deforestation in a more extreme way than firewood as firewood is mostly collected in the form of dead branches while charcoal is produced by cutting down live trees. Also in some cases overgrazing and uncontrolled timber harvesting are putting pressure on the bush.

### **2.3.3. Bush burning**

Another large impact is the burning of the bush. (J. Olson, May, 2003) This is a practice that happens very frequent. It is said to be done for the clearing of the land for agriculture or as a hunting method. It is also thought that the fire will form clouds for rain.

### **2.3.4. Encroachment**

Boundaries of reserves are in a lot of cases not demarcated. Farming and settlement form a great threat to Uganda's forests.

### **2.3.5. Deforestation**

Between the years 1990 and 2010, average deforestation rates were as high as 1.86% of the total forest cover, meaning 88,150 ha per year. (Butler, 2006)

Planting of forests is a practice that is not yet been fully developed. Only 0.2% of the forest cover in Uganda is plantation forest. Interest in planting forest and conserving forests has to grow.

### **2.3.6. Degradation**

Due to bad practices in the forests, such as stated above, land degradation takes place. Soil erosion is one of the most common forms of land degradation and has the effect that productivity of the land had decreased.

## **2.4. Causes for deforestation and land degradation:**

The major underlying causes are the population growth, the poverty and lacking governance.

### **2.4.1. Population growth**

Uganda's population growth is currently 3.2% per year. The result of this high growth rate is the increased built-up area. The high population number is leading to more demand of forest products, land, food and energy. The pressure on the bush is hereby increased. ((IRIN), 2009)

#### **2.4.2. Poverty**

About 37% of Uganda's population lives below the poverty line. In the north this percentage is even higher with 70% of the population living below the poverty line. The population living below the poverty line depends on the forest resources even more than the other population. For these people the forests make their living. This consequently puts stress on the forest. (Byarugaba, May, 2003)

#### **2.4.3. Lacking governance**

In the past there has been no or little education or guidance from the government. Due to lacking governance there is lack of policy support to conserve the forests.

#### **2.4.4. Other factors**

Other factors that have deforestation as a result are the war, and the fast growing economy.

### 3. Sub questions

The purpose of research is to get an idea on how people in Gulu district use the trees in their surroundings and how people interact with their natural surroundings. To get this question answered sub questions are essential. To be able to answer the research questions, the following sub questions were formulated:

1. Which tree species are used/ valued?
2. For which purposes are the trees used?
3. Is there a difference in gender or age regarding the use of natural resources?
4. Are tasks divided regarding tree use?
5. How often do people go to the forest?
6. Are people active in planting trees?
7. How much do the people depend on the natural products?

Each of these sub questions was subdivided into more specific questions that together formed the questionnaire. They were subdivided like in the following example:

1. Which trees are used?
  - Which trees are important to you?
  - Which trees are especially important for culture?
  - Which tree do you have in your homestead?
  - Which trees do you leave in your agricultural field?

The questionnaire can be found in the Appendixes under 'Interview list'.

The questions on the questionnaires are interlinked. The same question can sometimes give an answer to more than only one sub question. Also different questions might give the same answer. In this case the answers increase the reliability of the research.

## 4. Methods

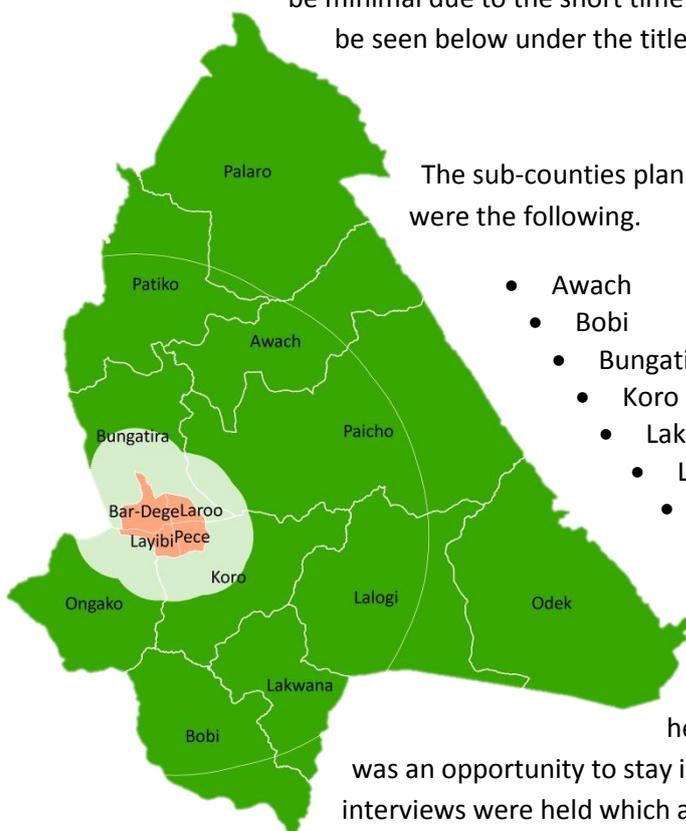
### 4.1. Where were the interviews and observations done?

The research was done in Gulu district, in an imaginary circle of 25 km around Gulu town, outside which no interviews were held.

There also was an imaginary circle of 5 km around Gulu town, within which no interviews were held.

Within this circle of 5 kilometer there is too much influence of Gulu town. The circle of 5 km is chosen on the basis of observation in the field and satellite images. Families close to the city are depending on it and more development finds place here. On the other hand there is also less dependence on forest and there is less natural vegetation in this circle of 5 km around the Gulu town.

The imaginary circle of 25 km is made to reduce the travelling time and costs. The travel time had to be minimal due to the short time there was for the research. More information on time can be seen below under the title: "when did the research take place?".



The sub-counties planned to visit according to the criteria mentioned above were the following.

- Awach
- Bobi
- Bungatira
- Koro
- Lakwana
- Lalogi
- Ongako
- Paicho
- Patiko

In each of these sub counties at least 3 interviews were held. In Palaro one additional interview was held as there was an opportunity to stay in a village for 2 nights. In Koro Sub County, 3 test interviews were held which are included in the research.

Figure 1 Gulu District Research area

For each sub county, permission had to be asked to do the research. Permission was asked of the local chief

(LC3) of the sub county. The LC3 office is located in the center of each sub county. For Awach the center is Awach, for Bobi the center is Bobi and so on.

These offices were visited and for each of the relevant sub counties approval was granted. For Ongako, Bobi and Lakwana the LC3 office was not visited but general approval was given by the RDC officer of Gulu district. This was done due to time shortage.

When approval was given the process of finding respondents began. The selection of respondents was done randomly. Mostly there is a main road through each sub county to the center. From the

main road was turned to a smaller road. This smaller road mostly led into more rural areas. From this road randomly was branched to small paths that lead to a homestead. Not at every homestead people were there and not always people were willing to do an interview. In such a case another homestead was visited.

## **4.2. When did the research take place**

### **4.2.1. Time of the year**

The research was conducted in the period March to May. The interviews were done from the 8<sup>th</sup> of April to the 20<sup>th</sup> of May. This time was chosen because of the aim to finish University in the end of June. The actual interviewing took place from the 8<sup>th</sup> of April to the 23<sup>rd</sup> of May because in the meantime plans had to be made.

The wet season in Gulu is from April to October. The research took place mostly during the wet season.

### **4.2.2. Time of the day**

The interviews were mostly held during mid-day. This time was selected as most favorable as men and women are busy in the mornings. Men are mostly occupied in the gardens and women are cooking the meals. From 10am to 12am men come back from the field and women are finished with cooking. After coming back from the field the men rest some time. For the research Gulu town was mostly left at 10 am. Driving to the first destination took, on average, 1 hour. The first interview therefore mostly started around 11am. As the duration of one interview almost was an hour and driving to the next homestead could take 15 minutes, the second interview was mostly held around 12.15am and the third interview at 1.30pm. These times of course are the approximate times.

### **4.2.3. Who has been interviewed?**

Most inhabitants of Gulu district belong to the Acoli tribe. Almost all interviews were held with Acoli. In total 41 interviews were done of which 3 interviews were with Langi people. People of this tribe speak a different dialect of Luo. Acoli and Langi mostly can understand each other well.

Who to interview and to which homestead to go was decided randomly.

### 4.3. Observations

In the first period of the research only Observations were done. Notes were made after observations to be able to review the observations on later times. These Observations were not done on a daily bases but whenever there was an opportunity.

In the beginning the observations were done to get a general overview of the situation, area, and culture, as to get an idea of how the research could best be done.

Observations were also done as a supplement base for the answers of the interview questions.

As stated in the project plan, 4 different methods of observing were chosen for the research. These are: the unobtrusive observation, the unfocused observation, the focused observation, and the non-participatory observation. The observations were often incorporated with other activities.

On 5 occasions the field of the respondent was shown and also parts of forest that was used by the respondent. This was done if the time of the day was favorable and if the respondent was found to be open and willing to do so. In these short tours, questions were also asked and the respondent often showed specific things of interest to him/her.

Two nights were spent in a village in the bush where a lot of things were observed. During this stay in some occasions the observation was more a participant observation as the observer took part in activities. These activities were hunting, collecting fruits, and eating. Hunting and collecting was only done once while the meals were often held together.

The opportunity occurred only once to stay in a village for 3 days because of connections with other people that would visit a village together with a local friend. The village is called Pok Ogali and is located in the north of Gulu district in Palaro Sub County. This stay at the village was done from 12, 13, and 14 April.

The observations are described under the chapter 'Results' and 'Observations'.

#### **4.4. Interview**

In total 41 interviews were done in Gulu district within the period of 8 April 2011 to the 23<sup>rd</sup> of May 2011.

A list of interview questions was made and tested with 2 pretest interviews. The list of questions was revised after 17 interviews on the 3<sup>rd</sup> of May because at this point it became clear that the questions could be formulated in a different way, could be ordered in a different way, and also some questions could be removed while others should be added.

From the 17<sup>th</sup> of May, during the interviews, tree-rankings were done to get an idea of which trees are preferred above others. This was not done at an earlier stage because the interviews done still added enough information. At the end of the research period enough information was gathered to be able to do the Tree rankings with people.

The interviews were done with a translator as most people in the rural area do not or only speak a little English.

The interviews were done in a random way. The time, place and the respondent for the interviews were not planned as in this way the situation will be the most natural and close to reality. If the interview was planned, respondents would await the interviewer in a certain manner and also expect more from the interviewer.

In 8 cases a tree-ranking was done with the respondents. This was done with small cards with the tree names written on the cards. The respondents were asked to put the cards in the right order.

The ranking was done at the end of the research period. The ranking was done from the 17<sup>th</sup> to the 23<sup>rd</sup> of May. During this period 11 interviews were done. The period of the 8<sup>th</sup> of April to the 16<sup>th</sup> of May, in which all the other interviews were done, was needed to collect enough information and bases to be able to make the cards for the ranking and to know if the idea of ranking would be possible at all.

#### **4.5. Literature**

Literature research was done during the whole research. It was done before, during, and after the interviews. Literature research was done to support the observations and the interviews. If certain information is available in literature, it is not necessary to research it again. Literature study was mostly done on general information such as the features of Uganda, maps, general culture and so on.

## 5. Area description

### 5.1. Uganda

Uganda is situated in east Africa. It is a landlocked country and borders South Sudan to the north, Kenya to the east, Tanzania and Rwanda to the south and Democratic Republic of the Congo to the west. In the south it also borders to Lake Victoria. The total area of Uganda is about 240.000 square km. (Factbook, 2011)

Kampala is the capital city of Uganda and has a population of 1.5 million people.

Uganda is divided into 111 districts. Each district is divided into a number of Sub Counties and each Sub County is divided into parishes. (Government, Aug, 2010)

22 percent of the land use is arable land while only 9 percent is permanently cultivated. 69 percent has other use.



Figure 2 Uganda, Africa



Figure 3 Gulu, Uganda

### **5.1.1. Population**

Uganda has an estimated population of more than 34 million people. Of this population 13 percent lives in urban areas.

The estimated population growth is 3.58 percent per year. Uganda is one of the fastest growing countries in the world. The average number of children that a woman gets is 6.69.

49.9 percent of the total populations is 14 years or younger. 48 percent is 15 to 64 years old and only 2.1 is older than 64 years.

There are a number of different ethnic groups of which the biggest are Baganda, Banyakole, Basoga, Bakiga, Iteso, Langi, Acoli, Bagisu, Lugbara and Bunyoro. (Factbook, 2011)

84 percent of the population of Uganda is Christian and about 11 percent is Muslim. There are some other religions like Hinduism and Baha'ism.

The official language of Uganda is English. Other common languages are: Luganda, Swahili and Arabic.

The sex ratio is 1.01 males to 1 female. (Factbook, 2011)

### **5.1.2. Economy**

The fertile soils and regular rainfall make agriculture the most important sector of the Economy. Products from the agriculture sector are coffee, tea, cotton, tobacco, cassava and potatoes. More than 80 percent of all labor is in this sector. Other natural resources besides fertile soil en regular rainfall are small deposits of copper and gold and other minerals. Recently oil has been discovered in Uganda.

The main industries of Uganda are sugar, brewing, tobacco, cotton textiles, cement and steel production. The industry is growing at a rate of 6 percent.

The most exported commodities are coffee, fish and fish products, tea, cotton, flowers, horticultural products and gold. These products are mostly exported to Sudan, Kenya, UAE, Rwanda and the Democratic Republic of the Congo. In Europe the countries to where products are mostly exported are the Netherlands and Germany.

The rate of urbanization is 4.8 percent per year.

### **5.1.3. Education**

The literacy rate in Uganda is said to be 66.8 percent. For male it is higher (76,8%) than for women (57.7%). The school life expectancy is 11 years.

#### **5.1.4. Main problems**

35 percent of the population lives below the poverty line.

6.5% of the population of Uganda has HIV/AIDS. This means about 1.2 million people have HIV/AIDS.  
(Factbook, 2011)

## 5.2. Gulu district

### 5.2.1. Geography

Gulu district lies in the north of Uganda and is located on a flat highland with an average altitude of around 1100 m. There are some inselbergs rising above the flat area. The total land area of Gulu district is 3449.08 km<sup>2</sup> which is 1.44 percent of the total area of Uganda. 0.8 percent of the land area of Gulu district is open water. There are many small streams. The major ones are finally flowing into the Nile. These are the Aswa, Unyama and Tochi River. (Gulu District five year development plan, April 2011)

Gulu lies 332 km north of the capital city Kampala.

### 5.2.2. Administrative structure

Gulu district is divided into 15 sub-counties. These sub counties all have their own center. A center is the name given to a somewhat big village where the local government is stationed, where there are shops and where people live closer together. Centers in most cases are old IDP camps. The names of the centers correspond with the names of the sub counties.

Each sub-county is divided into parishes. In total there are 70 parishes.

In 2009, 290 villages were registered by UNOCHA.

Gulu district is bordered by 5 other districts. These are: Kitgum in the north, Pader in the east, Lira in the southeast, in the south Oyam, and in the west Amuru. (Gulu District five year development plan, April 2011)

### 5.2.3. Climate

The average maximum temperature varies from 26 (juli) to 32 (January and February) degrees Celsius. The average minimum temperature varies from 16 (December) to 18 (February to May) °C.

The average rainfall in a year is about 120 mm per month with a maximum of 215mm in August and a minimum of 10mm in January. The total average annual rainfall in Gulu district is 1500mm.

(Gulu District five year development plan, April 2011)

### 5.2.4. Soil

The soils in Gulu district are mostly Ferralsols. More accurate the soils would be called Orthic Ferralsol. (FAO-UNESCO, November 2007)

*Ferralsols* consist of strongly weathered materials, mostly undelying rock formations. This weathering process often took place in warm humid climates. Ferralsols often indicate an old landscape. Ferralsols are often red. This because of the high amount of iron. Ferralsols also have a high amount of aluminium. In the case of Gulu district both red and yellow Ferralsols occur. These soiltypes have

good physical properties but are chemically poor. (FAO, Lecture notes on the major soils of the World, 2001)

Ferralsols have a relatively low fertility and binds phosphate. This makes the soil less favorable for agriculture. Often shifting cultivation is done on these soils. In Gulu district there is often a rotation of 3 to 5 years. Fertilizing the soil could be a method to have a higher production. (FAO, Lecture notes on the major soils of the World, 2001)

In the north of Gulu district *plinthosols* can be found. Plinthosols mostly occur on sloping hills with a fluctuating water table in residual materials of basic rock formations. Plinthite can only be formed under conditions with sufficient iron.

Agriculture is difficult on these soils as the soil is very unfertile. Also rooting is hard.

To summarize: the soils in Gulu district are not very fertile. They mostly consist of sandy clay loams.

The soils are very well drained so are not very susceptible for erosion but also with the result that the soil cannot hold a lot of water.

#### **5.2.5. Population and demography**

According to UBOS the population in 2002 was 298.500 people. The latest counting estimates a number of 385.600 people in 2011 which is 1.2 percent of the total population of Uganda.

Gulu town has been growing over the last 52 years from 30.000 people (1959) to 154.300 people (UBOS, 2011)

The population density is 115 persons per km<sup>2</sup> compared to a population density of 172 persons per km<sup>2</sup> in the total of Uganda.

More than 54 percent of the population is under 18 years of age. (Gulu District five year development plan, April 2011)

The people living in Gulu belong to the Acoli people. In the whole of Uganda there are 1,145,357 people belonging to the Acoli tribe (4.8% of the total Ugandan population).

80% of the people of Gulu district are Acoli. The language of the Acoli people is Luo. There are about 800.000 Acoli in the world. Most Acoli live in the districts Gulu, Kitgum and Paders in Uganda. This region is sometimes also called Acoli Land. Other Acoli live in the south of Sudan bordering Uganda. (BISS, 2009)

About 51 percent of the people living in Gulu district live in rural area. Officially there are villages but people often live great distances apart from each other divided by their cropland, forest, or open area. From a main road or branching road the homesteads are mostly accessible by small dirt paths.

### **5.2.6. Health**

The health in Gulu is below the national standard mostly because the high poverty level. Most diseases are caused by poor environmental sanitation and hygiene.

There are about 76 health centers of which 51 are government health centers and 17 run by NGO's. 4 of these 76 centers are hospital.

Accessibility is low. 63 % of the area is within 5 km of a health center. In the north of the district it is even less (43 %). (Gulu District five year development plan, April 2011)

### **5.2.7. Infrastructure**

The only tarmac road in Gulu district is the road leading to Kampala. This road goes south from Gulu town down to the capital city Kampala.

Some bigger roads in Gulu district lead to most sub county centers. Branching roads mostly connect the bigger roads. All roads are dirt roads. The dirt roads are often of bad quality, especially in the rainy season.

Most people in the rural areas walk or go by bike. Many paths are not accessible by bike.

### **5.2.8. Economy**

Gulu town is the main Economic center of the district.

There are not many small enterprises. There are only few grinding mills, rice hullers, garages, wood and metal workshops, and construction industries.

Other ways of income are employment. Most of these are government jobs like: Post Office, Telecommunication services, microfinance, Hotel services, National water and sewage corporation, Umeme (power supply), and Commercial Banks.

There is a great number of NGO's working in Gulu that offer jobs and bring in a lot of funds. Some of the NGO's are for example War child Holland, Sos children's village, World Vision, US aid, Winrock, and Watoto church. The NGO's in Gulu mainly focus on reconciliation, peace building, infrastructure, livelihood, health, food security, and agriculture.

The main source (57 percent) of livelihood in Gulu district is Subsistence farming, so producing for own use. The second source of livelihood is income from employment and after that business enterprise. The last important source of livelihood is cottage industry. (Gulu District five year development plan, April 2011)

### **5.2.9. Economic activities**

#### ***Agriculture***

About 95 percent of the population is employed by Agriculture.

The main cash crops in Gulu district are cotton and tobacco. The major food crops are rice, millet, sorghum, sweet potato, maize, cassava, groundnuts, sesame, beans, and peas. (Gulu District five year development plan, April 2011)

#### ***Livestock***

At this moment there are only about 100 dairy farmers in the district. In the past (1986) cattle was an essential part of the economy. From 1986 to 1988 the number decreased drastically because of the theft of cattle by other tribes, especially the Karamajong. (Gulu District five year development plan, April 2011)

### 5.2.10. Education

Education in Gulu is poor. There are in total 200 functional schools in Gulu district. The average teacher to student ratio is 50 students to one teacher, although in some cases there are 170 students to one teacher.

Recently teachers had a strike because the fees are too low.

Another reason for the education to be so poor is that the accessibility of school is low. The average distance to schools is 5 kilometers which is approximately two hours walking. In the north of Gulu district the distance to schools is even more. In total 49 % of the area of Gulu is 2.5 km distant from the nearest school while in the north of the district only 17% of the area is 2.5 km near a school.

The completion rate in Gulu is 33 percent.

Another problem is the extreme high school fees.

Gulu town has a University called 'Gulu University'. The university has 5 faculties and 2 institutes. The 5 faculties are: Agriculture and Environment, Business and Development, Education and Humanities, Medicine, and Science. The institutes are: Peace and Strategic studies, and Research and Graduate studies (Gulu District five year development plan, April 2011)

### 5.2.11. History

The Acoli are said to come from the north, a region called 'Bahr el Ghazal' in the south of Sudan. They are decedents of the Nilotic Luo. In the late seventeenth century a new sociopolitical order started to develop, characterized by the formation of chiefdoms. By the mid-nineteenth century approximately 60 chiefdoms existed in the region called Acoli land. Arabic-speaking traders started to call them Shooli a name which gradually transformed into Acoli. (Congress)

Acoli people used to live from cattle, hunting, and agriculture.

The north of Uganda, so also Gulu, have been a warzone for 20 years (1986- 2006). Over 90% of the population of Gulu district were displaced into 32 IDP camps (Internally Displaced People camps) spread over the district. In northern Uganda more than 2 million people were displaced and it is estimated that 800,000 people were killed. (Focus on land in Africa ,brief, Dec 2010)According to UNOCHA in June 2009, 3 years after the end of the war, still 45,000 people lived in IDP camps. At that time 170,000 people had returned to their own homes. The war has had an enormous influence on all facets of the society: on the economy, on the language, on the culture, on the health, and on the education.

## 6. Tree Talk

Tree talk is part of a bigger foundation called Straight Talk Foundation (STF). STF is divided in different departments such as Tree talk, Farm talk, Teacher talk, Parent talk and more.

Straight Talk is a foundation active in the whole of Uganda and is mostly occupied with sexual education. STF wants to improve the living standard of people in Uganda. Many newspapers are produced and distributed to increase knowledge and raise awareness.

Tree Talk (TT) as part of STF also wants to improve the living standard of people in Uganda. TT focuses on environment and livelihood improvement. Tree planting is seen as one of the most important solutions to degradation, lack of firewood, hunger, loss of habitat and biodiversity, erosion, climate change, the poor health of women and children, and poverty.

### 6.1. Areas where TT works

Other than STF, Tree Talk is only active in the North of Uganda. Tree talk is active in Northern Uganda as this area has been a war afflicted area for over 25 years. Because of this the North is less developed and more degraded than the other parts of Uganda. Donors are also more interested to invest and donate to this area because of the above listed reasons.

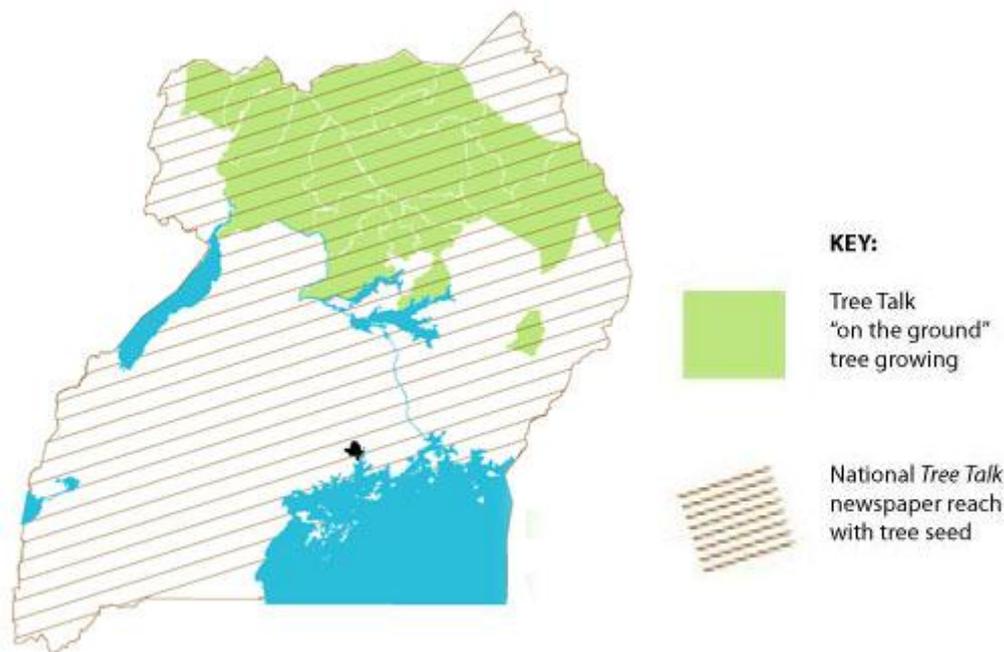


Figure 4 Tree Talk work field

## **6.2. Activities**

TT is active in creating awareness and spreading knowledge with the goal to improve the livelihood of the Ugandan people. This is done in different ways. The two main instruments are radio and newspaper. The newspapers are distributed in schools. These methods of awareness are mostly general and inform on topics such as environment, nature, trees, practical tips for how to live in an environmental friendly way, resource management, agricultural practices, pollution, and awareness of climate change. The newspapers are mostly in English except for the north where the newspapers are also distributed in Luo.

Tree Talk is only active on ground in the north of Uganda but the newspapers are distributed nationwide. Wherever the newspapers are distributed, seeds are given to the pupils and to the schools.

Furthermore Tree Talk also collects seeds, builds up nurseries, and oversees the planting of trees at schools, community groups, prisons, barracks, health centers and more.

### **6.2.1. Schools**

TT mostly works with schools since 2002 and distributes 20.000 newspapers in schools twice a year. Newspapers are distributed amongst the students and teachers. Also teachers are offered to participate in trainings so that they on their turn can teach pupils important issues concerning nature and environment. TT gives newspapers, seeds, and materials for setting up a nursery, to schools.

In case the school is not interested in starting a nursery, seedlings can be given to the school and pupils. The seedlings are either planted on the terrain of the school or are taken home by the pupils. This way TT wants to motivate students and even their parents to plant trees at their home.

The trees planted at the school site are used as firewood for the school, the teachers or the pupils. The wood might also be used as building material, be sold to pursue money, and as shade around the school.

### **6.2.2. Community groups**

Besides schools TT is also focusing on community groups. When a community group sees the need of planting trees and therefore is interested and motivated to start a nursery, they can come to or contact Tree Talk. Tree Talk will on their turn pay a visit to the community group. Tree Talk has certain conditions for working together with the community.

The community should have formed a group and a chairperson should have been chosen. The chairperson is the person to contact and he is responsible for the process of the nursery.

Also a piece of land should be selected which is owned by the community. This land should be free of any ownership issues.

Another condition is that one day of the week is selected that the group will work on the nursery site.

If both Tree Talk and the community group agree on these conditions a document is signed. From there on Tree Talk provides knowledge, advice, guidance, regular monitoring, and equipment such as: wheelbarrow, potting material, watering can, slashers, hoe, forked hoe, panga panga (machete). Tree Talk also provides seeds of different tree species. The community group can give their preferences but some exotic species are not promoted by TT.

The community group provides the nursery site, building material for the nursery beds, and finally man power.

If the group does not show any motivation Tree Talk can take back the equipment and stop the guidance.

Tree talk is working with about 138 community groups that in average have 5 members. These community groups are located in 5 northern districts. The nurseries at the community groups are much smaller than the nurseries of Tree Talk itself.

TT also works together with other institutions. In prisons, barracks and health units TT tries to stimulate tree planting since 2008. In these institutions wood and shade can be important.

TT also has its own nurseries from where they either sell or give away the seedlings are raised. There are 6 major nurseries located in different districts: Moyo, Ajumani, Amuru, Gulu, Kitgum, and Pader. Each of these nurseries produces up to 200,000 to 300,000 seedlings per year. Tree species that are mostly propagated are Markhamia (*Markhamia lutea*), Senna (*Senna siamea*), Mahogany (*Khaya senegalensis*), Albizia (*Albizia spp*), Neem (*Azadiraca indica*), and Eucalypt (*Eucalyptus spp*). In the Appendixes the Latin names of all tree species can be found.

### **6.3. Funded by....**

There are many donors that fund Tree Talk. The main donator at this moment is the Danish development organization 'Danida'. Under this agreement TT has committed to plant 4.5 million trees.

In the past TT has been funded by FAO, USAID, WCS (wildlife conservation society), and NFA (national forest authority).

## 7. Results

### 7.1. Observations

#### 7.1.1. Homestead

A homestead is the area where a family lives. This area is often cleared of any vegetation except for some planted trees, often old mango trees. The tree is used to sit underneath for shade. On the area huts are built. There is often a building that is used as a kitchen. This is often the wife's hut. A man has his own hut and in the case a man is married to more than one wife, the other women also have their own hut. In front of the hut that is also used as a kitchen the fireplace is found. This is mostly a simple construction of three stones. Besides the huts also a small granary can be found.

Some distance away of the homestead the toilet can be found, mostly a hole in the ground. Often a place to wash is also located outside the homestead.

Piles of firewood can mostly be found behind the huts or leaning against a tree in or around the homestead.

The agricultural field is often located near the homestead. Crops that are grown mostly are maize, groundnuts and cassava. In some cases pine and teak trees were planted on the agricultural field.

Some pictures can be found in the Appendixes under the chapter 'Pictures'.

#### 7.1.2. Observation of trees on the homesteads of people

Trees are an essential part of the homestead. Often only a single tree is located in the homestead while other trees are located around the homestead. The single tree in the middle of the homestead is often a mango tree or another kind of fruit tree. Tree species around the homestead are also often mango trees. Also *Senna spp* and *Gmelina arborea* are often found planted around the homestead.

Some pictures can be found in the Appendixes under the chapter 'Pictures'.

#### 7.1.3. Vegetation

The vegetation is mostly shrub land with much undergrowth of grass. Forests in some cases occur, mostly following streams. In the northwest of the research area the main vegetation is *Borassus palm*. In this region there are almost no large trees. Species are mixed, hardly an area with all the same species can be found. Tree species spread over the area are Obwolo, Ogali, Lucoro, Olam, and Okoto. Other species like Odugu, Opok, and Yaa will be found but less spread.

Some pictures can be found in the Appendixes under the chapter 'Pictures'.

## 7.2. Interviews

In the map below can be seen where the interviews took place. The number of the interview corresponds with the numbers of the interview in the 'General answers' table in the Appendixes.

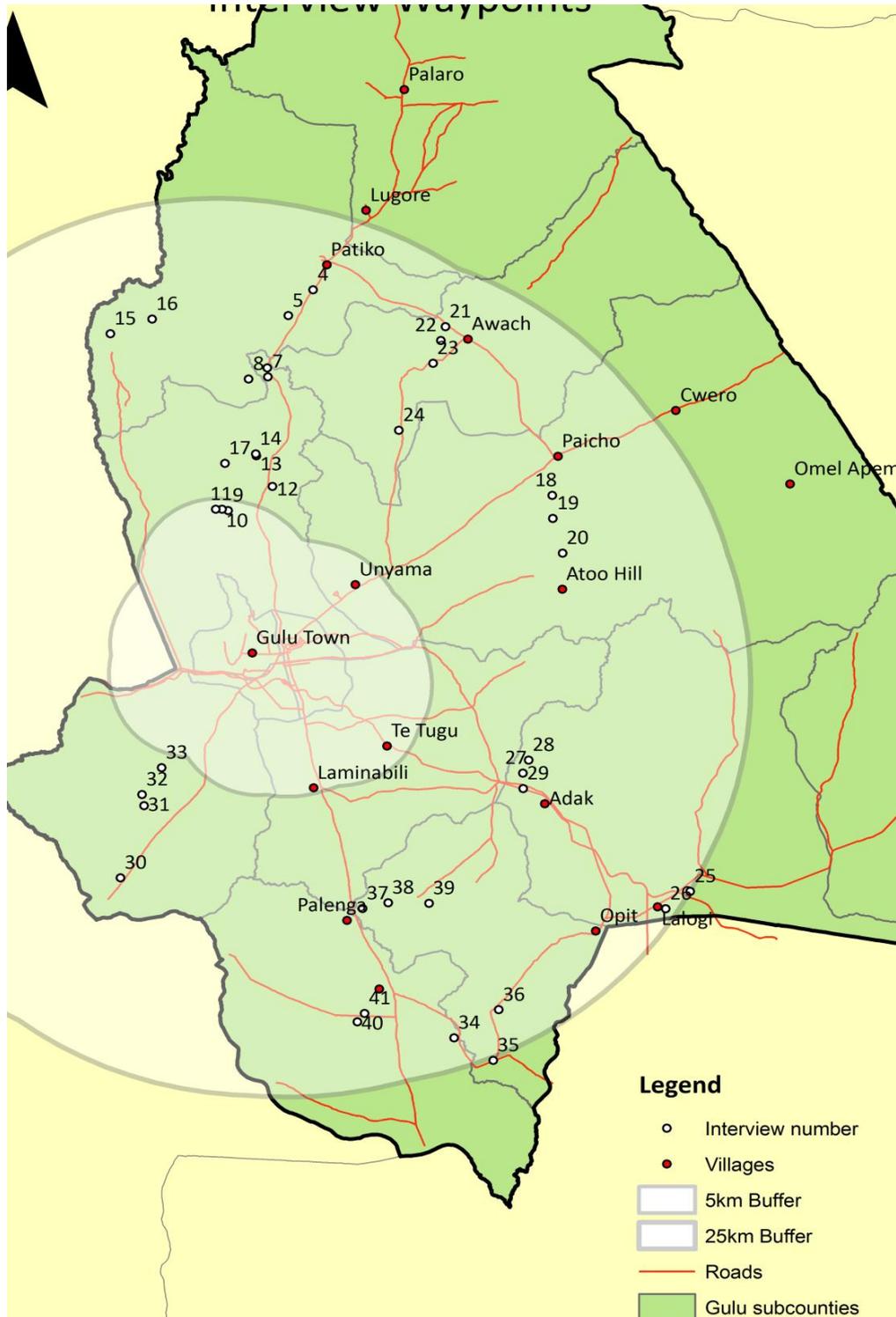


Figure 5 Interview locations

### 7.2.1. General information

- **Men/ women**

27 men and 19 women were interviewed. Women were mostly busy with cooking, brewing alcohol, and looking after the children while men often were available. The time the interviews took place was the most optimal time for both men and women to have some time for the interview. In one case a couples was interviewed and in one case a small group of 4 people. In these cases the men answered the questions about building material, hunting, charcoal making, and the general questions about forest. The women answered the questions about firewood and cooking.

- **Ages**

Ages varied between 16 and 80 years. Most respondents were between 18 and 45 years of age. The average age was 48.

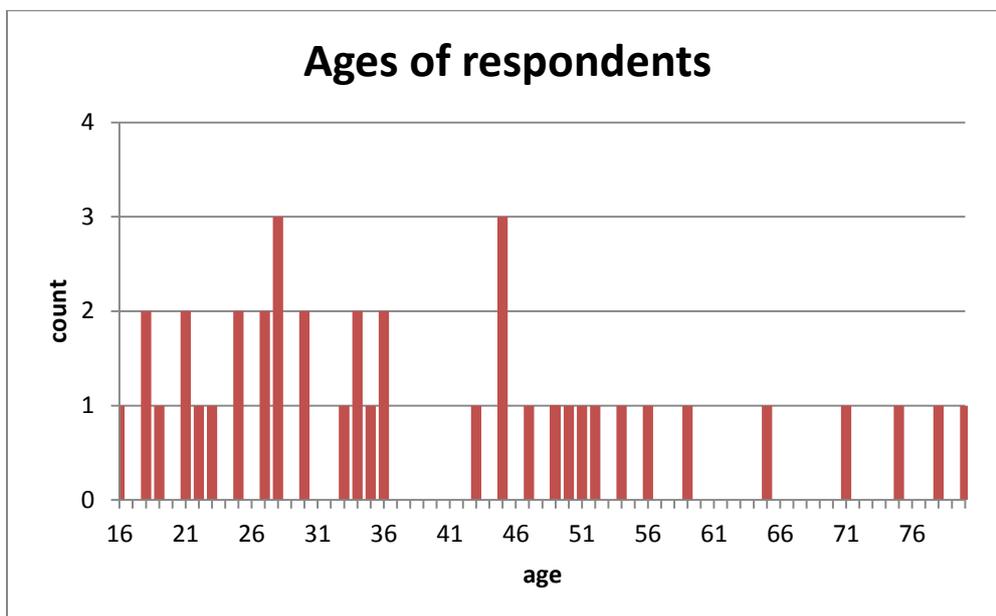


Figure 6 Ages of respondents

- **Jobs**

Almost all respondents were peasant farmers. Some of the respondents were students, housewife or teacher but always in combination with farming.

- **Main source of income**

The main source of income is in all cases crop production and selling of crops.

- **Size of land**

The size of the land differs enormously and most people could not tell the precise size of their piece of land. It seemed that the size of land per family was greater in the northern part of Gulu district compared to the other parts of Gulu district.

- *Nr of children*

The number of children varied between 1 and 12 children. Most families had around 2 to 6 children.

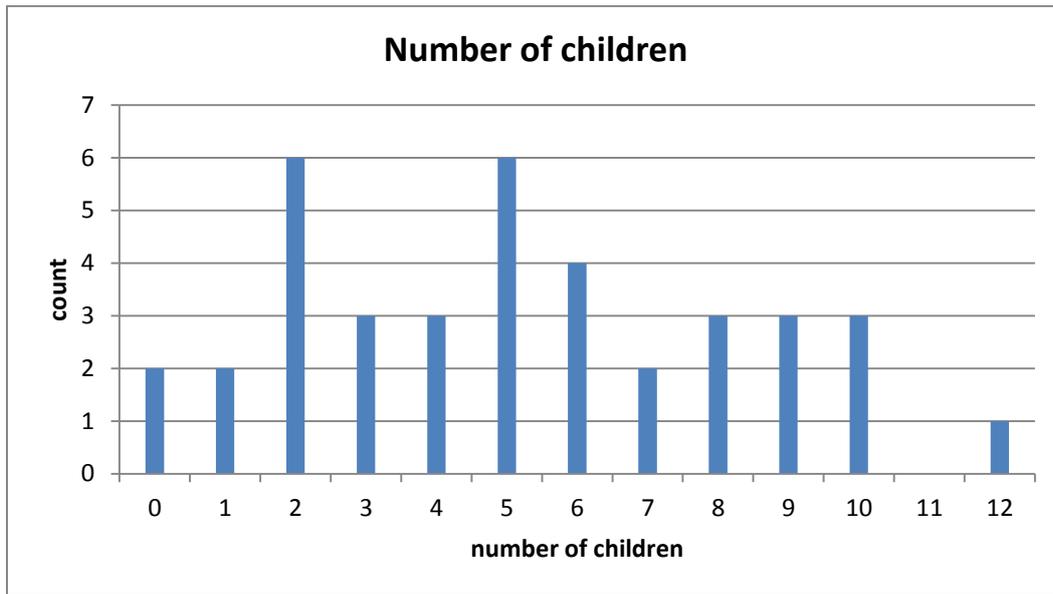


Figure 7 Number of Children

## **7.3. Interview questions**

### **7.3.1. Definition of forest**

In almost all cases forest was described as a group of trees standing together. However most of the vegetation around the homesteads was either described as gardens or as bushy vegetation.

Forest was often divided in two categories: natural and planted forest.

In some cases the respondents replied that they could not give a definition as they had never seen forest.

Only in few cases forest was related to wildlife, different species and the size of the area where the trees are standing.

The following 5 questions are more or less to get a general picture of the overall situation and are therefore not handled in much depth.

### **7.3.2. Do people sell products from the forest?**

People do sell products from the forest. Often people sell firewood and in the case charcoal is produced this is often sold. In some cases people even did not use the charcoal they produced, they only sold it. In some cases respondents sold building materials.

Often a part of the crop was sold that was left over. For the biggest part people however only produced for their own needs.

### **7.3.3. How much firewood is used?**

120 to 250 sticks of firewood are mostly used in a month time. According to the respondents the number of bundles collected in a month varies from 4 to 12 bundles and the number of sticks in a bundle varies from 10 to 50.

### **7.3.4. How do people cook?**

Cooking is mostly done on three stones on which the pot can be put. Firewood is put underneath the pot in between the stones and lighted with a type of grass.

Charcoal is hardly used as it is mostly sold. Also improved stoves are not used amongst the local population. It is not known why.

Tree species especially used for cooking purposes are Ogali, Odugu and Opobo. More information on these species can be found in chapter 'which trees are important to people?'

### **7.3.5. What kind of wood do people use for building huts?**

For building huts and other constructions a number of species are used. A hut roughly consists of three parts: the Roof, the middle pole, and the wall. For the roof often long straight poles of Opok, Opobo, Odugu, and some exotic species are used. The indigenous species are however valued higher. Also Bamboo or split Tugu poles are used. These poles are positioned at a right angle on the wall and point to the middle of the hut, where all poles come together. The lowest point is at the wall while the highest point naturally is in the middle of the hut. Parallel to the wall smaller sticks are attached to the poles. On these sticks the grass cover can be laid as roof. The sticks mostly are Bamboo or Otit branches. The sticks are attached with rope made out of Papyrus or the bark of Ogali. There are mainly two types of grass that cover the roof. These are Abi, a finer species of grass, and Obiya, a grass species that is broad. The roof is held up by a middle pole and by the walls. The middle pole almost always is a big stem of the tree species Opok. On top of this middle pole is a so called 'Panj'. This is a round wooden slice that keeps the roof poles together with nails. This in most cases is made of an Olam tree and in some cases the species Lucoro was used. The walls are mostly made out of bricks.

In most cases (21 of the 41) 40-50 poles are used for the roof. Outside the hut there are sometimes poles to keep the roof up in case the roof is built in such a way that it sticks out from the walls on the outside of the hut. These mostly were 10 to 15 poles.

### **7.3.6. How often do people go to a near center?**

People go to centers for their basic needs. They buy soap, salt, sugar, cooking oil, paraffin oil, and clothes. Most people go on regular bases.

#### **7.4. Importance of forest**

In none of the interviews forest was seen as useless. In some cases where there is no forest the respondents could not come up with why forest is important.

In most interviews the objects and resources were mentioned as reasons for importance of forest.

The most mentioned reasons of importance were:

##### ***Firewood***

Firewood is one of the most important uses of the forest and bush of the local people. This was mentioned as one of the first things in the interview. Most people cook only on firewood. Firewood is mostly collected by people themselves from the surrounding area. In 24 of the 41 interviews Firewood was seen as reason of importance.

##### ***Rain formation***

During 17 of the 41 interviews, rain formation was seen as a product of the forest. People had learned and had seen that the area of forest and the area directly surrounding the forest were moister than elsewhere. Forest was seen as valuable and should be preserved because of rain formation according to respondents.

##### ***Building material***

Another very important use of the forest is the collection of building materials. Local people are very dependent on this natural source for building materials as everything they build is made out of natural resources. Building material was mentioned in 16 of the 41 interviews.

##### ***Charcoal production***

Charcoal is an important product for income generation in the north of Uganda. 97 percent of the population of Uganda use firewood and charcoal as their source of energy. 4 million tons of charcoal is produced every year for personal use. In the interviews Charcoal was often mentioned as an important reason for why forest is so important. 10 out of 41 interviews showed this.

##### ***Bush meat***

Hunting is a much practiced activity. Animals that are hunted and eaten as the interviews have proved are: Anyeri (edible vegetarian rat), Obaa (smaller rat like rodent), Apoyo (Hare like rodent), Lacek (small deer) and Aweno (Guiney fowls). Hunting is mostly done with spears, axes, slingshots, traps, and always with dogs. No guns were seen by the observer. During 2 of the 41 interviews forest was seen as important because of the hunting possibilities it offers.

Farmers also hunt monkeys but this is not for the purpose of eating. Monkeys often destroy the crops of farmers and are therefore seen as very harmful.

### *Food and fruits*

The forest is rich in all kinds of fruits. Bush-meat is in this case not counted under 'food and fruits'.

In 8 of the 41 interviews food and fruits were mentioned as a reason for why the forest is so important.

Fruits that grow in the forest but were mostly planted by grandfathers or fathers are Mango (Muyembe) and Jackfruit (Mafenese). Fruits planted by the people themselves in the forest or often on their homestead are Passionfruit (Matunda), Orange (Musungwa), Lemon, Banana and Avokado.

Fruits that only grow in the forest and are not planted are Kano, Oywelo, Obwolo, Opobo, Yaa (Sheanut), Tugu (Borassus palm), Otit (swamp palm), Fomo, Oceyo, Olemo and Laling kwalo. These fruits were often mentioned as fruits from the forest. There are more fruits that have been mentioned but these are only mentioned once or twice and are not considered very important.

Latin names of the Acoli tree species can be found in the Appendixes.

### *Fertility*

The fertility was said to be higher in the area of the forest according to 7 respondents. The area surrounding the forest is therefore often used to grow the crops.

### *Climate protection*

Respondents mentioned that within the forest the climate was cooler and moister. Also the soil seemed to be more fertile. This answer was only given once. Wildlife protection was mentioned 3 times.

### *Erosion control*

Forest protects the soil from being flushed away. This answer was only given three times.

### *Cattle keeping*

It seems not yet many Acoli farmers keep cattle but there is growing interest in keeping goats and cows. In 9 cases the respondent owned cattle and in these cases forest or trees played an important role. Cattle could be treated with certain tree species for illness or diseases. The cattle kept by locals were: Sheep, Goats, Pigs and cows. Of the respondents only one person owned sheep, 7 people owned goats, 4 people owned pigs, and 3 owned cows. Some respondents owned more than one sort of cattle, so for example one respondent owned cows, goats, and sheep. In 2 interviews forest was considered important for cattle keeping.

### *Windbreak*

In 2 interviews forest was said to protect against wind. One respondent mentioned that their hut had not been damaged by heavy wind because of protection of a group of trees, while the roofs of other huts were heavily damaged by wind because all the trees were cut around the homestead.

### *Tourism*

In one case forest was preserved and the owner even prevented hunting within his forest because he saw his forest as an attraction for tourists. He wanted to preserve the forest for his children so that they could use it for tourism.

### *Shade*

One family used their forest to lay down at the hottest part of the day.

### *Bee-keeping*

Forest was seen as very important for bee keeping. Certain tree species are preferred by bees.

## 7.5. Which trees are important to people?

### Counting

To find out which trees are preferred by people a number of questions were added to the questionnaire. The main question, to get a list of important tree species, was by simply asking which trees were important to the respondent.

Other questions on the matter of tree importance are for example which trees people leave in the field, which trees have a cultural importance, and which trees are getting scarce in the forest. Of course other questions can also lead to which trees are valuable.

These other questions will be handled in separate chapters.

In the graph below the answers to the question: 'which trees are important to you?' are made visible. All respondents mentioned a number of trees, often also exotic species. The exotic species are excluded from this graph.

In total 36 species have been mentioned. As it can be seen from the graph tree species Odugu, Opok, Ogali, Owak, and Opobo have been mentioned most often.

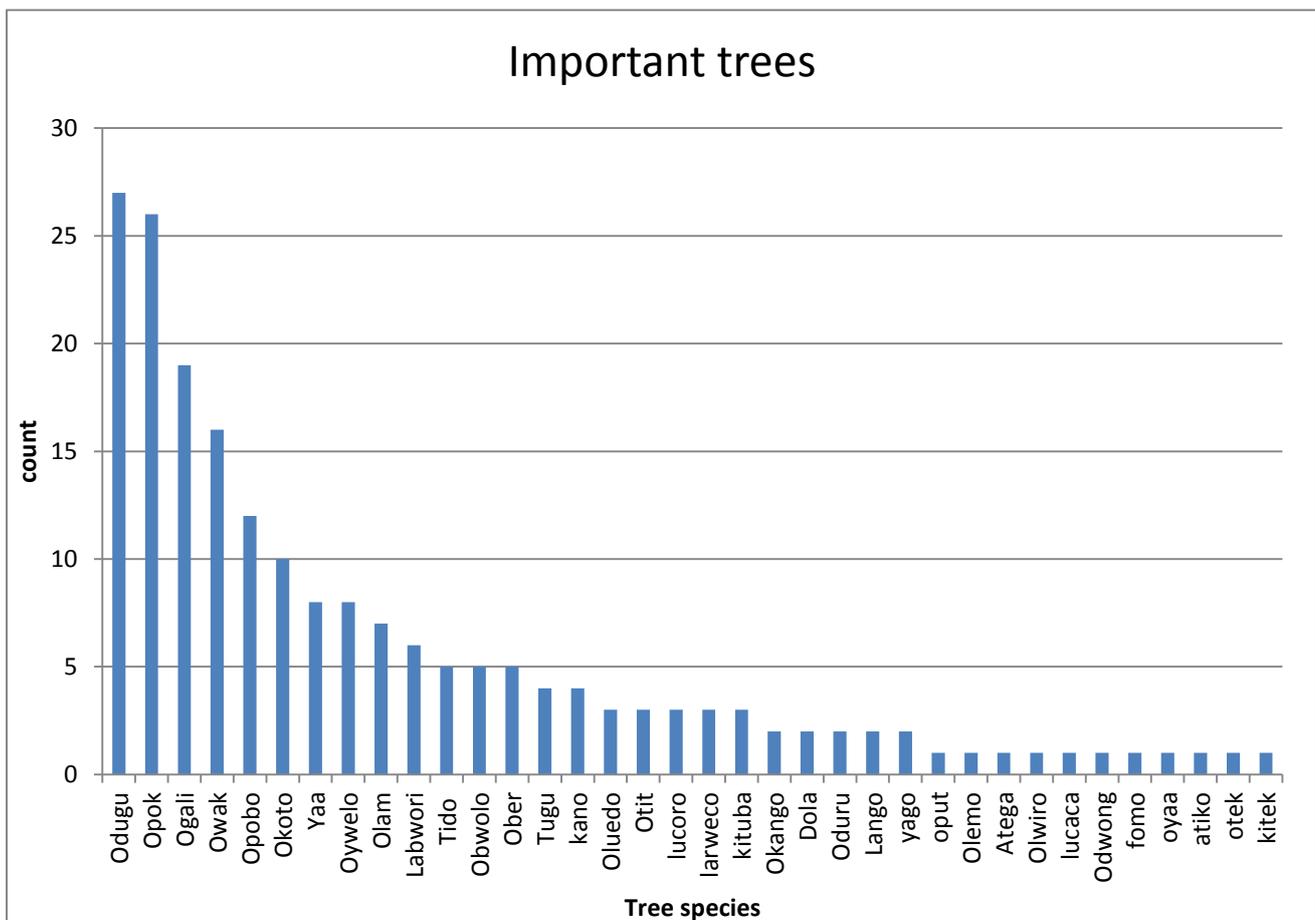


Figure 8 Important tree species

## Ranking

Additional to the question which trees are most important to people, 8 tree rankings were done. This is of importance as only the fact of being mentioned does not tell anything about the ranking. The fact of being mentioned more often can suggest which species are higher ranked but an additional ranking can either confirm or contradict the results of the question.

8 rankings were done at the end of the research period. These rankings were done in different ways. Tree names were written on little cards and these cards were given to the respondent. Respondents who could not read could not be asked for the ranking. A number of cards with tree species were offered to the respondent. If some tree species that the respondent would like to add were not on the cards, new cards with the relevant species was added to the cards. Tree species that were not known were put aside. Following, the respondent was asked to put the cards in the right order. This idea of ranking was not always understood. Some respondents also indicated that they would better do it differently. Some respondents divided the cards into groups and within these groups the cards were put in the right order.

Two rankings which held most cards were done with 17 tree species. The other rankings varied between 5-7 ranked trees.

Trees that were only mentioned in one interview have been excluded from the list. A tree mentioned only once and ranked as first can give a biased picture of which trees are generally important. One respondent might see a particular tree as his favorite while the tree is not even mentioned by other respondents. Such a tree is left out of the ranking list which is presented in this report.

To be able to take the average of the tree ranking, each different ranking is given a value. For example if a tree is ranked as first it is given value '10'. Below the value given to each ranking can be seen.

Ranking	Value
1	10
2	9
3	8
4	7
5	6
6	5
7	5
8	4
9	4
10	3
11	3
12	2
13	2
14	2
15	1
16	1
17	1

Table 1 Value given for ranking

As can be seen in the table on the left, 10 values have been chosen.

Other values also could be given to each ranking. The above showed values have been chosen to be able to distribute the values in a good way over the rankings.

The value given also corresponds with the ranking. It is assumed that the ranking of the first 5 trees is done most precise than the ranking of the lesser important trees. The less important trees become, the less precise the ranking is done. Here as an example the first ranking done in an interview.

Tree ranking	Tree species
1	Odugu
2	Opok
3	Opobo
4	Larweco
5	Ogali
6	Oywelo
7	Okoto
8	Owak
9	kano
10	Olam
11	Obwolo
12	Lucoro

Table 2 Example of Ranking

In this example tree species Obwolo and Lucoro are ranked as 11<sup>th</sup> and as 12<sup>th</sup> respectively. It is very likely that Odugu is the respondents' most important tree and that Opok follows Odugu as second most important. With Obwolo and Lucoro it is probably different. The respondents in most cases will not be able to make a difference in importance between the 11<sup>th</sup> and the 12<sup>th</sup> important tree.

Therefore the value given to the 5 first ranked trees is higher. The first 5 ranked trees all have their own value while ranking 6 and 7 have the same value. The same counts for ranking 8 and 9, 10 and 11, 12-14 and 15 to 17. In this way the rankings are divided into value classes.

Now the values per tree are added to each other and the tree species can be put in a table sorted from largest to smallest value.

Tree species	Value
Odugu	71
Opok	63
Owak	48
Opobo	42
Ogali	40
Okoto	25
Ober	23
Olam	21
Oywelo	20
Obwolo	20
Labwori	15
Larweco	14
lango	9
tugu	7
yaa	6
kano	6
yago	5
Oduru	2
lucoro	2

Table 3 Values given to tree species

This table can be projected in a graph.

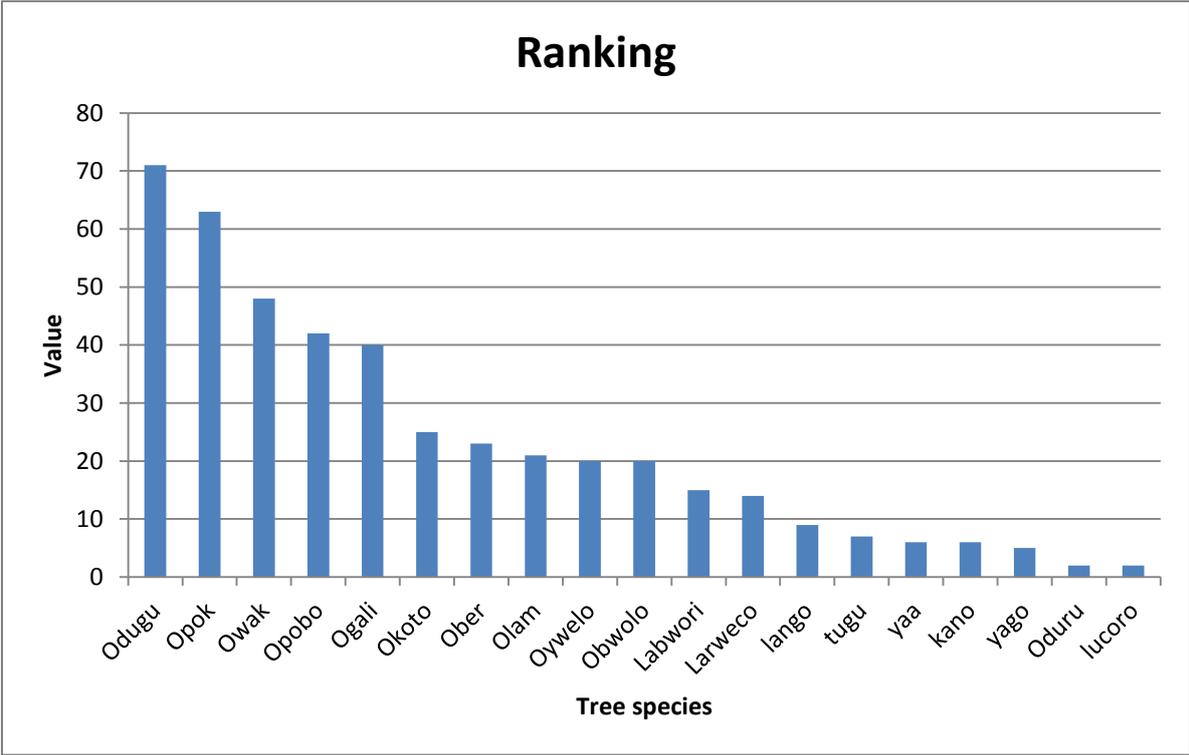


Figure 9 Ranked tree species

In the graph and table above it is made visible that with the chosen values tree species Odugu, Opok, Owak, Opobo, and Ogali are the highest ranked trees. The same species will seem first with most other values given to the ranking as long as the first ranking has a higher value than the second, the second higher than the first and so on. This means the ranking of the first 5 tree species is accurate.

When the table of the tree counting and the tree ranking are compared, it is obvious that the first five trees are the same.

	<b>Count</b>	<b>Rank</b>
<b>1</b>	Odugu	Odugu
<b>2</b>	Opok	Opok
<b>3</b>	Ogali	Owak
<b>4</b>	Owak	Opobo
<b>5</b>	Opobo	Ogali
<b>6</b>	Okoto	Okoto
<b>7</b>	Yaa	Ober
<b>8</b>	Oywelo	Olam
<b>9</b>	Olam	Oywelo
<b>10</b>	Labwori	Obwolo
<b>11</b>	Tido	Labwori
<b>12</b>	Obwolo	Larweco
<b>13</b>	Ober	Lango
<b>14</b>	Tugu	Tugu
<b>15</b>	kano	Yaa
<b>16</b>	Oluedo	Kano
<b>17</b>	Otit	Yago
<b>18</b>	Lucoro	Oduru
<b>19</b>	Larweco	Lucoro
<b>20</b>	Kituba	
<b>21</b>	Okango	
<b>22</b>	Dola	
<b>23</b>	Oduru	
<b>24</b>	Lango	
<b>25</b>	Yago	
<b>26</b>	Oput	
<b>27</b>	Olemo	
<b>28</b>	Atega	
<b>29</b>	Olwiro	
<b>30</b>	Lucaca	
<b>31</b>	Odwong	
<b>32</b>	Fomo	
<b>33</b>	Oyaa	
<b>34</b>	Atiko	
<b>35</b>	Otek	
<b>36</b>	Kitek	

Table 4 Comparison between mentioned and ranked tree species

To conclude, the species Odugu, Opok, Owak, Opobo, and Ogali seem to be the most important species in the area of Gulu district in the south of Uganda.

As these 5 species are so important a brief description, according to the answers in the interviews, will be given per tree.

### **Odugu**

There are two species under the name Odugu which are seen as one species. A distinction is almost never made. The two species meant are *Combretum collinum* and *Combretum molle*. In the interviews this tree species is mostly mentioned together with charcoal. The wood seems to be ideal for Charcoal production as it dries faster than other tree species. The wood can also be used as good quality firewood.

The poles of the tree are also sometimes used for building as the wood is very hard and strong.

Odugu produces the best honey so beehives are often put near an Odugu tree.

This tree is getting scarce as it has many uses and as the population is growing.

### **Opok**

*Terminalia macroptera* or *Terminalia torulosa* is the most used tree when it comes to building material. The wood is of excellent quality and is mostly used as middle pole of huts.

The wood is also used as firewood although it is very hard wood and the bark should be removed before trying to lighten it. Opobo and Odugu provide better firewood.

This tree is getting scarce as it has many uses and as the population is growing. therefore this tree is often left in the agricultural field.

### **Owak**

*Albizia grandibracteata* is called Owak.

Owak is often used for firewood. The firewood is good for cooking as it easily catches fire. The wood is soft and rots easily so people do not like the wood so much as it cannot be left in the field to dry.

The species is also used as timber.

### **Opobo**

*Grewia mollis* is often used for hoes and axes because the poles are often straight and strong. This tree produces fruits that can be eaten by people. Children like to collect the fruits. Besides firewood the wood is also used for charcoal production.

The bark can be used for making rope.

### **Ogali**

The Latin name for Ogali is *Piliostigma thonningii*. The wood of this tree is good firewood. The wood can easily be left in the forest to dry after it has been cut down as the wood is very hard.

The bark of Ogali can be used for making rope.

## 7.6. Cultural important trees

Another aspect of tree importance is the cultural value.

It was clear that the elder respondents were able to name more cultural important species than the younger respondents. The cultural rituals are not very often implemented nowadays. This probably has to do with the faith of the Acoli people and the war which forced people to stay in IDP camps. People were not dependent on the forest for that time and could not practice the cultural rituals.

tree species	count
Oluedo	29
okango	23
oput	9
yago	6
Yaa	4
Opobo	4
Odwong	3
ogali	2
lucoro	2
obwolo	2

Table 5 Cultural trees

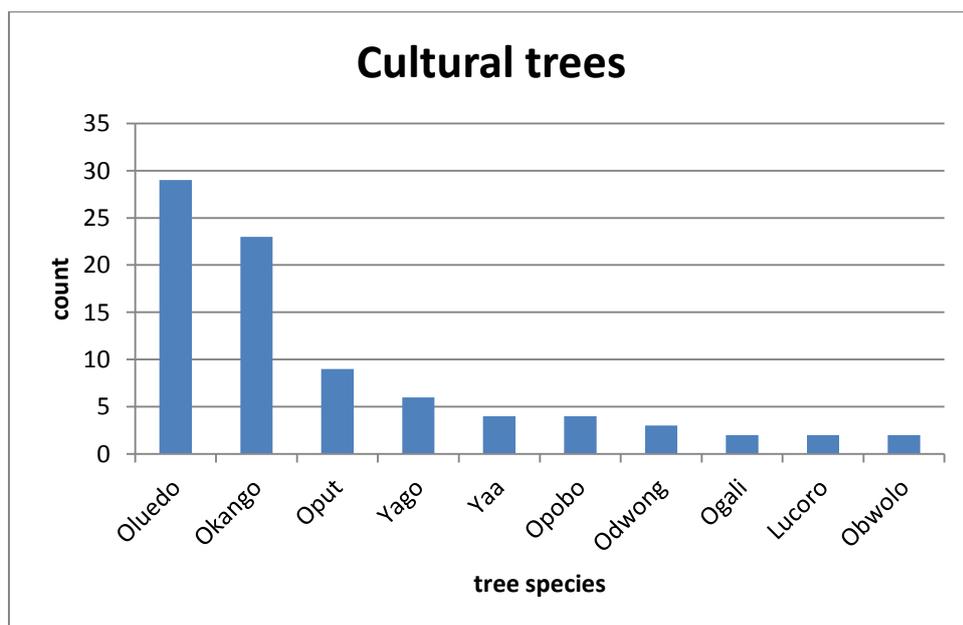


Figure 10 Cultural trees

As is illustrated in the graph, the first 5 tree species Oluedo, Okano, Oput, Yago, and Yaa are most mentioned as cultural important trees.

Below a brief description per species is given.

### ***Oluedo***

(lat. *Lonchocarpus laxiflorus*)

In Acoli culture the branches and leaves of Oluedo were used to bless the warriors before going to war. This would protect the warriors. The branches were woven over the heads of the warriors. The general use of the branches is for blessing.

Many other applications have been mentioned but a similarity could not be found. The tree is mostly not used for other purposes and nowadays the cultural aspect is not often implemented.

### ***Okango***

The Latin name of this species could not be found.

According to the respondents when a twin was born the umbilical cord was buried under an Okango tree.

### ***Oput***

The Latin name for Oput could not be found.

The root of this tree was used for reconciliation rituals. The root was pounded into a drink which was drunk by the members of the aversive groups. This way reconciliation took place.

### ***Yago***

(lat. *Kigelia africana*)

Yago is planted on an empty grave when the person who was thought to be dead turns out to still be alive. When a grave is dug and you bump into a stone, the grave cannot be finished. In this case also Yago is planted un top of the empty grave.

### ***Yaa***

(lat. *Vitellaria paradoxa*)

This tree species produces very nutritious fruits whose seeds produce very valuable oil. This oil is used in all kind of ceremonies.

### 7.7. Which trees do people leave on their field?

On the agricultural fields sometimes trees are left standing. It is interesting to know which trees people leave and why. The answer to this question shows which trees are important, even that important that people leave the tree standing in the agricultural field although the tree in a certain way harms the crop by shade. Also the answer can indicate which trees are getting scarce.

In another chapter the question ‘which trees are getting scarce’ will be attended.

tree species	count
Opok	16
Odugu	16
Ogali	5
Oluedo	5
Owak	4
Oywelo	4
Okoto	3
Yaa	3
Okango	2
Ober	2
Tido	2
Larweco	2

Table 6 Tree species left in field

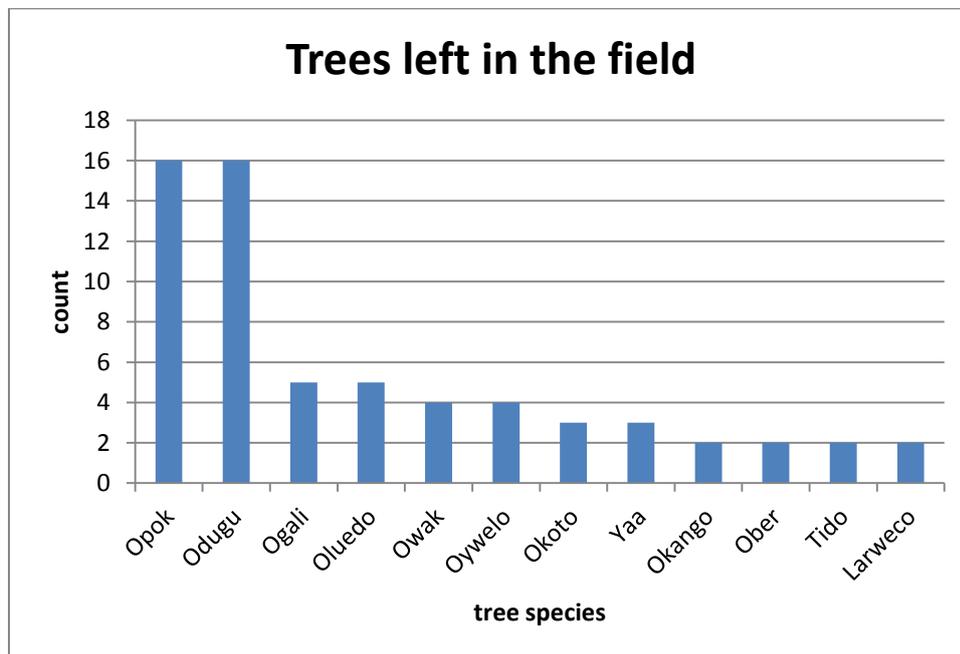


Figure 11 Tree species left in field

As can be seen in the graph tree species Opok, Odugu, Ogali, Oluedo and Owak are not cut down when the agricultural field is prepared for utilization. Four of these trees, Opok, Odugu, Ogali and Owak are also ranked very high in the ranking that is done and these trees are also mentioned in the chapter ‘which trees are getting scarce’ as the trees becoming few.

Together with the question which trees people left on the field, the question, why these species are left, arises.

According to respondents the tree species Opok and Odugu have a high value. The wood is used for many purposes and is of better quality than the wood of the other trees. These two species also do not produce a lot of shade which make them less harmful for the crops.

The other trees are left because of the usefulness of the tree. Oluedo in particular is left because of its cultural value.

Other reasons of letting trees grow amongst the other crops are:

The shade; on the hottest part of the day, after work you can rest under the shade of the tree. Also the water taken into the field is kept cooler under the tree because of the shade.

Nutrition and fertility; the leaves of the trees produce litter which adds to the fertility of the soil. This way the crops will grow better when the trees are not cut down.

Windbreak; the trees protect the homestead and the crops against strong winds

In some cases people cut down everything. The crop is affected too much by the shade of the trees.

## 7.8. How often do people go to the forest?

This question was chosen to be able to conclude if and in what way people are dependent on the forest and natural surroundings. The more people collect from the forest and the more often they go there, the more they depend on it.

This is a hard question to be asked and to be answered as the question is an open question.

First it should be described what it means to go to the forest. In most cases this means that the people really enter into the forest mostly to hunt or to gather forest products. In some cases it means that people go near the forest because they grow their crops next to it (as the soil is more fertile there).

Some respondents also stated that they did not enter the forest in the rainy season as the forest grew too thick.

To be able to make a conclusion of how often people go to a forest a division was made. The answers were sorted so that there are three groups: daily, weekly, and monthly.

11 respondents answered that they went to the forest on a daily bases. It was answered 16 times that the forest was visited on weekly bases and it was answered 5 times that it was visited on monthly bases.

## 7.9. What do people get out of the forest?

An obvious follow up question to how often people go to the forest is the question what people collect from the forest.

Some of the products collected from the area have been mentioned in the 2<sup>nd</sup> interview question 'why is forest important?' In that chapter firewood, building material, charcoal, fruits and food, and bush meat were already named.

The following groups where made to subdivide all the different products named.

Product	Count
Firewood	32
Building mat	26
Food	22
Bushmeat	17
Charcoal	11
Honey	4
Medicines	1

Table 7 Products mentioned

This table can be projected in a graph.

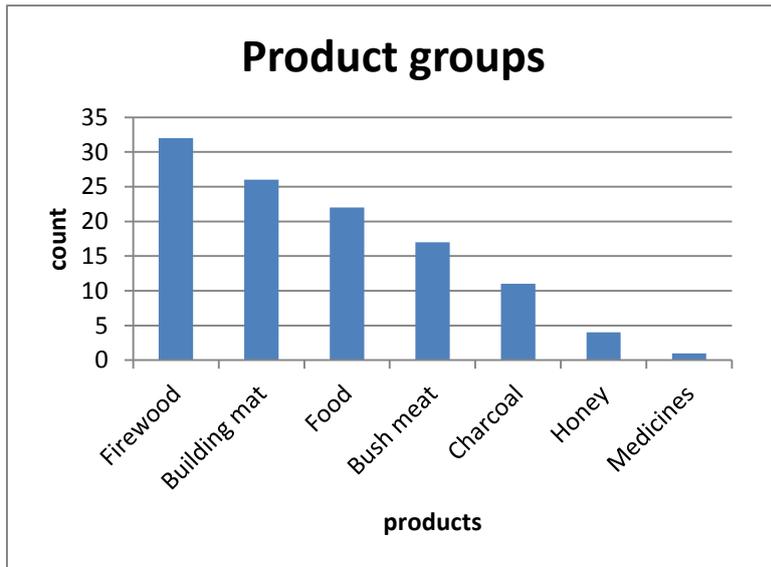


Figure 12 Product groups

### 7.9.1. Who gets which products?

It is also interesting to know which products are collected by whom to have an idea of the distribution of tasks. This can be important because this shows if there is a difference in interest in trees, men compared to women.

There is a small difference in which trees men and women mention in the interviews.

19 out of 25 of men mentioned Opok in their answer. Opok and Odugu are clearly the most mentioned tree species.

Men	
Opok	19
Odugu	16
ogali	7
Opobo	6
owak	9

Table 8 Men species

However, most women mentioned Ogali as an important tree species. 9 out of 14 women mentioned Ogali.

Women	
Opok	6
Odugu	8
ogali	9
Opobo	5
owak	6

Table 9 Women species

The reason for this difference could be the difference of interest. Men are mostly responsible for building while women take care of the firewood and cooking.

The Tasks for collecting products is generally divided as follows:

Men collect building materials and hunt.

Women collect firewood and often Obaro a kind of Yam. Also grasses are mostly collected by women.

Children mostly collect fruits and help their parents wherever help is needed.

### 7.10. Are some trees getting scarce in the forest?

This question is important to ask to know if people are noticing if tree species are getting scarce in the forest. It will also indicate which species are indeed becoming scarce.

Below a table is shown of how often a tree species was mentioned as a tree that is becoming scarce.

tree species	count
Opok	19
Odugu	14
Owak	6
Tido	5
Opobo	4
Yaa	3
Ogali	2
Obwolo	2
Oput	2
Ober	2
Kano	2
Camaweno	2
Kitek	2
Okeco	2
Larweco	2
Ocuga	1
Okango	1
Otit	1
Okoto	1

Table 10 Scarce trees

This table can be projected in a graph to make it clearer.

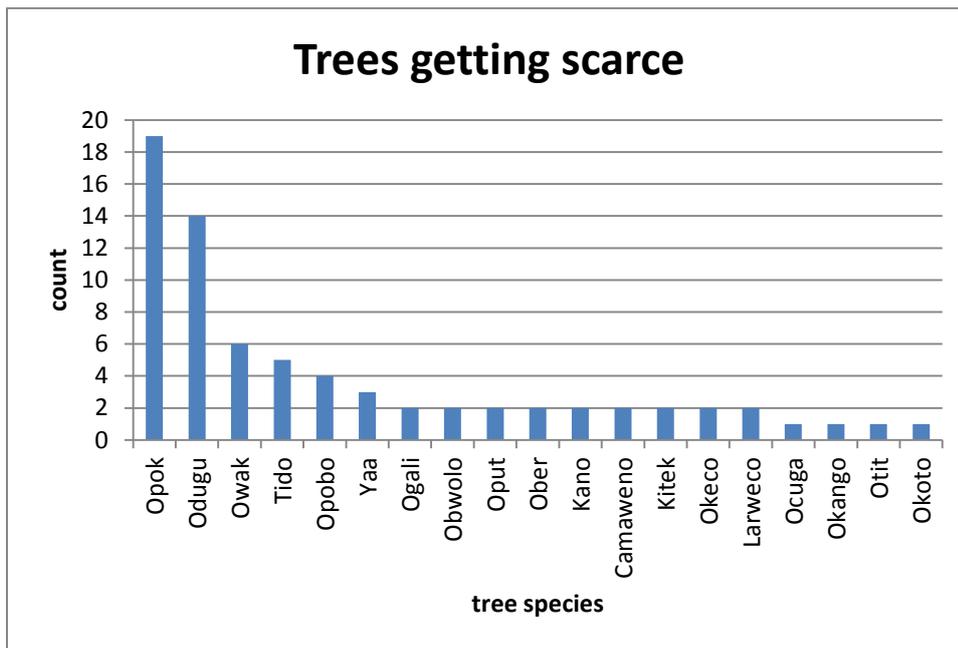


Figure 13 Trees getting scarce

As can be seen in the graph Opok, Odugu, Owak, Tido, and Opobo are mentioned most often. According to respondents these trees are becoming scarce in the forest. If this list is compared to the list of the most important tree species it is evident that the species Opok, Odugu, Owak, and Opobo appear in both lists in the top 5 species. These species are both very important and scarce.

From this fact the question arises if people plant these trees or if they are able to plant these species and if they are interested in doing so.

19 of the 34 respondents that answered the question if they were interested in planting indigenous trees said that it was impossible to do so.

7 respondents answered that they were interested in planting the species they mentioned but that they were not able to plant the seeds. According to the respondents the trees did not have seeds and were planted by God. The trees only grew naturally and could not be planted. In one case a picture of the seeds was shown and the respondent was asked if he had seen those hanging on the tree. The respondent had seen the seeds but had not realized that those were seeds.

4 respondents answered that it was possible and that they were interested. None of the respondents planted the tree species themselves but one respondent knew someone who had planted Opok. 4 respondents mentioned that they sometimes transplanted seedlings from the forest to their homestead.

2 respondents were not interested and 2 stated that it is not possible to plant the trees and would not be interested if it would be possible.

*Answers to the question: are you interested in planting?*

<b>y</b>	<b>n</b>	<b>cn</b>	<b>cn-y</b>	<b>cn-n</b>
4	2	19	7	2

**Table 11 Interest in planting**

y= yes

n= no

cn= cannot

cn-y= cannot but would do if possible

cn-n= cannot and would not

## 8. Conclusion

The research question is: How do local people interact with their natural surrounding and the trees in their surroundings in Gulu district, Uganda?

The general trees species that are most valued and most appreciated are the same in the whole of Gulu district. Odugu and Opok were clearly the most valued tree species being mentioned in 27 and 26 respectively of the total 41 interviews. This was verified by a ranking done with 8 respondents. In this ranking both Odugu and Opok were mentioned as most important tree species as well. Other important tree species, mentioned both in the important tree species list as in the ranking, were Owak, Opobo, and Ogali.

Respondents also noted that the highest ranked trees are the trees that are getting scarce in the forest. 19 out of 41 respondents said Opok is getting scarce and 14 out of 41 respondents answered Odugu is getting scarce in the forest.

Cultural trees that are highly valued are Oluedo, Okango, Oput, and Yago. These species are still valued especially for cultural rituals. These are rituals for war, for reconciliation, for birth, and for burial. These species are mostly not used for other purposes.

The most valued products, of the trees and the natural surroundings, are firewood, building material, and nutrition. People greatly depend on these because there is no electricity, and shops are sometimes long distances away from the homestead. Men mostly take care of the building material while women often have to provide for the firewood which they use for cooking. Children help the parents wherever help is needed. The forest is by most people visited on a weekly base. Sometimes products are sold to other villagers or alongside the road.

Shops are visited for buying goods like clothes, oil, salt, sugar, and soap. The shops are located in so called centers. These centers are mostly far away from the homestead.

People depend on their natural surrounding and on the resources they collect from their surroundings. They use the trees for their livelihood. People like the indigenous tree species but do not know they can be planted.

## 9. Recommendations

As can be read in the conclusion, people value the natural tree species. Yet Tree Talk and other organizations motivate the planting of exotic species (as well). I recommend that the focus will in the first place put on the indigenous tree species. The natural tree species are valued for their quality as are described in the thesis. As people do not know that the indigenous tree species can be planted I recommend education on this area. Older people seem to know more about the traditional use of the tree species and the values. These people could be involved in spreading knowledge on tree use.

Opok and Odugu are highly valued for the quality of their timber that it should thought about to help people plant these species. Another reason for this is the fact that these species are getting scarce.

I would also recommend a more in depth research on the advantages and disadvantages of the indigenous tree species. For example: how fast do they grow in comparison with the exotic tree species that are planted in Uganda.

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