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Traditional uses of indigenous tree species

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Abstract

Until recently, all attention in forest plantation development in Uganda had been given to exotic industrial species, mainly pines and *Eucalypts*. Indigenous tree species which are very important for human life have been accorded low priority in forestry development in the country. Much is known in selecting, breeding and management of exotic tree species but there has been less research in the field of indigenous species. Many of the indigenous tree species are gradually being lost through deforestation and over-harvesting and certain trees and shrubs known to be of high value are being wantonly harvested without replacement and are now threatened with extinction. It is thus important to promote sustainable management and use of Uganda's indigenous tree species or else they will disappear completely. The paper presents results of a survey of traditional uses of indigenous tree species which was carried out in Nakasongola, Mbale, Sironko and Kapchorwa districts and the potential impact of traditional uses on commonly used indigenous tree species on their sustainability. Results indicate that the main uses of indigenous tree species, in Nakasongola district in order of importance are firewood, medicine, poles, charcoal, craft material, food (fruit/honey), thatch, fodder and timber respectively. *Acacia senegal, A. seyal* and *Commiphora abyssinica* are the most commonly used indigenous species in Nakasongola district. The majority 95%) of the products from indigenous tree species are used for domestic purposes. The products are randomly harvested by picking, cutting, digging, stripping and tapping. Except for picking, the rest of the methods used during harvesting are destructive to the entire plant. Findings in the districts of Mbale, Sironko and Kapchorwa indicate that the main uses of indigenous tree species, in order of importance are Timber, Firewood, Medicine, Food (fruit/honey/bamboo shoots), Poles, Craft material, Fodder, Thatch, and Charcoal respectively. *Arundinaria alpina, Cordia millenii, Ficus spp, Markhamia lutea and Albizia spp* are the most commonly used indigenous species in the three districts. The majority (60%) of the products from indigenous tree species are used for domestic purposes while 40% of the products serve commercial purposes. The products are randomly harvested by picking, cutting, digging, stripping and tapping. Except for picking, the rest of the methods used during harvesting are destructive to the entire plant.

Key words: Deforestation, forest plantation, Uganda

Introduction

Although it is difficult to attach a monetary value to the significance of fuel, medicine and other necessities required by local communities, when some indigenous tree species are grown in an effective way, and the potential economic yields are realized, a powerful economic force for export as well as domestic use can be affected. Much is known in selecting, breeding and management of exotic plantation species but there has been less research in the field of indigenous species. Interest has only been focused on local species in the last few years, but they are still far from being well covered due to the scarcity of valid information.

Indigenous trees and shrubs in Uganda have traditionally been a source of materials for building construction, crafts, a variety of medicines, fruits and roots which can be used for food and furniture. Apart form adaptability to local climatic and edaphic conditions, many indigenous tree species and shrubs are known to offer a wide range of uses and services, as most of them are multipurpose. Thus to omit indigenous tree species and shrubs from the discussion of social welfare of rural communities in Uganda is to omit a significant source of raw materials, a major contributor to household income (direct and indirect) and at times, a refuge from poverty.

Unfortunately however, certain trees and shrubs known to be of high value are being wantonly harvested without replacement and are now threatened with extinction. Many of the indigenous tree species are gradually being lost through deforestation and over-harvesting for charcoal, timber and other activities like construction of roads and expansion of ranches and farms. Their harvesting and death also lead to further environmental degradation, which adversely affects the growth of other trees and animals.

Knowledge of traditional uses of indigenous tree species and shrubs has value not only for the culture in which it evolves but

also for scientists and planners striving to improve conditions in rural localities. Every society has a large body of technical knowledge based on careful observation and use of its resources. Every society also has ways of disseminating new information and technologies, whether generated within or without. However, this information is orally transmitted from generation to generation and it is not documented. Thus there is a danger of totally losing this information in the long run. Therefore there is need to document traditional uses of indigenous tree species and shrubs. There is also need for controlled harvesting and domestication as well as sharing of scientific information between traditional users and contemporary scientists.

It is also important to promote Uganda's indigenous tree species or else they will disappear completely.

To save these trees from being depleted they have to be cultivated and domesticated. The domestication process involves three stages which are: identification of indigenous tree species which are commonly used as well as their uses, capturing of germplasm through seed or vegetative propagation and the incorporation of the potential species into existing farming systems. the study objectives were in two folds viz: to inventory, document and understand traditional uses of indigenous tree species in selected areas of the country, to identify and assess the impact of traditional uses of indigenous tress on the sustainability of commonly used species.

Methodology

Location

The study was conducted in the districts of Nakasongola, Mbale, Sironko and Kapchorwa.

a) Nakasongola

Location and population

Nakasongola district was part of Luweero district until early 1998 when it was made an independent district. It borders with the district of Luweero to the Southeast, to north of Nakasongola are the districts of Apac, Lira and L. Kyoga. To the North west, the district borders with Masindi. According to the 2002 census, Nakasongola district had a population of 125,297 people.

Land use

The major landuse practice is livestock grazing (ranching) with periodic transhumance of pastoralism. The indigenous Zebu cattle are largely reared. These are known to be resistant to tropical diseases like trypanosomiasis, but they are small in size and slow maturing and have low yields of milk. Some long horned Ankole cattle also exist in the district. Settled agriculture is also practiced. Besides livestock and agriculture, fishing constitutes another major source of livelihood for people around L. Kyoga.

Vegetation cover

Much of Nakasongola district falls under what Langdale Brown (1960) called the Albizia-combretum woodland. This is a natural climax savannah woodland or woodland of mixed deciduous trees of 3-12m high and grasses of 0.3-1.3m high at maturity. The cover of the grass layer varies with season but is often patchy and is always subordinate to the tree layer. Albizias and Combretums are the dominant trees.

According to the National Biomass study (1998), the district is 36.4% covered by woodland (average height 4m), 13.9 is bush land (average height 4m) 21.9% is grassland. The rest being built up areas, bare rocks and water bodies.

b) Mbale, Sironko and Kapchorwa districts

In the districts of Mbale, Sironko and Kapchorwa, only counties surrounding Mt. Elgon National Park were surveyed. The survey took place in Bungkho county in Mbale, Budadiri and Bulambuli counties in Sironko and Tingei county in Kapchorwa.

The area covered by Mt. Elgon National Park was first gazetted in 1938 when it was called Mt. Elgon crown forest. The area was then estimated at 429 sq. miles or 1,111.1km^2 (111,100 ha). The name was changed to Mt. Elgon Central Forest Reserve in 1948. A further gazetting in 1968 adjusted the area to 457.29 sq. miles or 1,184. 4 km^2 (118,385 ha). In October 1993, 1145 km^2 of the then Mt. Elgon Forest Reserve was gazetted as Mt. Elgon National Park and management transferred Uganda National Parks.

The area is vulnerable to various hazardous processes that can have negative effects on agricultural lands, unique ecosystems, important fishing areas and human resources, and thus on economic stability. These damaging effects include soil erosion caused by rainfall run-off, which also results in downstream sedimentation and water eutrophication. The rate of soil erosion is influenced by the amount of vegetation cover. Removal of natural vegetation (including trees) for agriculture or pasture leaves the soil with less protection from the detaching action of rain drop impact and the transporting action of run-off water and wind.

The soils are fertile carrying heavy populations. Rainfall is very heavy varying from 1250-2000mm per annum. The people are mainly agricultural farmers and agriculture is very intense in the area. Matooke (bananas and plantains) is the staple food. Maize, millet, beans, potatoes and cabbages are also grown in the area. It is a very common sight to see almost every family tethering a cow or two, a few sheep and goats in its courtyard and feeding them on crop residues, bananas leaves and split banana stems a practice which has come up due to the scarcity of pastures. Coffee is still the major cash crop in the area. Land holdings are very small 0.5-2ha. The presence of Mt. Elgon National Park in the three districts has caused localized scarcity of some of the essential community requirements due to restrictions imposed by park management.

According to the 2002 census, Mbale district had a population of 720, 925 people, Sironko district has 2291, 906 people while Kapchorwa has 193,510 people.

The study was conducted through a rapid rural appraisal done in two phases; exploratory survey and household and Group survey

Exploratory survey

In this phase, qualitative methods were used to gather baseline information, identify key informants as well as collaborators and to access a sampling frame for the household survey. The methods included in-depth interviews, direct observations, focus group discussions, informal conversations and documentary review.

The Household survey

The survey targeted the individual users of indigenous tree species. District forest staff assisted the study team to access the users of the indigenous tree species.

The methods used included;

(i) Semi-structured interviews to collect information on household background, tree species preferences, spatial arrangements, indigenous knowledge on tree management, etc

(ii) In-depth interviews and spontaneous group discussions were used to follow up issues of particular interest.

(iii) Direct observation of the salient features of the landscape.

The Group survey

Group discussions were held with a cross-section of users of indigenous tree species, belonging to various categories e.g. cultivators, cattle keepers, landlords and tenants.

Information was gathered as follows;

(i) Using Focus group discussions with farmers, herbalists and extensionists.

(ii) Using Key informant interviews, contact farmers, and district administration to solicit specialist information.

(iii) Direct observation of tree cover, spatial arrangements, etc.

Notes were recorded in the field and discussion held on any unclear issues that arose, before leaving the field.

Sampling Criteria

The units of analysis were households. These were selected by purposive sampling putting into consideration gender and other socio-economic factors like poverty.

Data Analysis

Qualitative data analysis was done manually by coding, extracting, and relating information gathered on the major themes of the study. Quantitative aspects of the data were entered on computer and analyzed using Excel software.

Results and discussion

The commonest indigenous tree species used in Nakasongola district are *Acacia senegal,* A.seyal. (Obugando) and *Commiphora abyssinica.* These species are preferred most because they provide poles, firewood, charcoal and medicine. The commonest indigenous tree species used in Mbale, Sironko and Kapchorwa districts are *Arundinaria alpina, Cordia millenii, Ficus spp, Markhamia lutea and Albizia spp. Arundinaria alpina (Mountain* bamboo) provides a wide range of products like food (shoots) craft material and poles. Cordia millenii is used mainly for timber and firewood (Table 1).

Recent developments in both theory and practice of forest and environmental management have posed challenges related to the integration of indigenous tree species in plantation development and management of natural forest ecosystems. In this light, issues focused on the regeneration, use and management of these species are slowly gaining ground in contemporary forestry.

This study, aimed at inventorying, documenting and understanding traditional uses of indigenous tree species in selected areas in Uganda. The study also aimed at identifying and assessing the impact of traditional uses of indigenous tress on the sustainability of commonly used species. This study has therefore revealed pertinent issues that will help in sustainable management of indigenous tree species and identifying priority indigenous tree species for domestication in the districts covered by the study.

It is apparent from review of relevant literature that little information has been documented on the use of indigenous tree species in Uganda. Although substantial work has been done on growing of exotic tree species for the production of timber and other woody products, little or none has been done on indigenous tree species. Studies done on indigenous tree species have centred on identification. No studies have been done on possibilities of influencing their production on sustainable basis.

Revelations from this study and review of relevant literature indicate that quite a number of indigenous tree species are gathered and utilized by local communities to meet their, health, ethnoveterinary, socio-economic, energy as well as cultural requirements. The majority of the indigenous tree species still grow predominantly in the wild.

Whereas Nakasongola is a distance from Mbale, Sironko and Kapchorwa, there is a lot of similarity in the use of indigenous tree species (Tables 1-5). There are variations in species which may be due to biophysical variations but the major uses i.e. Firewood, charcoal, medicine, crafts etc) are closely related. Regardless of providing essential commodities like fruits, firewood, poles, medicine, timber, and many other products, many indigenous tree species endangered due to poor

Table 1. Traditional uses of indigenous trees in Nakasongola district

Use	Percentage
Firewood	30
Medicine	25
Charcoal	13
Poles	13
Crafts	6
Food (Fruits, honey)	3
Thatch material	3
Timber	2
Stools	1
Fodder	1

Table 2. Purposes of harvesting indigenous trees in Nakasongola district

Purpose	Percentage
Commercial	5
Domestic	95

Table 3. Methods of harvesting medicinal indigenous trees in Nakasongola district

Methods	Percentage
Stripping	38
Picking	37
Digging (up-rooting)	20
Cutting	4
Tapping	1

Table 3. Traditional uses of indigenous trees in Mbale, Sironko and Kapchorwa districts

Use	Percentage
Timber	11.7
Firewood	11.3
Medicine	11.3
Food (Fruits, shoots)	11
Poles	10.4
Crafts	10.4
Charcoal	5.2

Table 4. Purposes of harvesting indigenous trees in Mbale, Sironko and Kapchorwa districts

Purpose	Percentage
Commercial	40.8
Domestic	59.2

Table 5. Methods of harvesting medicinal indigenous trees in Mbale, Sironko and Kapchorwa districts

Methods	Percentage
Digging (up-rooting)	47.1
Picking	36
Stripping	15
Cutting	1.9

methods of harvesting like continuous debarking, uprooting, and cutting without re-planting.

This severely compromises the possibility fro conservation and sustainable utilisation.

The study has also revealed that most of the products from indigenous tree species have not been commercialized even those with high potential such as *Acacia senegal* and bamboo shoots. In addition to subsistence consumption of these products, the technology and skills of harvesting, processing and utilizing the products are still modest and very wasteful. There is need for improved methods and technology for harvesting and processing these products from indigenous species. This is in addition to diversification of products from these indigenous species and putting them to maximum use. For instance Acacia senegal which is known for producing gum arabica, a high value product is simply used for charcoal and firewood in Nakasongola. In Mbale, Sironko and Kapchorwa, the quality of products from bamboo is so low and could be improved with some technological inputs from China or Taiwan.

The population of Mbale, Sironko and Kapchorwa is heavily dependent on indigenous tree species for energy, medicine, crafts, food (bamboo shoots). The main source of these products is Mt. Elgon National Park. This source is however characterised by heavy restrictions imposed by Uganda Wildlife Authority (UWA). Results also indicate that prospects of sustainable use of indigenous tree species are very limited as many of them are slowly being lost because the

ecosystems which provide them are receding rapidly through deforestation or conversion to "less stable forms" and poor knowledge to continuously propagate them. Yet some of them are more superior attributes compared with their exotic substitutes.

Recommendations

There is need to take advantage of the shortage of some essential tree products from indigenous tree species such as fruits, wood fuel, medicines and fodder and use the opportunity for the promotion of domestication of these species.

For domestication to succeed, there need to select those tree species which are relevant to the communities in terms of utilization or those which meet the real needs of the users.

In the short run, there is urgent need to build local capacity for improved harvesting, processing and utilization of these tree species. The most logical approach seems to be equipping local users with knowledge and equipment for the purpose. Promotion of indigenous tree products requires improvement of processing efficiency for quality raw materials and products, better marketing and thus empowerment of rural communities to earn higher incomes but with due sensitivity to a need to conserve and increase the quality and quantities of the resource.

Therefore, building local capacity through noting existing skills and those preferred, products and alternatives and costs of improving them is the priority. When interventions produce tangible benefits this constitutes incentives not only for diversifying products but also conserving the resource better. Expertise in value addition of and diversification of products from indigenous tree species is scanty in Uganda therefore collaboration with regional and international agencies like FAO and INBAR will be important for successive development of local industry.

Not much is known on how to propagate indigenous tree species and it still difficult to help rural communities to produce them in large quantities and reduce dependency on wild sources. This therefore calls for efforts in research and development to produce the right technologies for propagation, management and value addition. This may include identification of existing superior indigenous tree stands as sources of high quality planting material, determining suitable seed collection times of the various indigenous tree species, collection of small representative samples for testing and experimentation purposes and investigating the most appropriate methods of raising suitable planting stock of various indigenous tree species by either seed or vegetative propagation for breeding, conservation and operational planting.

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