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The Use of Non Wood Forest Product as Income Generation in Semi Arid Zone Case Study Umkaddada Locality, North Darfur State, Sudan

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Abstract: *The study were carried out at Arais area north Umkaddada town, the objective was to study the non wood forest products for their role in income generation, type of fruits, Grasses and other parts of trees available in the area and their contribution to income generation. The study showed that Grewia tenax, Baid grass, Acacia tortilis, Balanite aegyptiaca, Sclerocarya birrea and Ziziphus spini christi were the most subsidiary source and presented that the mother trees of the some species were highly affected.*
The study area lies eastern part of the State. It is geographically located within 12th and 15th degree of latitude N, 25th and 28th degree of longitude E. Covering an area of 40,000 squire km. It is bordered on the east by North Kordofan State, on the south by eastern Darfur State on north and west by Milliet and Ekoma localities respectively.
Key words: *income generation, subsidiary source, Grewia tenax, Ziziphus spini christi, Adansonia degitata*

I. Introduction

There is a wide range of non-wood forest products and services differing in their source, nature, characteristics and utilization. Their conservation, management, utilization, trade and socio-economic roles present a complex array of problems and potentials. From time immemorial these products and services have contributed greatly to human welfare and progress.

Once designated as minor forest products (MFP), this very important group of forest benefits has recently been receiving increasing recognition and attention. Depending on the scope and coverage they are grouped and defined differently. The term non-wood forest products (NWFP) generally includes all tangible products other than timber, fuel wood and charcoal derived from forests or any land under similar use as well as woody plants. The term non-timber forest products (NTFP) include all tangible products other than timber and include wood energy (fuel wood and charcoal). The other term in use, non-timber forest benefits, includes, in addition to all tangible products other than timber, environmental and socio-cultural services Abdelmajed, (2001). Rural people at Umkaddada Locality are influenced by degradation of the agricultural lands, fluctuation of rainfall and loss of their domestic animals therefore most of them support their life needs through collecting grass, hunting wild animals and gathering tree fruits, they practices these activities each in different seasons, most of them marketing their products rather than satisfy them self to get money for other needs.
The various types of non wood forest products in the area are not studied to know its trend on term of density, frequency, productivity and market needs.

Situation of Non-Wood Forest Products

Globally, many products which figured prominently in the past have undergone a substantial decline in production and trade over the last 20 years. There are several factors constraining the sustainable development of NWFP, especially of those of purely forest origin FAO,(1991).

Due to overemphasis on timber production in recent times, non-wood products were neglected by foresters and policy makers leading to lack of attention on their scientific management and conservation. Extensive gathering and inappropriate management regulations have often caused resource depletion. Gathering or extraction of natural resources can only support low human population densities, and increasing population pressure have negatively affected the sustainability of NWFP resources FAO, (1992).

Organized and unplanned land use changes also have caused destruction of the proper habitat for NWFP. Lack of integration of wood and non-wood products in forest management, wasteful harvesting, lack of stability and reliability of supply, and lack of efficient and proper market chains are other constraints on the supply side IBGR, (1984). There is lack of processing and storage technology and facilities; quality standards of products are often poor. Most traditional NWFP activities are labor intensive and cheap, so they tend to be inversely related to general economic development. They tend to become early casualties in the process of economic development, and succumb to competition, unless measures are taken to improve them to the new needs and situations FAO, (1991).

II. Methodology

In October 2011 three sites within Umkaddada area were selected Abo Odam, Arais and Eldandanga. The first area was 45 km east Umkaddada town; the second was located at 25 km North West to Umkaddada and the last one 20 km north east. Equal area of 100 fedans was selected (among pocket site in each selected area). Tree density and frequency was studied and total of 200 house hold heads were investigated for socio-economic impact. The pocket site in each area was described as rich of trees and grass.

2-1 Tree density and frequency:

Tree density index is defined as the number of individual species per unit area, while frequency is term used in sense of presence or absence of individual species. For obtaining tree density each site was divided into 42 equal units, a quadrate of 10x10m was placed randomly at each unit and the individual species inside the quadrate were counted and recorded, then tree density was calculated by dividing the total individual species over the total of quadrate for each site separately at the same time species which present in each quadrate was recorded.

2-2 Socio-economic study:

Socio-economic study was conducted in the study area; a set of questions was prepared covering all aspects related to the income generation and non wood forest products which contribute on their livelihood.

200 house hold heads were selected randomly and interviewed, (Abo Odam 75 head, Arais 75 head and Eldandanga 50 head) the target group were selected according to population size in each area.

III. Results And Discussion

Table (1): Subsidiary source of income generation for local people at Umkaddada Locality

source of income	Abo Odam	Arais	Eldandanga	**Frequency**	**%**
Collecting grasses and tree fruits	92	43	27	162	81
Work as laborers	3	6	13	22	11
Gold Mining	14	0	2	16	8
Total				200	100

Table (1) showed that 81% of the investigated heads in the three sites said that they depend mainly on collection of grass and non wood product, and all of them are mentioned that during the rainy season collect grass and sale it in local markets, while at late of rainy season they depend on fruits of Acacia tortilis, Which is preferred by domestic animals as good fodder.

The target group at Abo odam site stated that during the rainy season children and old women stay beside the stream to capture Adansonia fruits by using branch of shrubs when it is floating on running water of Abo odam wadi.

At early dry season December and January investigators stated that they depend on production of Gum Arabic as cash crop and sale the fruits of Grewia tenax, Balanite aegyptiaca, Ziziphus spini christi and Adansonia degitata, during the hot dry season which stored from the period of darat (harvesting period) Humied and Haraz fruits are collect and marketed later before the rainy season the time of its ripping and falling.

11% of the investigators said that they used to work as labors at cities such as Umkaddada, Elobied and Khartoum to generate income during the dry season while in rainy season depend on farming, and only 8% of the target group stated that they depend on Gold mining especially people of Abo odam because near to mining areas like Umbadir and Sikango mountain.

The target group in Arais and Eldandanga stated that the production of Grewia fruits, Gum Arabic and Nabag have decreased year by year because pockets are found among the Range land which occupied by animals while harvesting.

All the investigators of the study areas ranked the price of non wood product in their area as fallow table (2)

Table (2): the product price estimated in local measurement units/SDG at markets of the study areas

Species	Abo Odam	Arais	Eldandanga
Gum Arabic/ sag	250	245	245
Gidiem fruits /kora	25	40	55
Sayal fruits/ kora	01	02	03
Nabag fruits/ kora	03	05	08
Humied fruits/ koam	02	05	05
Higlieg fruits/ kora	03	06	09
Tebaldi fruits/ kora	08	12	15

Table (3): tree density/ ha at three sites of study area

Species	Local name	Abo Odam	Arais	Eldandanga
Acacia senegal	Hashab	91	53	24
Grewia tenax	Gidiem	82	64	41
Acacia tortilis	Sayal	31	18	09
Ziziphus spini christi	Nabag	28	12	16
Sclerocarya birrea	Humied	23	11	46
Balanite aegyptiaca	Higlieg	47	13	07
Adansonia degitata	Tebaldi	23	0.0	09

For the measurement of both tree density and frequency the study was focused only on target species which mentioned by interviewer as source of income generation and other species are neglected. Therefore table (3) showed that Acacia senegal and Grewia tenax are the most dominant species, this because Acacia Senegal (Hashab) was owned by individuals who occupied the areas in the past in term of land tenure, they are not allow to anyone to cut or to remove part of it, and Grewia tenax is shrub of many stems of less value and will not subject to cutting because most of people know its valuable support particularly in term of blood recovery.

With regard to Acacia tortilis (Sayal), Sclerocarya birrea (Humied) and Balanite aegyptiaca (Higlieg) these species are used as fodder and some of them are editable although it has other uses. Adansonia degitata (Tebaldi) was very rarely appear as mother trees in all three sites, without regeneration observed, because physiologically described as high water demander, Andrews (1965).

Table (4) tree frequency (%)/ ha at three sites of the study area

Species	Local name	Abo Odam	Arais	Eldandanga
Acacia senegal	Hashab	49	38	26
Grewia tenax	Gidiem	46	32	17
Ziziphus spini christi	Nabag	19	16	12
Acacia tortilis	Sayal	14	08	17
Sclerocarya birrea	Humied	11	06	04
Balanite aegyptiaca	Higlieg	26	7	03
Adansonia degitata	Tebaldi	7	0.0	0.2

Table (4) showed that Acacia Senegal, Grewia tenax, Ziziphus spini christi and Acacia tortilis are present with suitable frequency while the other species with very low frequency this because there are continuous needs for their wood product as building pole, fire wood and equipment handles.

IV. Conclusion

Measurement of tree density and frequency showed that Acacia senegal and Grewia tenax has good distribution all over the pocket areas, and consider as dominant species.The investigators all over the study sites mention that the non woody parts of Acacia Senegal, Grewia tenax, Acacia tortilis, Ziziphus spini christi and Adansonia degitata are the most used as subsidiary income generation from time to time around the year.

Adansonia degitata is very rare in the area but the fruits come with running water (Abo Odam stream) from Kordofan areas.The sustainability of these activities it not long due to the bad management with regard to natural resources in the area like continues cutting of trees, intensive grazing and debarking of some trees like Adansonia degitata on the other hand the fluctuation of rainfall and degradation of the lands which causing desertification.

V. Recommendations

- There is a need to use an appropriate program for replanting and protection of the forest trees as general with special attention to the pocket areas.
- Sustainable extension program is needed among inhabitants to guide them to adopt the protection of all tree species to keep the area from the desert.
- Cooperative management for natural resources including the different sectors such as (Forestry, Range, Agriculture, Animal production, Soil conservation and extension) is very important.

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