

## CHAPTER ONE

### INTRODUCTION

Sudan is the largest country in Africa and the ninth largest in the world with an area of about 2.5 million km<sup>2</sup>. It exhibits a wide range of variation in its topography, climate, soil and hydrology. These characteristics variables are reflected in Sudan's diversified ecological habitats, vegetation zones and consequently in rich flora.

Studies on the flora of Sudan were few and represented in the work of Broun and Massey (1929), Andrews (1950, 52, 56), which may be regarded as the standard reference Floras of the area. Recently El Amin (1990) made valuable attempts to update the trees and shrubs of the Sudan.

Studies on regional floras include the work of Crowfoot(1928), Obied and Mahmoud (1968), Sahni (1968), Ahti et al (1973), Hassan (1974), Wickens (1976), Thirakul (1984), Bebawi and Neugebohrn (1991). In addition to a great accumulation of unpublished scientific contributions (thesis, dissertations, reports), towards various aspects of flora which include: Al Awad(1981, 1995), El Ghazali (1983, 1985), Kordofani (1985), Ahmed (1985), Gumaa (1988), Ibrahim (1996), Elsaddig (1997) and Elsafori (2000).

The study area (Soba) has been selected for the present study for a number of reasons: There is a large number of specimens previously collected from the study area, in various herbaria that need to be updated and incorporated in the main Flora of Sudan.

The present study was designed to fulfill the following objectives: To document the woody plants of the study area and to contribute to the updating the Sudan Flora. To survey the medicinal folkloric uses of the woody plants of the study area, in attempt to highlight their economic importance.

The present study consists of six chapters; after the introduction, chapter two includes a brief description of the study area location, climate factors ( rainfall, temperature, relative humidity, evaporation, winds, cloud and sun shine), topography, geology, geomorphology, soils, inhabitants, present land use and human activity, communications and water resources. In chapter three the vegetation of the study area. Chapter four was about the materials and methods applied. Chapter five presents the results which include the taxonomical results and brief botanical descriptions of species with special reference to their medicinal uses, the synonyms, vernacular names, habits an habitats and geographical distribution. Botanical names and synonyms have been updated in accordance with recent available literature. Identification keys to various genera and subsequent species for each family are also constructed. The families, genera and species are arranged alphabetically. Photographs, general uses and medicinal folkloric uses were also included. In chapter six, the results obtained were discussed and conclusions were drawn. It is hoped that this work will contribute positively to floristic studies in various parts of the country in attempt to add to and update the Flora of Sudan.

## **CHAPTER TWO**

### **THE STUDY AREA**

#### **2.1 General:**

The study area is confined to Soba area; it is a part of Khartoum State. It lies between latitudes 15°28'34" and 15°31'23" N and longitudes 32°41'01" and 32°36'14" E. Map (1), Map (2) It's boarded from the east by the Blue Nile and from the west by the White Nile.

#### **2.2. Climate:**

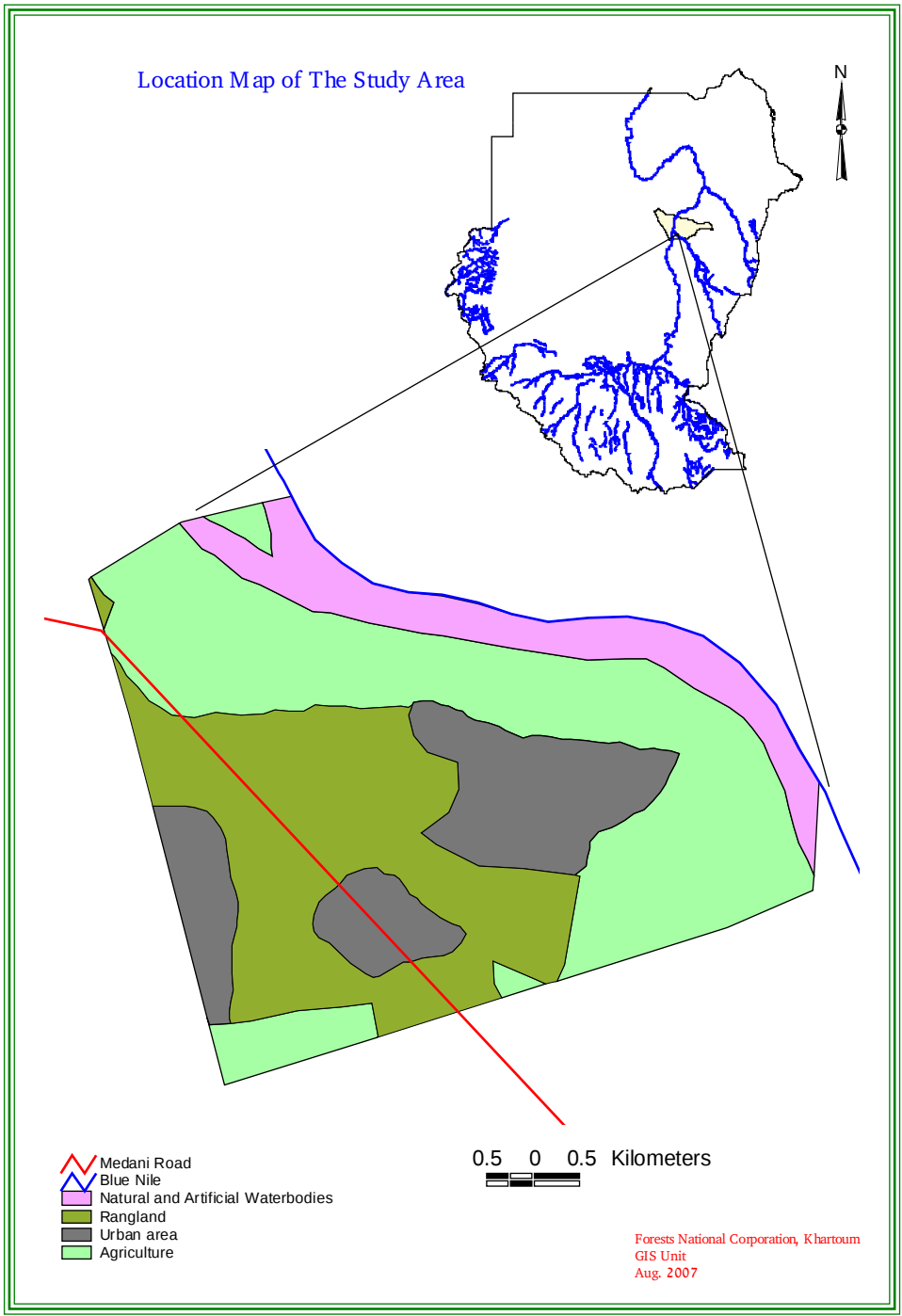
The climate is a typical tropical continental characterized by warm dry winters and hot rainy summers.

##### **2.2.1 Temperature:**

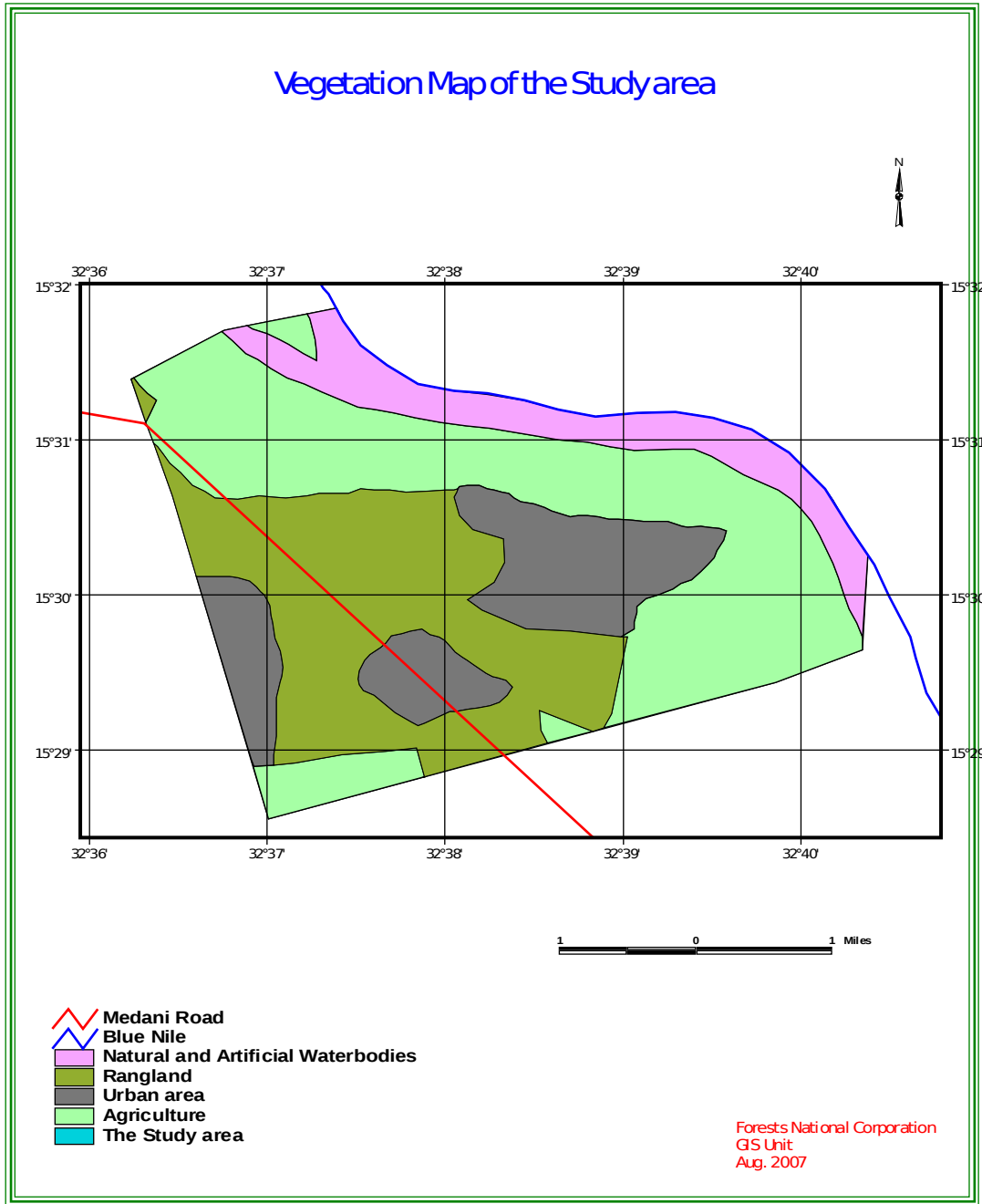
The summer season is the longest season and hence air temperature values are usually high (monthly mean maximum is 34.7°C) and characterized by large daily and annual ranges. The monthly mean temperature values are relatively low (23.3-24.6°C) from December to February and the coolest month is January. From March to November they are higher (28.3-34.7°C) with May and June being hottest months (Fig 1) (Abdalla, 1997).

##### **2.2.2 Rainfall:**

The low rainfall is confined to a short rainy season (July-October) and is characterized by few heavy rainstorms or frequent light showers. The monthly and yearly rainfall is greatly variable, however, the monthly mean maximum (about 59.4mm) is usually reached in August. (Fig.2). (Abdalla, 1997).

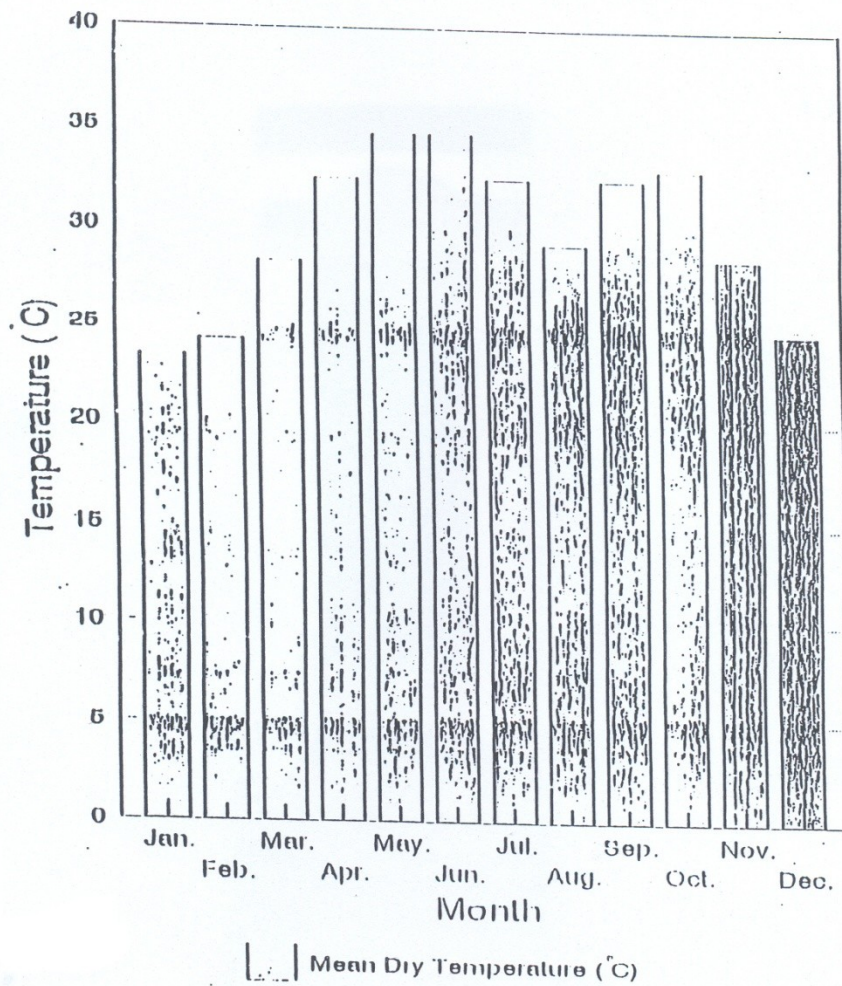


Map (1)



**Map (2)**

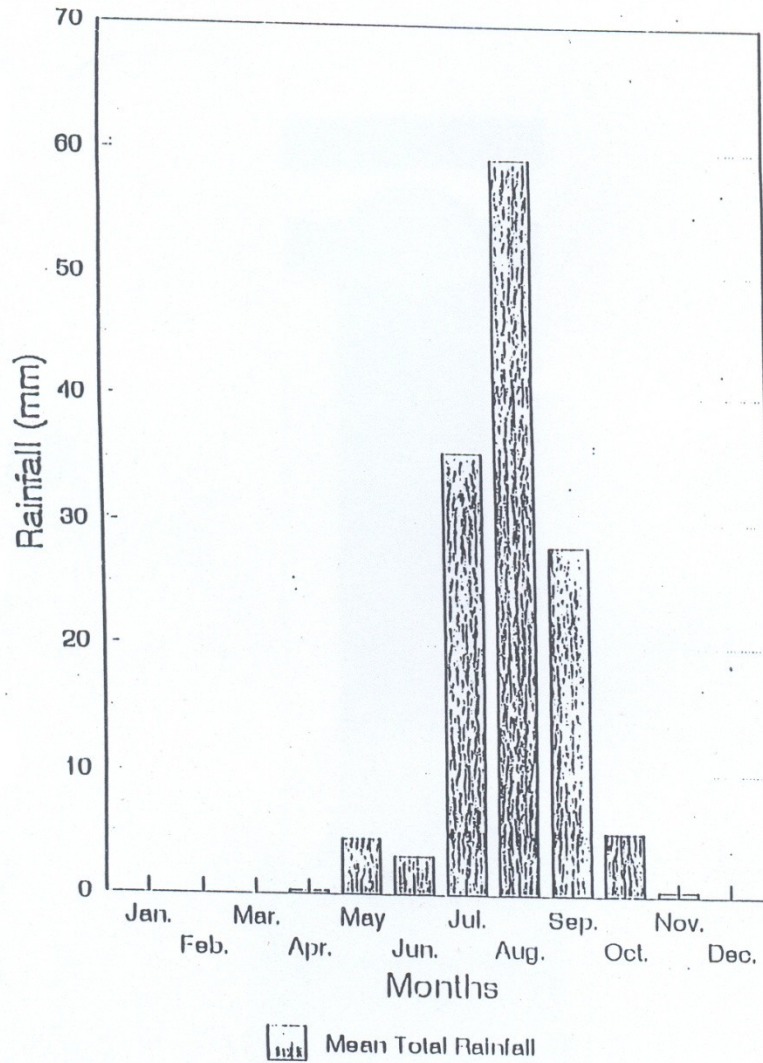
Fig. (1): Mean Dry Temperature for the year (1971-2006)



Source: Khartoum Metrological Department (2007)



**Fig. (2): Mean Total Rainfall for the year (1971-2006)**



**Source: Khartoum Metrological Department (2007)**



### **2.2.3 Relative humidity :**

The relative humidity values are generally low, reflecting the general aridity of the climate. The monthly mean values are usually low from October to June, reaching a minimum (about 17%) in March and April, and relatively high from July to September, reaching a maximum (about 48%) in August,( Fig.5). (Abdalla, 1997).

### **2.2.4 Evaporation:**

The mean daily evaporation is the highest in April (21.3 mm) and the lowest in August (6 mm). (Abdalla, 1997).

### **2.2.5 Winds:**

The winds at the study area prevail from different directions at different times of year. The north- east or northerly trade winds prevail during the winter, where as the south and south east winds prevail during the autumn. The dust storms are common in the study area during the summer season. (Abdalla, 1997).

### **2.2.6 Clouds and Sun shine:**

Clouds prevail almost 6 month in the year, where the mean sunshine is 3650 hours/year. (Abdalla, 1997).

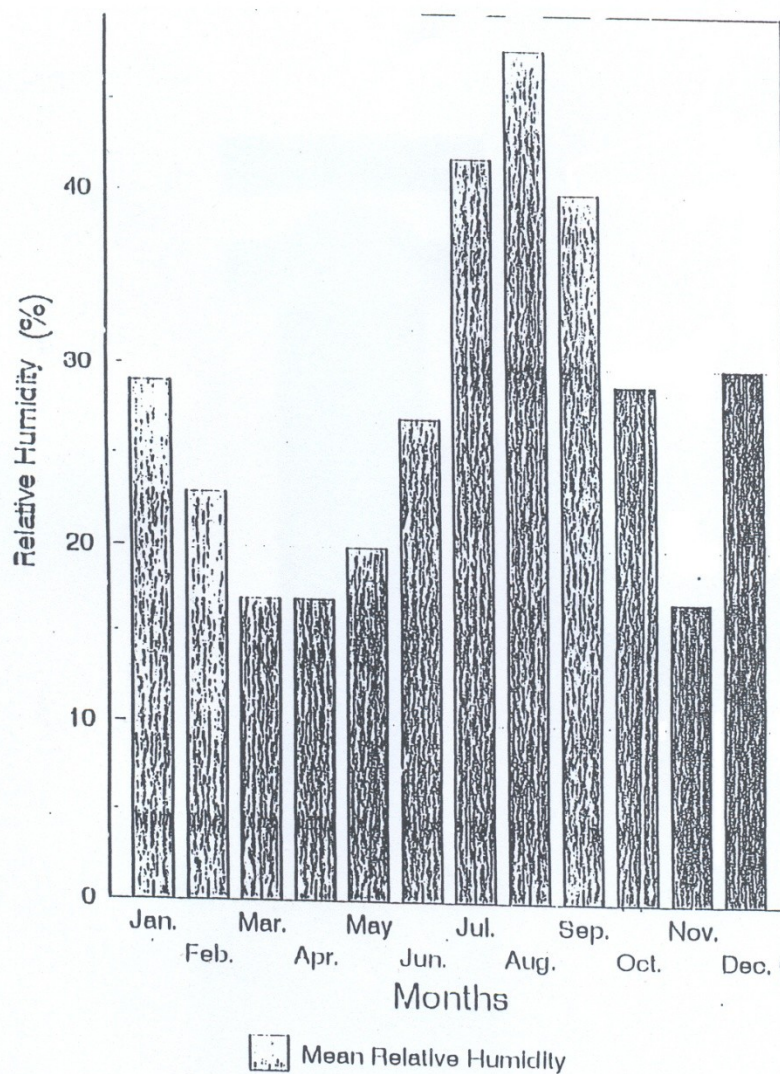
## **2.3 Geology:**

The study area is an open flat country. The formation of the study area is mainly (mudstone) refers to rock made of fine-grained particles (clay or silt) which, although neither fissile nor laminated, is massive. The colors of the mudstones vary from white and to purple. The dark colors are due either to the decay of organic matter or to the iron oxides which percolate from the iron-rich sandstones of upper layers. The eastern side of the study area is a part of the western fringe of that

extensive clay plain. Here the Nubian sandstone formation is covered with alluvial deposits called, Gezira clays. The Gezira clay formation consists of clay, sand and gravel.

The clays are alkaline, dark colored and low in organic matter. Shukri(1950) remarked that the clays change color with depth from brown. The sand is mainly composed of angular and sub-angular quartz grains which vary in size from fine to medium. The sand grains are white, yellow or pink when washed, but in the logs they are brown or grey due to their contamination with clay. The gravel consists mainly of quartz pebbles which are usually white or yellowish in color. The thickness of the formation varies considerably from one location to the other. (Obeid and Mahmoud, 1968).

**Fig. (3): Mean Relative Humidity for the year (1971-2006)**



**Source: Khartoum Metrological Department (2007)**

## **2.4. Geomorphology:**

Khartoum province comprises a part of the extensive plateau of the central Sudan (average height 380-400meters above Sea level) and apart of the alluvial plains of the Gezira.

The land which lies between the White Nile and the Blue Nile (part of the Gezira plain) and the plain east of the Blue Nile and the main Nile is almost flat except for sand drifts. This area is drained by small water channels and shallow wadis that are not as obvious land-form units as the wadis of the western part. The channels of these shallow wadis area recognized by their scrub growth or by careful leveling. Their water often overflows their sides; flood sheets area common in the rainy season, causing the growth of extensive areas of ephemeral grasses and herbs. The pattern of this (diffuse) ephemeral growth is different from the western side where as drainage systems are better defined. The Gezira plain is also characterized by the presence of an under groundwater reserve. The standing water level in boreholes varies from 7 meters near the banks of the Blue Nile to 14 meters away from this Nile. At the study area in Gezira Formation which has a thickness of 18 meters, the standing water level is 14 meters. (Obeid and Mahmoud, 1968).

## **2.5 Soil:**

High level dark clays occur above the present flood level of the river between the Blue and White Nile and along eastern side of the main Nile. The soil has a high salt contains calcium carbonates and gypsum. The soil may have sandy surface, specially south and south-east of Khartoum. These soils are generally grey in color becoming browner southwards and they have affinities with the cotton soils of the Gezira. .Obeid and Mahmoud ,(1968).

## **2.6 Present land use and Human activity:**

According to Mohamed Dafalla, 2007, (Personal communication).

Farmers trade Union, economic activity being carried out in the area is the live stock rearing (animal keeping).The main species of the animals kept in the area include cows, sheep, and goats. The animals are sold in the form of meat and milk or live animals. People are also engaged in poultry for the production of eggs and meat, farming for vegetables and horticulture this beside bricks making.

## **2.7 Communication and water sources:**

### **2.7.1 Accessibility to the study area:**

The area is connected by the Khartoum –Soba – Medani High way and rail way.

### **2.7.2 Water sources:**

Blue Nile is the main water source in the area.

## **2.8 Population:**

The population of study area is about 12,500 inhabitants (2007).

## CHAPTER THREE

### Vegetation of the Study Area (Soba)

The first attempt to produce a description and map of vegetation of the Sudan was in (1948) by F. W. Andrews and the classification with slight modification was followed by Smith (1949). A decade later, Harrison and Jackson (1958) produced some what similar classification of the vegetation. Wickens (1991) found that informal classification of Harrison and Jackson (1958) required reorganizing into a hierarchical system. This modification was developed for use in a number of FAO and UK over –seas development Administration (ODA) projects in the Sudan, including United Nations Development program (UNDP). These studies resulted in a revision of the vegetation map of the Sudan in 1977.

Andrews (1948) classified the area as Acacia Desert Scrub Region, the chief floristic character being the dominance of Acacia spp. The vegetation, however, in general scattered and with scanty shrubby flora of these shrubs, *Acacia nubica* occupies the lighter soils. Other common trees and shrubs are *Ziziphus spina-christ*, *Boscia senegalensis*, *Balanites aegyptiaca*, *Cadaba farinosa*, *Salvadora persica*, *Calotropis procera*, and *Ficus sycomorus*. In areas with clayey soils subjected to inundation, the dominant tree is *Acacia nilotica* which is replaced by *Faidherbia albida* and *Acacia seyal* at higher ground..(Map. 5)

According to Smith (1949) the study area belongs to *Acacia* Desert Scrub. The commonest species are *Acacia raddiana*, *Maerua crassifolia*, *Capparis decidua*, *Acacia senegal* and *Boscia senegalensis*.

Harrison and Jackson (1958) classified the area as the semi-desert region. This has been divided into five sub-divisions on various desert regions. The area under study belongs to the sub- division *Acacia tortilis-Maerua crassifolia*. Desert scrub. The species reported in this region were *Capparis decidua*, *Ziziphus spina-christi* and *Balanites agyptiaca*, *Acacia nubica* and *Calotropis procera* on clay drainage

lines. Map. (3).

Noordwijk (1984) the area under study belongs to semi- desert or semi-arid land with annual rainfall of 90-300 mm. The Woody species include *Acacia tortilis* and *Maerua crassifolia* .(Map. 6)

According to Wickens (1991) the area is classified as *Acacia tortilis* scrub and grass land. The woody species were *Acacia totilis*, *leptadenia pyrotechnica*, *Salvadora persica*, *Maerua crassifolia* and *Capparis decidua*. Map (4).

The vegetation of the study area was described as a part of the regional vegetation zones of the Sudan by various authors( Andrews, (1948); Smith, (1949); Harrison and Jackson, (1958),Noordwijk (1984) and Wickens (1991). He shows that close relationship existed between the plant growth and land forms. Halwagy, (1963) recognized three physiographically different ecosystems in the semi-desert north-east of Khartoum. The desert plain, the Khors, and Jebels. Further he divided the desert plain into clay plain and sandy plain and described the vegetation on each of these four habitat regions. Halwagy (1963) also studied the effect of man and grazing animals on the natural vegetation of Khartoum district. He compared the performance of the vegetation inside and outside a fenced area and discussed the importance of plant cover in relation to soil conservation. They showed that the pattern of the shrubs did not prove the commonly postulated regularity. They found that the pattern of the seedlings of *Acacia ehrenbergiana* were more intense than that of large trees. This was attributed to competition between individuals.

They also showed that there is no relation between the pattern of *Acacia erhenbergiana* and *Capparis decidua*. The observed patterns could not be explained only by the grouping of individuals around parent plants or by run off, but also by variations in the soil factors which result in variations of soil moisture which is an important factor in controlling the distribution of vegetation. The general features of the vegetation of Khartoum province is classified into two

vegetation regions:

1- The flood plain: this is mostly under cultivation except for small strips and patches which are not cultivated and developed reverine open forests. This type of forest is four layered: the tree layer which is dominant and includes *Acacia nilotica*, *A.seyal*, *F.albida*, with occasional *Balanites aegyptiaca*. The shrub layer which is mostly well developed and it is composed of *Calotropis procera*, *Ziziphus spina-christi*, *Ricinus comunis*, *Abutilon pannosum* and *Tamarix nilotica*. The upper field layer comprises *Cassia spp*, *Argemone mexicana*, *Bergia suffruticosa*. The field layer which is well developed specially during the post flood period and it is represented by *Cyperus rotundus*, *Cynodon dactylon*, *Echinochloa colonum* and *Solanum nigrum* and *Xanthium brasilicum*.

The vegetation of Khartoum province is representing thirteen community types which can be recognized in the field on the basis of the vegetation and habitat. These communities seem to repeat themselves with reasonable similarity whenever the habitat is repeated. The vegetation of the study area seems to be subjected to three types of changes: Seasonal, accidental and successional. The seasonal changes are perceptible changes in aspect of the vegetation which are attributed to rhythmical changes in the climate and the behavior of the plants. These changes are reflected in the behavior of both the ephemeral and the perennial species.

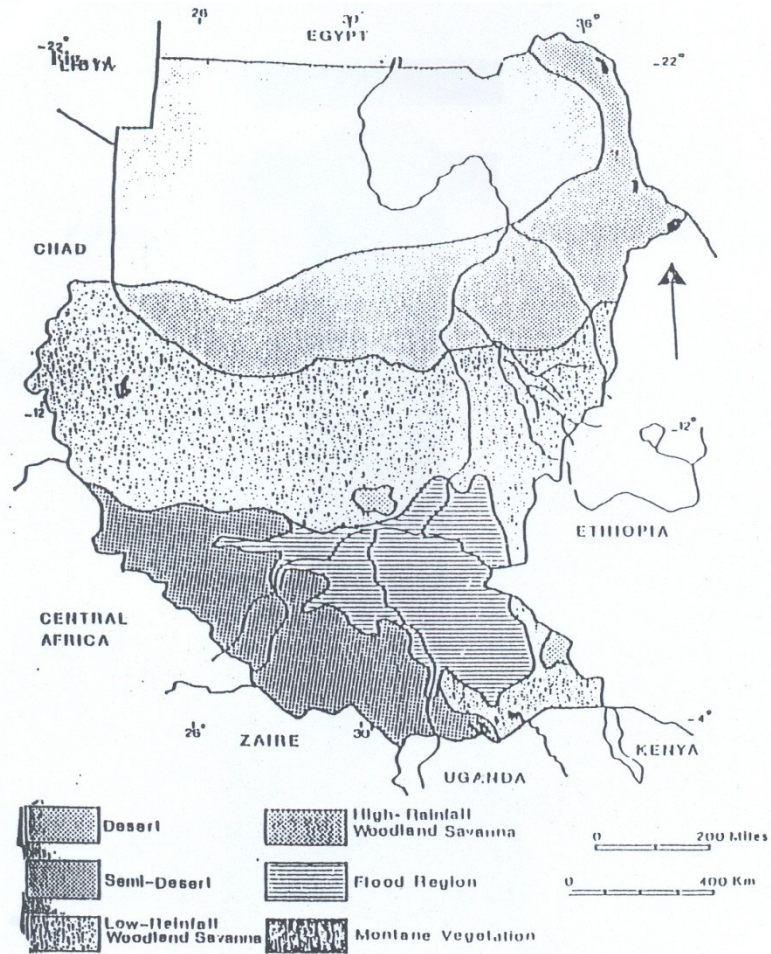
Accidental changes are mainly attributed to the variation in the rainfall. In year of good rainfall a chance growth of vegetation, especially ephemeral occurs, where as in dry years when rainfall is below average little ephemeral growth is observed. The vegetation also practices progressive and retrogressive succession changes. The former are attributed to the gradual building up to the soil as a result of the accumulation of soft alluvial material transported by wind and /or water. On the other hand, retrogressive changes are caused by the removal of surface deposits by the consequence of human interference manifested in removing the soil or the plant



cover. All the authors are very close in their classification for the vegetation zones of the Sudan. However, the floristic composition of the described vegetation zones is more relevant to the study area.

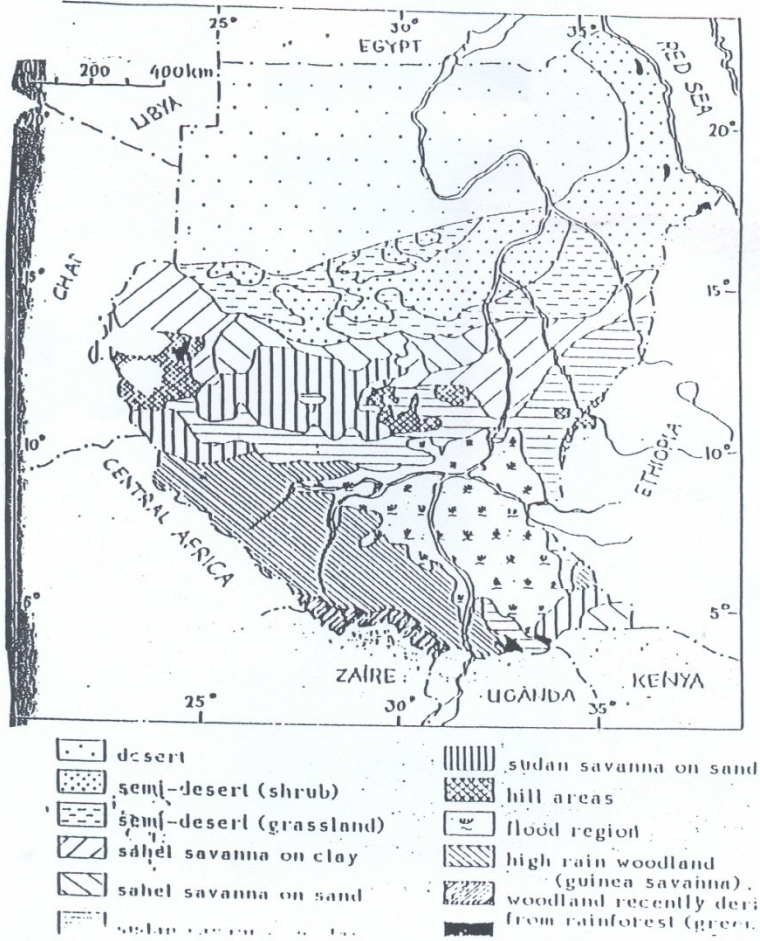
Map (3)

The vegetntional zones of the Sudan (modified after Harrison & Jackson, 1958)



ECOLOGICAL ZONES (Noordwijk, 1984)

Map (4)

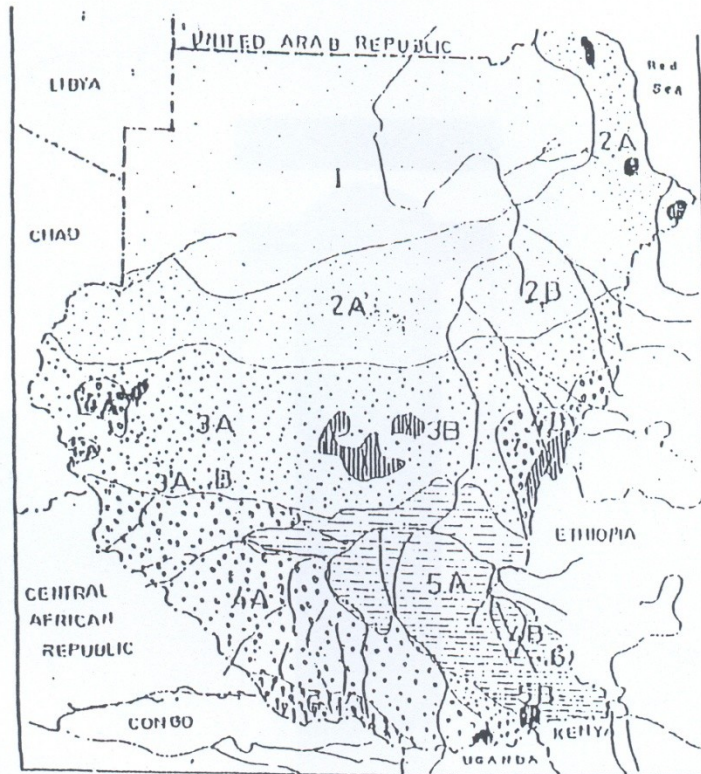


Map (5)



Sudan Vegetation Map (Andrews, 1948).

Map (6)



- |  |  |  |                        |
|--|--|--|------------------------|
|  | Desert   |  | Horn region            |
|  | Semi-desert scrub & grassland<br>A: on limestone complex soils<br>B: on clay soils |  | Lowland altered forest |
|  | Thorn savanna & scrub<br>A: on limestone complex soils<br>B: on clay soils         |  | Hill Vegetation        |
|  | Deciduous savanna wood land<br>A: on limestone complex soils<br>B: on clay soil    |  | Mountain Vegetation    |

Sudan Vegetation Map (Wickens, 1991).

## **CHAPTER FOUR**

### **MATERIALS AND METHODS**

The study area falls within the semi-desert region. The global positioning system (GPS) was used to determine the images of the study area.

#### **4.1: Materials collected:**

##### **4.1.1 Sites of collection:**

Plant specimens were collected fresh from the field, in three times collection field trips, (during March, May, June 2007), from sites representing all the study area. The twigs with leaves and flowers and/or fruits were collected.

##### **4.1.2 Preparation of Specimens:**

After collection, specimens were stretched to dry between news papers and firmly pressed inside a herbarium press. Newspapers were used and continuously changed during the days of collection to avoid rotting of materials. The air-dried specimens were deposited at the herbarium of Forestry Research Center Soba (F. R. C).

#### **4.2 Methods Used:**

##### **4.2.1 Field observations:**

The observations were focused on the habit, habitat, distribution, color of flowers, during the collection trips.

##### **4.2.2 Specimens examination:**

In the herbarium further analysis and/or identification were done. Initially by examining the various parts of the specimens collected by using hand-lens. Fine floral characters were examined under electrical advanced microscope.

##### **4.2.3 Species identification:**

A preliminary species identifications were carried out using a set of keys (Andrews 1950, 52, 56), Hutchinson and Braun et al (1991). The identified species

were compared with already identified herbarium specimens in Forestry Research Center Herbarium at Soba, Medicinal and Aromatic plants Research Institute (MAPRI) herbarium, National Center for Research Khartoum. Families, genera and species were listed in alphabetical order. The synonyms of the identified species were extracted from many references such as Hutchinson and Dalziel, (1963); index kewensis,( 1895-1965), and Wickens(1976).

The Arabic vernacular names of species cited (Ar. =Arabic), were recorded from local inhabitants within the study area, or extracted from Braun and Massey (1929), Andrews(1953,57), Wickens(1976),Braun et al (1991).

#### **4.2.4 Species description:**

Brief botanical descriptions were done mainly for habits, bark, leaves, inflorescences, flowers and types of fruits, habitats, distribution accompanied by photographs.

#### **4.2.5 Medicinal Folkloric uses:**

The uses of collected species have been provided. These uses have been extracted from available literature of Sudanese studies or studies in neighboring countries. In addition, some information was obtained from the local inhabitants in the study area.

## CHAPTER FIVE

### RESULTS (Species Description)

This study reported 48 plant species at the study area, belonging to 19 families (18 Dicotyledons and 1 Monocotyledons). The plant species have been shortly described and the names have been updated, in addition 48 photographs which were done to support and complete the description. The results are as follows:

#### ASCLEPIADACEAE

*Calotropis procera* (Aiton.) Aiton. .F. Hort., Kew, ed., 2, 2:78(1811).

**Syn. :** *Asclepias procera* Aiton., Hort, Kew, 1:345(1789).

**Vern. names:** (Ar.) Usher

**Description:** Soft woody shrubs or small trees up to 6 m high; branching from the base and with yellow – brown or whitish grey, thick barks. Leaves succulent, opposite-decussate, ovate or obovate (6.5-24x4.5-16.5cm), hairy, exuding milky latex.

Flowers sub-umbellate cymes. Fruits follicles, with sticky spongy inflated.

**Habitat:** Low land and waste sites.

**Distribution:** Widespread in the Study area.

**General uses:** Fuel wood, **charcoal**, **timber**, amenity, **stuffing**, **fibers**, dune control, **shade**, shelterbelt, agro forestry, fruit, hedging, pesticides, **medicine**, (Vogt, 1995).

**Medicinal uses:** The infusion of the roots mixed with flour is used for jaundice, where the latex is used against scorpion bites (EL-Ghazali *et al*, 1987). Roots used for snake bites treatment, while a decoction of root is used as part for the



eradication of hookworms also used as medicine for camel disease (Kokwaro,1993). The plant is used for malaria, goiter, and schistosomiasis, cutaneous, and gonococcal (Adjanooun *et at*, 1993).



*Calotropis procera*(Aiton.)

**Photograph (1)**

## **BALANITACEAE**

***Balanites aegyptiaca*** (L.) Del. In Descr. Aegypt. Hist.Nat.2:221.t.28, fig.1(1813).

**Syn. :** *Ximenia aegyptiaca* L., Sp. PL:1194(1753).

**Vern. names :** (Ar.) Hegli.

**Desdribution:** Armed trees, up to 8-10 m high; with fluted and slightly enlarged stems and deep vertical fissured barks. Leaves bifoliate, obvate to rhomboid,(1.5-3.2x0.7-1.5cm). Flowers yellow-green. Fruit drupes, oblong-elliptic yellow.

**Habitat:** Low land plains.

**Distribution:** Widespread in the study area.

**General uses:** The timber is used for agricultural implements, local furniture, walking sticks and bent wood chairs, it provides good firewood and charcoal. The fruits are edible (Local people in Soba 2007).

**Medicinal uses:** The inner core of the seed is crushed to provide oil for cooking, the fruits and oil are used for medicinal purposes. The embryo and fruits are eaten to cure diabetic, balharzia, and also as a purgative (Elsafori, `2000). The aqueous extract of the bark is used for jaundice and the branches are used as a fumigant for rheumatism (EL-Ghazali, `1985, 1986). The leaves are used for wound healing and mixed with sesame oil for anti-rheumatic (EL-Ghazali, *et al*, 1987, 1994). The decoction of the root is taken against malaria, while bark fumigant is used to heal circumcision wound and the fruits are mild laxative, antidote to arrow poisons (Boulos, 1983). Gum mixed with maize meal porridge and eaten to treat chest complains while the root are used for abdominal pains, as a purgative and as anti emeti (Kokwaro, 1976,1993).



*Balanites aegyptiaca* (L.) \_

**Photograph (2):**

## **BOMBACACEAE**

***Adansonia digitata*** L., Sp. Pl. 2:1190(1753)

**Syn. :** *A. baobab* Gaertn, Fruct.2: 253, t. 135(1763); *A. situla*(Lour. ), Spreng, Syst. 3: 124(1763).

**Vern. names:** (Ar.) Tabaldi, Gungolez

**Description:** Trees up to 20 m high; with buttress roots, stems. Vastly thickened trunk, girth up to 13 m or more. Branches short, stout and stiff, wide-spreading, bark smooth, grey or pink, fibrous. Leaves digitately foliate, leaflets oblanceolate to elliptic, (10 x 5 cm). Flowers solitary, axillary, white. Fruits capsules, ellipsoid or globose, edible.

**Habitat:** Low land plains, wadis and stream or khor banks.

**Distribution:** In gardens.

**General uses:** Fuel wood, charcoal, **timber**, amenity, **forage**, **fiber**, **leaves**, dune control, **shade**, agro forestry, **shelterbelts**, **fruit**, hedging, pesticides, **water storage**, ( Vogt, 1995).

**Medicinal uses:** The aqueous extract of the fruit is used for stomach pains (EL-Ghazali, 1985). A decoction of the root is taken as a remedy for lassitude, while the bark is boiled and drunk as a cure for pain in the body, and decoction is used for bathing infants if they are weak, and used also in steam baths for high fever and as a diaphoretic(Kokwaro, 1993).



*Adansonia digitata* L.

**Photograph (3):**

## **BORAGINACEAE**

***Cordia sinensis*** Lam.; Tab. Illustr. (1914).

**Syn.:** *Cordia rothii* Roem. & Schult., Syst. Veg. 4: 798(1819).

**Vern. names:** (Ar.) Inderab

**Description:** Scar- bid much branched shrubs or Small trees up to 7 m high, with pale- brown, fissured barks. Leaves opposite or sub opposite, oblong or oblong – lanceolate (2-6x1-2.2cm). Flowers cymes white-green. Fruits drupe, ovoid with cup-shaped.

**Habitat:** Near rivers in short grass savanna

**Distribution:** Widespread in Northern and central Sudan.

**General uses:** Fuel wood, charcoal, **timber**, amenity, **fodder**, dune control, shade, **shelterbelt**, agro forestry, **shelterbelts**, **fruit**, **hedging**(live), pesticides, ( Vogt, 1995).

**Medicinal uses:** The roots are boiled with milk and drunk for malaria (Kokwaro 1976). Leaves are used for kidney and bladder disease, ulcers, diuretic, dysentery, diarrhea, asthma, coughs and dental disorders (Maydell. 1986).The decoctions of the bark are used to enhance wound healing (EL Ghazali *et al* 1994).



*Cordia sinensis* Lam.

**Photograph (4):**



## CAPPARACEAE

### **Key to genera**

(A). Sepals in 2 series; fruit not torulose-----CAPPARIS. 1

(AA). Sepals united into a tube at the base, valvate in a single series; fruit generally torulose-----MAERUA.2

*Capparis decidua* (Forssk.), Edgew. in Journ. Linn. Soc. Bot. 6:184(1862).

**Syn.:** *Sodada decidua* Forssk., Fl. Aegypt-Arab:81(1775); *Capparis aphyllaa* Hayne, ex. Roth., Nov. Pl. Sp.: 238(1821).

**Vern. names:** (Ar.) Tundob

**Description:** Armed much-branched shrubs or small trees up to 3 m high; with terete, solid prickled and dark green stems. Leaves small, deciduous. Flowers lateral and terminal fascicles pink. Fruit globose; edible.

**Habitat :** Low land plains.

**Distribution :** Widely distributed except in extreme south.

**General uses:** Fruits are said to be edible, and wood ash is used as a vegetable salt. saddles, water pipes, etc (Maydell, 1986).

**Medicinal uses:** The aqueous extract of the stems are used against jaundice, where as the stems are used as a poultice for swellings and joint pains (EL-Ghazali, 1985). The poultices of the twigs are used against headache and the fumigant of the stem are used as anti-rheumatic (EL-Ghazali *et al*, 1994-97). Green branches are used for stringent, cardiac problems, boils, swelling, toothache, as laxative, diaphoretic, anthelminthic, cough, athma, inflammation, fever (Boulos, 1983).



*Capparis decidua*(Forssk.),

**Photograph (5):**

***Maerua crassifolia*** (Forssk.) Gilg. & Benedict. in Engl., Bot. Jahrb., 53:250(1915).

**Syn.** : *M. uniflora* Vahl, Oliv. F. T. A. 1:86(1868);*M. meyeri* (Johannis) Gilg. in. E. J. 51:225(1914);*M. uguenensis* Gilg. in E. J. 53. 251(1915);*M. hirtella* Chiov. Fl. Somlia. 1:83(1929).

**Vern. names:** (Ar.) Sarh,sorak and Kowoge .

**Description:** Small trees up to 10 high; with straight and cylindrical stems and tough often twisted branches. bark smooth; Leaves clustered, ob ovate-elliptic (1.2-3 x0.6-16cm), Flowers axillary, solitary. Fruits pods, torulose .

**Habitat:** Low land plains.

**Destruction:** Northern and central Sudan.

**General uses:** The wood is used locally for fire wood and charcoal (Local people of Soba area).

**Medicinal uses:** The fumigant of the stems is used as anti-rheumatic (EL-Ghazali *et al* 1997).





*Maerua crassifolia*\_\_(Forssk.)

**Photograph (6):**

### COMBRETACEAE

#### **Key to genera**

(A.) Petals present:-----Combretum 1.

(AA). Petals absent:

(b). Fruit small, 2-winged-----CONOCARPUS. 2

(bb).Fruit samara broadly elliptic, winged.----- TERMINALIA.3

*Combretum aculeatum* Vent., Choix. Pl. sub.t . 58(1808).

**Vern. names:** Shiheit

**Description:** Scandent or rambling shrubs with lax branches, 2.5-4 m high; older branches brownish white covered with recurved spines of the old petioles. Leaves alternate or sub-opposite, (1.9-5.8x0.8-3.4cm). Flowers in small racemes, whitish, scented. Fruits 5-winged; yellow-brown.

**Habitat:** Tall grass savanna on sandy or loamy soils.

**Distribution:** Wide spread.

**General uses:** Wood of sufficient dimension for fuel wood or charcoal and shoots used for woven work, baskets, fish traps, seeds are edible(Maydell, 1986).

**Medicinal uses:** The roots are used to treat gonorrhoea, round worm, catarrh and gastric disorders, as laxative and for wound-dressing. Leaves as a laxative and diuretic; the sap for ophthalmic disorders, an infusion from the twigs helps teething children. Various parts of the plant treat leprosy and used as a fish poison (Maydell, 1986).





***Combretum aculeatum*** Vent.\_

**Photograph (7):**

***Combretum glutinosum*** Per. ex DC. J. nat. Prod. Downers Grove, Ill.:American society of pharmacognosy. June 1994. V. 57(6)p. 732-737

**Vern. names :** (Ar.) Habeil

**Description:** Trees up to 12 m high, with irregular stem in upper portion, bark grey, more or less smooth. Leaves opposite or sub-opposite elliptic, (4-13.9x1.4-3.6cm). Flowers axillary, racemes, Fruits ovate angular, 4-winged.

**Habitat:** In alluvial soils in valleys or stream on gravelly stony soils in tall grass savanna.

**Distribution:** Widespread in Eastern Sudan (Gallabat, Ingessana hills and in Kordofan)

**General uses: :** **Fuel wood, charcoal, timber,** amenity, dune control , Shade, agro forestry, shelter belts, fruit, hedging, **pesticides,** (Vogt, 1995).

**Medicinal uses:** The bark is used to treat influenza and rheumatism, for wound dressing. Roots as anathematic, for cough, gonorrhoea and gastric disorders. Leaves for malaria, bleeding, haematoma, biliary diseases, headache, sorres, rheumatism

and colic, for wound-dressing and as a diuretic. Young shoots and bark as are aphrodisiac. Fruits and seeds for syphilis and boils; seeds for wounds and in veterinary treatments. A tea from dried leaves (Rat) is commonly used in Senegal, Gambia and other countries. From the trees sap drink is prepared for pregnant women, Maydell,( 1986),in Baumer, (1983).







*Combretum glutinosum*\_Per. **Photograph (8):**

*Conocarpus lancifolius* Engl. & Diels, IUCN 2006.(Exotic)

**Vern.names:**(Ar.)Damas

**Description:** Trees up to 20 m high, with straight stem, bark brown, deeply fissured .Leaves alternate, crowded at ends of branches, narrow lanceolate,(4.2-7.6x1.2-1.4cm).

Flowers terminal heads. Fruits small, scale –like, 2-winged.

**Habitat :**The species is native to Somalia and possibly parts of Arabia where it tends to grow along seasonal water courses.

**Distribution :**Fairly widespread(planted).

**General uses:** The wood from this species is strong and is used in general carpentry, and for making poles which are used in housing construction, it also makes an excellent fuel wood and charcoal. The foliage provides fairly good fodder but tends only to be browsed in times of need this tree is used extensively as a very attractive ornamental for its shade value, and as a windbreak(Vogt, 1995).

**Medicinal uses:** Its resin is reportedly used as a treatment for chest and bowel complaints (Vogt, 1995).



*Conocarpus lancifolius* Engl. & Diels

**Photograph (8):**

***Terminalia brownii*** Fresen, Mus. senckenb. 2:152, t. 9/1(1837).

**Syn** :*T. Brownii* Fresen. Var. *albertensis* Bagshawe and Bak. F., J. B. 46:7(1908); *T. semlikiensis* Dewild, Pl. Bequaert. 4:346(1928).

**Vern. names:** (Ar.) Subagh, Darot.

**Description:** Trees up to 10 m high, with cylindrical and round stem young bark smooth, whitish, or dark grayish. Leaves clustered at the ends of twigs, ob ovate-elliptic, (3.5-6.9x3.5-3.7cm). Flowers axillary spikes, white-cream. Fruits samara broadly elliptic, winged.

**Habitat** :Rocky hill slopes and low land plains.

**Distribution:** Widespread in the study area.

**General uses** : **Fuel wood, charcoal, timber,** amenity, **forage,** dune control, shade, agro forestry, shelter belts, fruit, hedging, pesticides, (Vogt, 1995).

**Medicinal uses:** The barks are used for cough and bronchitis and the fumigant is used for rheumatism (EL-Ghazali,1997).



*Terminalia brownii* Fresen, \_

**Photograph (9):**

***Terminalia catappa*** L. Syst.nat. ed. 12, 2:674. (1767) (Exotic).

**Vern. names** :(Ar.) Brasilia

**Description:** Deciduous tree up to 30 m high, with cylindrical stem, bark brownish-grey; smooth. .Leaves simple; alternate; clustering at the ends of the branches; obovate to elliptic,(15-30x7-15cm).Flowers in panicles, sessile, small and white. Fruits drupes, broadly ovate –elliptic, edible with small lateral wings.

**Habitat:** Common in many tropical areas.

**Distribution** :Fairly spread.

**General uses** : **Fuel wood**, charcoal, **timber**, **amenity**, **dune control** , **shade**, **shelterbelts**, agro forestry, **shelter belts**, **fruit**, hedging, pesticides, hedging, **silk production**, **dye**(black), (Vogt, 1995).



*Terminalia catappa*\_L.

**Photograph (10):**

## EBENACEAE

*Diospyros mespiliformis* Hochst . ex . DC,prod, 8:672 (1844).

**Syn. :** *D. bicolar* Klotzsch in Peters, Reise Mossamb. Bot. :134(1864);  
*D. sabiensis* Hiern , J. Linn. Soc. Bot. 40:135(1911).

**Vern. names:** Goughan, Absebela

**Description:** Trees 10-50 m high, with straight cylindrical stem, bark fairly smooth, grey-black with small irregular scales. Leaves simple, alternate, oblong to elliptic, (14x4.5cm). Flowers axillary cymes, small white. Fruits yellow, berry globose.

**Habitat:** Along streams and rivers in high rain fall savanna.

**Distribution :**Not widespread in the study area.

**General uses:** **Fuel wood**, amenity, dune control, **gum**, **charcoal**, shade, shelterbelt , **timber**, pesticide, **fruit**, agro forestry, hedging, (Vogt, 1995).

**Medicinal uses:** Leaf decoction as extraordinary remedy for fever and otitis and for wound dressing; haemostatic and cicatrivative. A decoction is used as a poison antidote and to cure toothache. Bark and roots for serious infections, malaria, pneumonia, syphilis, leprosy, dermatomycoses, as an anathematic and to facilitate delivery, etc. Different parts of the tree are used against diarrhea, skin infections, headache, toothache and similar pains and as a psycho-pharmacological drug, (Maydell, 1986).



*Diospyros mespiliformis* Hochst

**Photograph (11):**



## EUPHORBIACEAE

***Ricinus communis*** L., Sp. Pl. : 1007(1753).

**Syn.** : *R. viridis* Wild., Sp. Pl. 4: 564 (1805); *R. africanus* Wild; Sp. Pl. : 565 (1805); *R. megalospermus* Del. Cent.pl. Afr. Meroe Caill:89(1826)

**Vern. names** : (Ar.) Khirwa

**Description:** Shrubs or under shrubs up to 3 high, with cylindrical stems. Leaves alternate, deeply palmate –lobed, orbicular (10- 50 cm across), Flowers large pyramidal, pseudo terminal erect panicles. Fruit sub globose, smooth or prickly.

**Habitat** :Irrigated schemes , semi-wild on banks of rivers.

**Distribution** :Central and southern Sudan.

**General uses:** **Fuel** wood, dune control, **oil, paper**, agroforestry, fruit, **pest control**, hedging, charcoal ,**amenity** ,shade, pesticides, fence, Shelterbelt(Vogt, 1995).

**Medicinal uses:** It's well known that the oil is used medicinally as a purgative. Fresh young leaves applied to wounds are said to accelerate their healing. The seeds are poisonous but it has been reported that crushed seed mixed with water, act as a cure for afterbirth bleeding and act as a general remedy for abdominal troubles. The roots of the plant are chewed in case of infection by guinea worm (Vogt, 1995).



*Ricinus communis* L.

**Photograph (12):**

FABACEAE

Sub-family caesalpinoideae

**Key to genera**

(A).Leaves of two fused leaf lets, appearing simple and bi lobed:-----

-----BAUHINIA 1

(AA). Leaves compound with one or more free leaflets:

(b). Leaves bi pinnate (apparently simply pinnate.):

(c). Common petiole very short, ending in spine:

-----PARKENSONIA 4.

(cc). Common petiole more developed than above, not ending in a spine:

-----DELONIX 3.

(bb).Leaves simply pinnate:

(D). Anthers attached at the base:-----CASSIA 2.

(DD). Anthers versatile:----- TAMARINDUS 5.

***Bauhinia rufescens*** Lam., Encyl. Bot. 1:381(1785)

**Syn.:** *Adenolobus rufescens* (Lam.) Schmitz; *Bauhinia adansoniana* Guill. And Perr. , Tent.fl. sensg. 1:265; *piliostigma rufescens* (Lam.) Benth.

**Vern. names:** (Ar.) kulkul

**Description:** Small trees or shrubs up to 10 m high, with smooth grey bark, branchlets often armed with pointed short lateral shoots. Leaves bi- lobed, (4-

17.3x3.5-4cm), lobes semi-circular. Flowers racemes, white cream, small. Fruits, pods, obliquely constricted.

**Habitat:** In the savanna zones of S. Kordofan, Darfor and S. Sudan.

**Distribution:** Widespread.

**General uses:** An ornamental shrubs, very suitable for hedges, protecting garden, fields, compounds, and along roadsides (Maydell, 1986).

**Medicinal uses:** An extract from the roots used as an astringent or antipyretic in local medicine. Leaves and fruits are applied for the treatment of diarrhea, dysentery and ophthalmic disease or as a tonic. The bark of the roots is used to cure chest complaints, syphilis and other venereal disease, leprosy, to reduce fever (Maydell 1986).



*Bauhinia rufescens* Lam.

**Photograph (13):**



*Cassia siamea* (Lam)Eucycl. 1:648. (1785). (Exotic).

**Vern. names:** (Ar.) Cassia

**Description:** Trees up to 15 m high; with cylindrical stem, with smooth grey bark. Leaves compound, leaflets 6-10 pairs, elliptic to elliptic oblong (4.5-7x1-2.2cm).

Flowers yellow, paniculate; terminal. Fruits linear compressed pods.

**Habitat:** Sub-humid to semi-arid regions all over the world.

**Distribution:** Widespread.

**General uses:** **Fuel wood, charcoal, timber, amenity, poles,** dune control, **shade, shelterbelt, tannins, honey,** agro forestry, shelterbelts, fruit, hedging, pesticides,( Vogt, 1995).

**Medicinal uses:** The uses of the tree are mainly recognized for its blood-cleaning properties and it is said to cure a variety of ailments associated with the blood-forming organs. Other recorded uses are in treating herpes, rhinitis and as a laxative. Leaves are said to be eaten but need to be soaked in boiling water then discarded.(Maydell, 1986).



*Cassia siamea*(Lam)

**Photograph (14)**

***Delonix regia*** (Hook.) Raf. Fl. Tellur. 2:92. (1837)(Exotic).

**Vern. names:** (Ar.) Goldmore

**Description:** Trees up to 16m high; with cylindrical stems and smooth grey barks. Leaves 30- 60cm long, pinnae, 10-20 pairs ,leaflets 20-40pairs. Flowers bright scarlet, upper petals yellow- striped, connate. Fruit pods, dark brown.

**Habitat:** Tropical and sub-tropical areas of the world.

**Distribution:** Widespread.

**General uses:** **Fuel wood**, charcoal, **timber**, **amenity**, dune control, **shade**, shelterbelt, agro-forestry, shelterbelts, **fruit**, hedging, pesticides, (Vogt, 1995).





***Delonix regia*(Hook.) Photograph (15):**

***Parkinsonia aculeata*** (L). Sp. Pl. 1:375. (1753) (Naturalized)

**Vern. names:** (Ar.) Sesaban

**Description:** Armed shrubs or small trees, up to 9 m high; with a short bole. Bark green turning grey, flaking, prickle present.

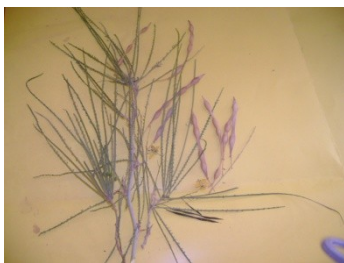
Leaves 2-4 pairs, elongated, flattened, more than 30 cm long, leaflets up to 60 pairs, flattened, obovate-elliptic to obovate oblong or oblong.(13-20.5x0.5-0.8cm). Flowers bright yellow. fruits cylindrical, yellow to brown glabrous, pods.

**Habitat:** Semi-arid tropical areas. .

**Distribution:** Widespread.

**General uses:** **Fuel wood, charcoal,** timber, **amenity,** dune control, shade, agro forestry, **erosion, fodder, shelter belts,** fruit, **hedging**(live), pesticides, ( Vogt, 1995).

**Medicinal uses:** It is reported that the leaves, seeds, flowers and bark may be used as an infusion for fever. Bark decoction for baths and ablutions. (Maydell, 1986).



*Parkinsonia aculeata* (L). —

**Photograph (16):**

***Peltophorum pterocarpum*** (DC. ) K. Hayne. Nutt. Pl. Ned.-Ind. ed. 2 :755.  
(1927) (Exotic).

**Vern. names:** (Ar.) Biltaphram

**Description:** Trees up to 16 m high; with cylindrical stem, bark grey smooth.

Leaves up to 35 cm long, 6-12 pairs, leaflets 20 pairs oblong-linear, glossy.

Flowers terminal panicles, yellow. Fruits indehiscent pods, winged along both sutures.

**Habitat :**Tropical Asia and Australia.

**Distribution :**Widespread.

**General uses:** **Fuel wood, charcoal, timber, amenity,** dune control, **shade,** agro forestry, shelter belts, fruit, hedging, pesticides, ( Vogt, 1995).



*Peltophorum pterocarpum*\_DC.

**Photograph (17):**

*Tamarindus indica* L., SP. Pl. : 34(1753)

**Vern. names:** (Ar.) Aradeib

**Description:** Medium sized to large tree up to 30m high; with straight cylindrical stem, pole grey, fissured. Leaves paripinnate, leaflets.(10-15 pairs)oblong (3-4x2.8-3cm). Flowers, yellowish, in small terminal glabrous racemes. Fruits pods, slightly constricted between seeds, edible pulp, it's curved or straight,

**Habitat :** Near streams and valleys and on termite mounds in tall grass savanna.

**Distribution:** Central and Southern Sudan.

**General uses :** **Fuel wood, charcoal, timber, amenity,** dune control, **forage, honey,** shade, agro forestry, shelter belts, **fruit,** hedging, pesticides, **dye(yellow), tannins,**( Vogt, 1995).Wood is durable and termite resistant used in gun powder , (Maydell,1986)

**Medicinal uses:** The water extract of the fruit are used as laxative, for febrifuge and for malaria, (local people of the study area ( 2007). Leaves and flowers are used in soups and extraction of dyes. Fruits reduce the fever as a stringent remedy and for throat infections. The root decoction is used to lessen infections of respiratory tract and to cure the leprosy. The bark decoction is used to treat the infections and asthma. (Maydell, 1986).



***Tamarindus indica* L.**

**Photograph (18):**

**FABACEAE**

**Sub-family faboideae**

*Erythrina abyssinica* DC. Subsp. abyssinica. Tr. & Sh. 231 (1990).

**Vern. Names:** (Ar.) Hab el arus, shush.

**Description:** Trees 9-20 m high. Bark yellow brown, corky, fissured often are armed with blunt woody prickles. Leaves trifoliate.

**Habitat:** On gravelly soils, banks, of rivers and streams in the tall grass Savanna Zone, S. Darfur, Kordofan, Blue Nile, Upper Nile, Bahr El Ghazal and in Equatorial.

**Distribution:** Fairly widespread in the study area.

**General uses:** Red hot poker tree, ornamental. (Vogt. 1995).



## **FABACEAE**

### **Sub-family faboideae**

***Pongamia Pinnata*** (L.) Pierre. Tr, & Sh. 241(1990) (Exotic)

**Vern. Names:** (Ar.) Um al Shuur.

**Distribution:** Trees up to 18 m high. Bole short. Branches glabrous, erect. Leaves imparipinnate, opposite, about 30 cm long, leaflets 5-7 pairs oblong ovate with acute apex, 4-12x 3-6.5cm. Flowers lilac or white. Fruit elliptic to obliquely oblong compressed woody pods.

**Habitat:** Heavy clay.

**Distribution:** Fairly widespread in the study area.

**General uses:** Fuel wood, **amenity**, dune control, **charcoal**, **shade**, shelterbelt, timber, pesticide, agroforestry, fruit, hedging. (Vogt. 1995).

**FABACEAE**

**Sub-family Mimosoideae**

**Key to genera**

- A, Flowers in spikes-----PROSOPIS 4
- AA Flowers capitates.
- (b).Leaves not sensitive to touch:
- (c). Filaments free or united only with the disc at the base-----ACACIA 1
- (cc). Filaments united into short or long tubes-----ALBIZZIA 2
- (bb).Leaves often sensitive to touch: -----MIMOSA 3

**ACACIA**

**Key to species**

- (A). Inflorescence spicate, more or less cylindrical:
- (a). Pinnae 2-3 pairs; leaflets 2-5 pairs-----A. laeta. 3
- (b). Prickles in 3s. -----A. senegal.8
- (bb). Prickles in 2s: -----A. mellifera. 4
- (AA). Inflorescence capitates, globose:
- (c). Pods spirally twisted or falcate :
- (d). Pods spirally contorted linear more or less -----A. tortilis 11
- (dd). Pods falcate-----A.seyal 9

(cc)- Pods straight or only slightly curved:

(E)- Pods glabrous:

(F)- spines broadly swollen- galled at the base-----A. drepanolobium.1

(FF). Spine not galled: -----A.ehrenbergiana. 2

(EE). Pods pubescent:

(G). Inflorescences capitates:

(H). Flowers heads:

Heads, bright yellow-----A. . nilotica 5

Subsp tomentos

Heads, white to cream-----A. sieberana.10

(HH). Flowers spoon like-----A. oerfota 6

(GG). Inflorescences plicate----- A. polycantha. 7

***Acacia drepanolobium*** Harms ex Sjostedt. Schwed. Zool. Exped. Kilimandjaro 8:116-117(1908).

**Syn.:** *A. formicarum* Harm.In E. J. 51:363 (fig. 2)(1914).

**Vern. names:** (Ar.) Suffar azrak, suffer aswad

**Description:** Shrubs or small trees 2-7 m high. Bark brown to dark brown, with spinescent inflated (ant galls). Leaves compounds, leaflets 15-26 pairs, (1.2-2.9X1.5-3.2cm).Flowers heads, white to cream. Fruits falcate, pods dehiscent.

**Habitat:** Gregarious on dark clay water depressions in short grass Savanna.

**Distribution:** Fairly widespread in the study area.



*Acacia drepanolobium* Harms\_\_

**Photograph (19):**

***Acacia ehrenbergiana*** Hayne, Getreue Darstell. Gew. 10, t. 29(1827).

**Syn.** : *Acacia flava* (Forssk.) Schweinf., Bull. Herb. Boiss. 4, app.2:214(1896);

*Mimosa flava* Forssk., Fl. Aegypt.-Arab.:176(1775):

**Vern. names** : (Ar.) Salam

**Description:** Spinescent pubescent many-stemmed shrubs, 1-5 m high; bark peeling into yellow flakes. Leaves small; up to 2 cm long; pinnae 1-3 pairs. Leaflets 10-12 pair; oblong –linear. Flowers capitate, sessile, yellow. Fruits falcate constricted, olive- green, glabrous pods.

**Habitat** :On dry sandy plains.

**Distribution** : In semi-desert in northern Sudan.

**General uses:** The twigs are pollarded for livestock in the dry season and browsed by goats, camels and sheep. Bark fibers are used to make ropes.(Maydell, 1986.).

**Medicinal uses:** The gum is inferior to gum Arabic; it is used as an emollient in local medicine (Maydell, 1986.).



*Acacia ehrenbergiana* Ha



**Photograph (20):**

*Acacia laeta* R. Br. Ex Benth. Tr. & Sh. 157 (1990).

**Vern. names:** (Ar.) Subahi, Kitr achbash

**Description:** Small deciduous trees or shrub growing up to about 10 m often found near *acacia mellifera* and being confuse with it. With practice, however, it can be easily distinguish from other acacia by it leaves. The bark is black to grayish-brown and fissured. The leaves are bipinnate with 3-5 pairs of pinnate leaflets and 2-5 pairs of pinnate.

**Habitat:** On clay plains or loamy soils in Central Sudan.

**Distribution:** Northern and Central Sudan.

**General uses:** **Fuel wood**, amenity, dune control, **charcoal**, **forage**, shade, shelterbelt, **gum**, **timber**, pesticide, agroforestry, fruit, **hedging** (living and dead). (Vogt. 1995)

**Medicinal uses:** The bark is boiled in water and the liquid used as a remedy for stomach trouble, cleaning primary infection of syphilis sterility, malaria, pneumonia (Kokwaro, 1993).

*Acacia mellifera* (Vahl.) Benth. In Hook.; Brenan. in Kew Bull. 11:191(1956).

**Syn:** *Mimosa mellifera* Vahl, Symb. Bot. 3: 103(1791), *A. detinens* Burch, Trav. 1:310(1822).

**Vern. names :** (Ar.) Kitir

**Description:** Small trees up to 8 m high much branched from base. Bark smooth grey to brown with white horizontal lenticels. Prickles in pairs below each node. Leaves bipinnate up to 5 cm long, Leaflets 1-2 pairs ob ovate elliptic. Flowers axillary, spicate, white-cream. Fruits pods papery, flattened dehiscent.

**Habitat :** Low land plains.

**Distribution :** Northern and Central Sudan.

**General uses:** **Fuel wood**, amenity, dune control, **charcoal**, **forage**, shade, shelterbelt, **honey**, **timber**, fruit, pesticide, **hedging** (live and dead), agro forestry. (Vogt, 1995).

**Medicinal uses:** The bark is boiled in water and the liquid used as a remedy for stomach trouble, cleaning primary infection of syphilis sterility, malaria, pneumonia (Kokwaro, 1993).





*Acacia mellifera*\_(Vahl.)

**Photograph (21):**

*Acacia nilotica* (L.) Willd.ex Del. Fl. Aegypt ; subsp. *tomentosa*; (Benth.) Brenan, in K.B. 1954:84(1957).

**Syn:** *A. arabica* (Lam.) Willd, Var. *tomentosa* Benth, in Hook, Lond. Bot. 1, 500(1842), *A. nilotica* (L.) Del., Var. *tomentosa* (Benth) A. F. Hill, in Bot. Mus. Leaf. :Harvard.Univ. 8:98(1940).

**Vern. names :** (Ar.) Sunut, Garad.

**Description:** Trees up to 20 m high, with straight and cylindrical stems, blackish or black-brown barks. Leaves biparipinnate alternate, leaflets 7-27 pairs 1.5-4X0,5 cm, linear. Flowers axillary heads, yellow. Fruits pods, straight regularly and narrowly constricted between seeds, tomentose.

**Habitat:** Silty soils, streams and valleys banks.

**Distribution :**Widespread in the study area.

**General uses:** : **Fuel wood**, amenity, dune control, **charcoal, forage, shade**, shelterbelt, **gum, tannins, dye, honey, timber, fruit**, pesticide, Hedging, Agro forestry.( Vogt, 1996).

**Medicinal uses:** A decoction of the bark is taken for diarrhea and dysentery and the pods are used for cough and as gargle for tonsillitis (El-Ghazali, 1985). The bark is peeled off and the phloem stands folded into a ball and chewed. The juice is used for treatment of sorcthroat and coughs. The leaves may also be boiled in tea or coffee which is drunk without milk or sugar as treatment for chest pain or pneumonia, boiled roots used for indigestion or stomach trouble (Kokwaro), 1993).



*Acacia nilotica*(L.)

**Photograph (22):**

*Acacia orefota*. (Forssk.) Schweinf. in Bull. Herb. Bioss. 4, App. 11:213 (1896).  
Hook, Lond. Journ. Bot . 1:498 (1842). Benth.

**Syn** :*A.nubica* Benth, in Hook., Lond. Journ. Bot. 1:498(1842); *A. virchowiana*  
Vatke in Oes. Terr. Bot. Zeitschr. 30: 275(1880); *A. merkeri* Harms in  
E. J. 36: 208(1905).

**Vern names** : (Ar.) Laot.

**Description:** Shrubs up to 5m high, with basal branching. Bark smooth green –  
grey or whitish green, stipules spinescent. Leaves bipinnate(1.3-4.7x3.4cm) leaflets  
5-15 pairs. Flowers axillary heads. Fruits pods, yellow, pubescent.

**Habitat** :Low land plains.

**Distribution** :Widespread in the study area.

**General uses** : The timber is used locally for huts and fencing and also firewood ,  
browsed by camels.(By local people of Soba area)

**Medicinal uses** : The leaves are used as a poultice for swelling . The roots juice  
for scorpion bites (El-Ghazali, 1985). The smoke of stems and branches is used to  
cure rheumatism and back pains (EL-Ghazali *et al* ,1998) . The ash from the  
burned plant is used as a protection against anthrax, while bark decoction taken as  
emetic (Kokwaro, 1993).



*Acacia orefota*(Forssk.)

**Photograph (23):**

*Acacia polycantha* Willd. Sp. Pl. 4: 1079(1806) subsp. *campylacantha*(Hochst. ex A Rich.) Brenan in F.T.E.A. Leg. (pta) sub family mimosoideae 88 (1959); F.W.T.A. ed 2,1:499(1958).

**Syn.:** *A. campylacantha* (Hochst ex.) A.Rich; Tent Fl. Abyss. 1:242(1847): Andrews 2:137 (1952); *A. caffra* (Thunb.) Willd. var. *campylacantha* (Hochst. Ex A. Rich) Aubrev. *A. catechu* (L.F.) Willd. Subsp. *suma* (Roxb.) Roberty var *campylacantha* (Hochst. Ex A. Rich.) Roberty in candollea 11:157 (1948); *A. suma* of Broun and Massey Fl. Sudan 172 (1929).

**Vern. Names:** (Ar.) Kakamut.

**Description:** Trees up to 15 m high. Bark fissured whitish to yellowish with hooked prickles in pairs just below each node. Leaves 8-27 cm long, pinnae 3-33 pairs, leaflets 13-16 pairs, linear- oblong. Flowers spicate, creamy white, sessile. Fruits pods, oblong dehiscent.

**Habitat:** Wet sites.

**Distribution:** Widespread.

**General uses:** **Fuel wood**, amenity, dune control, **gum, charcoal**, shade, shelterbelt, timber, pesticides, agro forestry, fruit, hedging (Vogt, 1995).

**Medicinal uses:** The roots are said to act as a general health tonic, as an antidote for snakebite, and as a cure for venereal diseases; a preparation from the bark is used for general stomach disorders (Vogt, 1995).



*Acacia polyantha* Willd.\_Sub sp.campylacantha\_

**Photograph (24):**

*Acacia senegal* (L) Willd., var *senegal*, Sp. Pl. 4:1077(1806)

**Syn:** *Mimosa senegal* L., Sp.Pl.: 521(1753); *Acacia verec* Guill Fl Perr. Fl. Seneg. 1:245, t. 56(1832); *A. virchowana* Vatke and Hildebr. In Oesterr. Bot. Zeitschr. 30:275(1880); *A.companulata* Hochst.T.S.K.:69(1936). *A.somalensis* Sensu. T.T.C.L. 330(1949); *A.thomassii* T.T.C.L. :330(1949); *A.senegal* (L.) Willd subsp. *senegalensis* (Houtt.) Roberty var. *verec*(Guil and perr.)

Roberty Var. in *verec* (Guil&Perr.) *candollea* 11:156(1948).

**Vern. names :** (Ar.) Hashab, Alloba.

**Description:** Shrubs or small trees up to 12 m high. with irregular more or less sinuous stems, bark yellow to light brown or grey, rough. Prickles at nodes in threes, 2 lateral pointing up ward and one central pointing down ward or back ward. Leaves biparipinnate 1-6 cm long. Pinnae 2-6 pairs, leaf lets 8-18 pairs, linear to elliptic oblong. Flower spikes, white or cream. Fruits pods, flat, membranous.

**Habitat :**Low land plains.

**Distribution :** Fairly widespread in the study area.

**General uses :** **Fuel wood**, amenity, **dune control**, **charcoal**, **fodder**, shade, shelterbelt, **gums**, **honey**, **timber**, **fruit**, pesticide, **hedging**, **agro forestry**.( Vogt, 1995).

**Medicinal uses :** The gum is used to cure urea ulcer and to stop diarrhoea (El-Ghazali, *et al* , 1998). The root decoction is slightly purgative and is drunk in the case of constipation or for stomach-ache and is also used for treatment of gonorrhoea . A decoction of the bark is drunk to treat diarrhoea and stomach disorders (Kokwaro, 1993).Bark, leaves and gum are used to treat gastritis disorders, hemorrhages, ophthalmia, colds, as an emollient and astringent(Maydell, 1986).





*Acacia senegal*( L) .var. Senegal. —

**Photograph (25)**

*Acacia seyal* Del., var *fistula* (Scweinf.) Oliv.,. F. T. A. 2:351(1871).

**Vern. names:** (Ar.) Suffar abiad

**Description:** Spinescent deciduous, trees up to 9-10m high, with straight and cylindrical stems ,with inflated spines and whitish bark, stipules spine scent . Leaves bipinnate 3-7 pairs, leaflets 10-15 pairs. oblong to linear. Flowers heads, bright- yellow. Fruits pods slightly constricted between seed,.

**Habitat :** Low land plains.

**Distribution :** Fairly widespread in the study area.

**General uses :** **Fuel wood**, amenity, **dune control**, **charcoal**, **forage**, shade, shelterbelt, **gum**, **smoke**(insect), **tannin**, **timber**, fruit, pesticide, **Hedging**(live and dead), Agro forestry.( Vogt, 1995).

**Medicinal uses:** Many medicinal uses have been reported, with the bark, leaves and gum being used for treating, amongst others, haemorrhages, diarrhoea, colds, headache, and burns(Vogt, 1995.).





*Acacia seyal*. Del .*var fistula*.

**Photograph (26):**

*Acacia seyal* Del, var. *seyal* Brenan, Fl. Aegypt : 142, t,52 Fig. 2(1813).

Syn.:*A.seyal*.Del.,Fl. Aegypt;142, t, 52 fig.2 (1813).

**Ver. names:** (Ar.) Talih.

**Description:** Trees, up to 15 m high,with straight and cylindrical stems with red barks. Leaves biparipinnate, alternate(0.6-2.5x1.2-2.3cm); pinnae 3-9 pairs. Flower axillary heads yellow. Fruits pods, linear, glabrous.

**Habitat :**Low land plains.

**Distribution :**Widespread.

**General uses :** **Fuel wood**, amenity, **dune control**, **charcoal**, **forage**, shade, shelterbelt, **gum**, **smoke**(insect), **tannin**, **timber**, fruit, pesticide, **hedging**(live and dead), agro forestry.( Vogt, 1995).

**Medicinal uses:** The stem is used as fumigant for women (EL-Ghazali,1985) and also for rheumatic pains to protect women against cold and fever two weeks after birth , whereas the barks and leaves are used in treating gastric ulcers . In addition the gum is effective against rheumatism and inflammations of respiratory system (Boulos, 1983).



*Acacia seyal*\_Del,var.seyal.\_

**Photograph (27):**

*Acacia sieberana* DC, Prodr. 2:463(1825);

**Syn. :** *A. veruagera* Schweinf. linaea 35, 340, t. A, 10(1867-8);

*A. purpurassens* Valke, Pesterr. Bot. Zeitscchr. 30:277(1877)

**Vern. Names:** (Ar). Kuk.

**Description:** Trees 5-20 m high, longest among the Sudan acacias. Bark light brown usually grey and rough on the main stem. Leaves pinnae 6-11pairs, leaflets 14-52 pairs 3-14cm long., linear oblong. Flowers capitates, white to cream. Fruits pods, woody or pulpy straight or slightly falcate, indehiscent.

**Habitat:** .Low lands plains.

**Distribution:** Central and southern Sudan.

**General uses:** The timber is used for oil mills, fire wood and charcoal. Although not naturally durable it would be suitable for sleepers if treated with a preservative. (Sahni, . 1968).

**Medicinal uses:** Various applications in local medicine, generally in combination with other woody plants: bark, leaves and gum serve as vermifuge, to treat bilharzias, hemorrhages, orchids, colds, diarrhoea, gonorrhoea, kidney troubles, syphilis, as astringent, ophthalmic, to cure rheumatism and disorders of the circulatory system; pods as emollient; roots are used for stomach complaints, as vermifuge (for tapeworm), urethral troubles, oedemata, dropsy (Maydell, 1986).



*Acacia sieberana* Dc.

**Photograph (28):**

*Acacia tortilis* (forssk.). Hayne, subsp. *raddiana* (Savi.) Brennan, in Kew Bull. 1957: 87(1957)

**Syn. :** *A. raddiana* Savi. Alc. Acazie. Egiz.: 1(1830); *A. tortilis* Hayne Var. *pubescens* A. Chev. in Bull. Soc. Bot. Fr. 74. 960(1927).

**Vern. Names:** (Ar.) Sayal.

**Description :** Shrubs or small trees up to 7m high; with straight stems. Leaves 0.5-2cm long, pinnae 2-10 pairs. Flowers in axillary heads. Fruit pods contorted glabrous or appressed pubescent.

**Habitat:** Dry sites and bank of streams and wadis.

**Distribution:** Widespread in the study area.

**General uses:** Fuel wood, amenity, dune control, gum, charcoal, shade, shelterbelt, timber, fodder, pesticides, agro forestry, fruit, hedging (live and dead) (Vogt, 1995).

**Medicinal uses:** Many medicinal uses have been recorded including as a cure for malaria, swollen joint and skin disorders, (Vogt,1995).





*Acacia tortilis*\_(forssk).Hayne. sub sp. raddiana.

**Photograph (29):**

## ALBIZIA

### *Key to species*

A.pinnate pairs more than 10-----A. amara.1

AA.pinnate 2-4 pairs-----A. lebbeck. 2

***Albizia amara*** (Roxb. ) Boiv. subsp. *sericocephala* (Benth.). Brenan ,in kew . Bull: 190(1955).

**Syn:** *A. sericocephala* Benth. in Hook. Lond. J. Bot. 3:91(1844); *A.amara* Sensu oliv;F. T.A. 2:356(1871):

**Vern. Names:** (Ar.) Arad

**Description:** Unarmed savanna shrubs or small trees up to 8 m high; with straight and cylindrical stems, bark grey, fissured .Leaves bipinnate, (6.6-10.3x4.1-4.7cm); pinnae, 14-46pairs, leaflets 20-50 pairs, linear oblong. Flowers axillary heads, dense, whitish or pink. . Fruits pods, broad, flattened.

**Habitat:** Low land plains.

**Distribution:** Widespread in the study area.

**General uses:** **Fuel wood**, amenity, dune control, **charcoal**, **fodder**, shade, shelterbelt, **tannins**, **timber**, fruit, pesticide, **vegetable**, hedging, agro forestry. ( Vogt, 1995).

**Medicinal uses:** Aqueous extract of the bark is used for Jaundice, mouth inflammation and wounds. The leaves are used as poultice for chest (El-Ghazali, 1985).



*Albizia amara* (Roxb.) Boiv.

**Photograph (30):**

***Albizia lebbbeck*** (L.) Benth. in Hook.,Lond.Journ. Bot. 3: 87(1844) (Exotic).

**Syn.:***Mimosa lebbbeck* L., Sp. Pl. :516(1753).

**Vern. names** : ( Ar.) Digen basha

**Description:** Trees up to 20 m high; bole straight, short and cylindrical Bark grey, rough. Leaves biparipinnate , pinnae 2-4 pairs ; leaflets 3-10 pairs , oblong, obovate(3.3-7.5x10-22.7cm). Flowers solitary. Fruits pods, oblong flat.

**Habitat** :Many part of the Sahel.

**Distribution** :Widespread in the study area.

**General uses** : **Fuel wood, amenity**, dune control, charcoal, **fodder, shade, shelterbelt, gum, soap, timber**, fruit, pesticide, **vegetable**, hedging, **agro forestry.**( Vogt, 1995).

**Medicinal uses:** Are reported to include treatment for boils from the flowers and treatment for diarrhoea, dysentery hemorrhoids and leprosy from other parts of the tree (Vogt, 1995).



*Albizia labbeck* (L.)

**Photograph (31):**

*Leucaena leucocephala* (Lam.) De Wit; T. S. L. W. A. Vol. 1.: 390(2002)  
(Exotic).

**Vern. names** :(Ar.) Leucaena

**Description:** Shrub or small trees up to 10m high; with straight and cylindrical stems, bark grey, lenticellate and knotty. Leaves bi pinnate, pinnae 4-7 pairs. Leaflets 10- 20 pairs, linear (7-10x3-5mm).Flowers axillary globose, heads, fruits pods.

**Habitat** :Pan tropical.

**Distribution:** Wide spread in the study area.

**General uses:** **Fuel wood, amenity, dune control, charcoal, forage shade, shelterbelt, timber, fruit, pesticide, vegetable, nitrogen fixation, hedging, agro forestry.**( Vogt, 1995).

**Medicinal uses:** The seeds are used in curing gonorrhoea and defects in vision (Vogt, 1995).



***Leucaena leucocephala* (Lam.)** -

**Photograph (32):**

*Mimosa pigra* (L.) Syst. Nat. Ed. 10, 2: 1312. (1759 ).

**Vern. names:** Shagert Elfas, Elmosthia.

**Description:** Armed shrubs up to 4 m high, with golden- brown twigs, pubescent, spines curved. Leaves bipinnate, alternate (7-12 cm), pinnate 6- 12 pairs, leaflets 12-40 pairs, linear. Flowers in globose white pinkish heads,. Fruits flat pods, densely bristly.

**Habitat:** River banks and swamp.

**Distribution :**Widespread in the study area.

**General uses:** Not browsed by cattle ; locally used for fencing around stables (Maydell, 1986).

**Medicinal uses:** Root has stimulating effects. Extracts and decoction as remedy for colds snake bite, fever, toothache, eye diseases and obesity (Maydell, 1986).





*Mimosa pigra*(L.)

**Photograph (33):**

*Pithecellobium dulce* (Roxb.) Benth. J- Nat-Prod60(12) :1269-74 . (1997)

**Vern. names:** (Ar.) Tamar hindi.

**Description:** Armed shrubs or trees up to 15 m high, stems buttressed, bark grey, smooth; knotty.

Leaves bi pinnate. Leaflets one pair; elliptic or ob ovate –elliptic (0.3-0.6x2.5-3.6cm).Flowers creamy white in heads .Fruits spirally twisted pods.

**Habitat:** Pan tropical.

**Distribution:** Wide spread in the study area.

**General uses:** **Fuel wood**, charcoal, **timber**, pesticides, **amenity**, **shade**, **shelter belt**, dune control, **forage**, **bark**, **honey**, agro forestry, **hedging**(live), **fruit**, (Vogt, 1995).



***Pithecellobium dulce*(Roxb.)**

**Photograph (34):**

***Prosopis chilensis*** (Mol.) Stuniz, in Ann. Rep. (1931).

**Syn.** : *P. juliflora* Sensu Auctt. In Lock, Loc. Cit.: 96(1989). *Prosopis glandulosa* Torr., in Lick. Legumes of Africa, check-list: 96(1989).

**Vern. names** :(Ar.) Mesquit

**Description:** Spinescent evergreen trees up to 10 m high, with dark brown, fissured barks. Spines pairs, stout, yellow. Leaves bipinnate, (7.8x9.3cm), leaflets 12-60 pairs, linear. Flowers axillary spikes. Fruit linear straight or slightly curved glabrous pods.

**Habitat** : low land plains.

**Distribution** : Widespread in the study area.

**General uses** : **Fuel wood, charcoal, timber, perfume, pesticides, amenity, shade, shelter belt, dune control, fodder, honey, agro forestry, hedging, fruit,** (Vogt, 1995)

**Medicinal uses:** Macerated bark is occasionally used as antiseptic in the treatment of boils (by local people of Soba area, 2007).



***Prosopis chilensis*** (Mol.)

**Photograph (35):**

## MELIACEAE

***Azadirachta indica*** A. Juss., Mem. Mus. Nat., Paris 19:221 (1830) (Exotic).

**Syn.** :*Antelaea azadirachta* (L.) Adelbert in Blumea 6:315(1948);Sp. Pl.: 385 (1753). *Melia azadirachta* L., *Melia indica* (A.Juss.) Brand, For. Fl. Ind. 67.

**Vern. names:** (Ar ) Neem

**Description:** Small to medium sized trees up to 27 m high, with short and cylindrical stem, bark brown, fissured. Leaves, (11.8-17x10-12.2cm) imparipinnate, clustered at the ends of twigs. Flowers panicles, sweet-scented white. Fruits drupes, ellipsoid.

**Habitat** :Originates from Asia in particular North-East India and Burma

**Distribution** : Wide spread in the study area.

**General uses:** **Fuel wood**, dune control, **timber, honey, oil, agro forestry, fruit**, hedging, **charcoal ,amenity ,shade, shelterbelts, pesticides**, (Vogt, 1995).

**Medicinal uses:** Bark, leaves, fruit, oil, and sap help to cure various skin diseases, venereal disease, syphilis or snake bites antiseptic, astringent, an thematic, diuretic, tonic, antiperiodic and remedy against rheumatism and sprains. A decoction prepared from bark is said to be a febrifuge. Nimbidin and related compound, extracted from neem are used for creams, lotion shampoos, hair tonic and tooth pastes, Maydell, (1986) in (Booth, 1984).



*Azadirachta indica*\_A. Juss.

**Photograph (36):**

## MORACEAE

*Ficus sycomorus* L., Sp. Pl: 1059(1753.)

**Syn:** *Ficus graphalocarpa* (Mig.) Steud. ex. A. Rich., Tent. Fl. Abyss. 2:270 (1851).

**Vern. names :**( Ar.) Gomeiz.

**Description:** Spreading savanna trees up to 22 m high, with short and buttressed bole cylindrical stems. Bark smooth yellow greenish. Leaves ovate- orbicular or sub orbicular (5-17x2-10cm). Flowers minute grouped. Fruits figs, ob ovoid-globose, edible.

**Habitat:** Hill slopes and near streams.

**Distribution:** Widespread in the study area.

**General uses:** The fruit drop when still immature. They are eaten particularly by goats and sheep, but also by cattle and birds. Mature fruits are edible fresh and are prepared with millet by some people. They can also be used for the preparation of an alcoholic beverage. Leaves are taken for soups and groundnut dishes; they are a much sought fodder. The tree is therefore lopped. The nutritive value of the leaves is as follows: crude protein 9.0%DM, Net energy 7.3 MJ Kg DM P 0.14; Digestible protein/FU 45 (le Houerou 1980 A, p. 91). The wood is white and light, easy to work, not very durable (Maydell, 1986).

**Medicinal uses:** Bark decoction drunk for treatment of general abdominal pain and stomach disorder (Kokwaro 1993). Leaves are said to be effective against jaundice. They provide an antidote against snake bites. The latex is used for dysentery and chest diseases. Remedies from the bark for cough, throat infection and for chest pain: the roots have laxative and anathematic effects (Maydell, 1986).





*Ficus sycomorus* L.,

**Photograph (37):**

## Myrtaceae

### **Key to genera:**

(A.) Fruit hemispherical to broadly turbinate:

(b). Flowers more than 7-flowered umbels ----- Eu. camaldulensis 1

(bb). Flowers 3-5- flowered umbels-----Eu. microtheca 3

(AA). fruit lanceolate, contracted into short thick neck ,-----Eu. citridora 2

*Eucalyptus camaldulensis* Dehnh.Cat. horti. camald. ed. 2: 6, 20. (1832)

(Exotic).

**Syn :** *Eucalyptus rostrata* Schlecht. Linnaea 20:655. (1847) (non Cav. 1797)

**Vern. anmes :** (Ar.) Ban, Kafur.

**Description:** Trees up to 30m high, with large straight boles .Bark smooth, whitish peeling off in strips. Leaves alternate, lanceolate, falcate, aromatic (5.9-11.6x1.9-2.4cm).Flowers in numerous small umbels (clusters).Fruits capsules egg shaped, opening in 4 valves.

**Habitat :**Sub-tropical and semi-arid regions.

**Distribution :**Fairly widespread in the study area.

**General uses :** **Fuel wood, charcoal, timber, perfume,** pesticides, amenity, **shade, shelter belt,** dune control, fodder, agro forestry, hedging fruit, (Vogt, 1995).

**Medicinal uses:** The oil from the leaves is used in the perfume and for medicinal applications-pleasant honey is produced from the flowers.( Vogt, 1995).



*Eucalyptus camaldulensis*\_Dehnh. \_

**Photograph (38):**

*Eucalyptus citriodora* Hook. T. L. Mitchell, J. exped. Trop. Australia 235.( 1848).

**Vern. names:** Ban, Kafur.

**Description:** Trees up to 50m high, with straight cylindrical bole and smooth barks. Leaves alternate, narrow to broad lanceolate(4.2-8.1x1.3-2.7cm) lemon-scented. Flowers terminal corymbose , 3-5 umbels. Fruits capsules.

**Habitat :** Deep soils with high water table.

**Distribution :** Fairly widespread in the study area.



***Eucalyptus citriodora* Hook .**

**Photograph (39):**

*Eucalyptus microtheca* Muell. J. Proc. Linn. Soc., Bot. 3. 87. (1859)

**Vern. names :** (Ar.) Ban, Kafur .

**Description:** Small to medium-sized trees up to 12m high, with short cylindrical stems. Bark dirty brown- white, with longitudinal irregular fissures. Leaves alternate, narrow lanceolate to lanceolate, acuminate (6-20x0.8-2cm). Flowers lateral or terminal panicles of 3-5 umbels. Fruits capsules, with three valves.

**Habitat :** Clay and saline soils.

**Distribution ;**Fairly widespread in the study area.

**General uses:** Fuel wood, amenity, dune control, charcoal, shade, timber, shelter belt, pesticides, fruit, Agro forestry hedging, erosion control. Constricting, sleepers or for structural purposes (Thirakul 1984).



*Eucalyptus microtheca*\_ Muell. \_

**Photograph (40)**

## SALVADORACEAE

*Salvadora persica* L., F. W.T. A. Ed. 2, 1(2): 644(1858).

**Syn.:** *Rivinia paniculata* L., Cent. Pl. 2:2; *Cissus arborea* Forssk., Fl. Aegypt.-Arab. : 32(1775).

**Vern. names:** (Ar.) Arak

**Description:** Ever green small trees up to 10 m high, branches green to grayish glabrous. Leaves simple, opposite, elliptic to lanceolate, coriaceous. Flowers terminal and axillary heads. Fruits berry globose .

**Habitat:** Arid area of the flood plains along valleys and stream.

**Distribution :** Wide spread in the study area.

**General uses :** **Fuel wood, charcoal, timber,** pesticides, amenity, **shade,** shelter belt, **dune control, toothbrushes, fodder,** agro forestry, hedging (live), **fruit,** (Vogt, 1995).

**Medicinal uses:** Many medicinal uses have been reported, including treatment for fever, head ache, gonorrhoea, bronchitis asthma, and as an anathematic. Diuretic and for dental care (Maydell, 1986).





*Salvadora persica* L. \_\_\_\_\_

**Photograph (41):**

## SAPINDACEAE

*Dodonaea viscosa* Jacq. Enum. Syst. Pl. 19. 1760(select. Strip. Amer. Hist. 109. (1763)

**Vern. names:** (Ar.) Arkwit

**Description:** Shrubs or small trees 2-4 m high, with branches angular, viscid and glabrous. Leaves sub sessile, ob lanceolate(12.5x3cm). Flowers terminal panicles or sub- racemes. Fruits flat, sub- orbicular or- ob cord ate broadly 1-3 winged. .

**Habitat:** Hilly ground of short grass savanna.

**Distribution :**Widespread in the study area.

**General uses:** Fuel wood, charcoal, **timber**, pesticides, amenity, shade, shelter belt, dune control, **hedging** (live), fruit, (Vogt, 1995).

**Medicinal uses:** The leaves are used to treat fever and sore throats. A well-known remedy is an infusion of the roots to treat the common cold (Vogt, 1995).



*Dodonaea viscosa* Jacq. \_\_\_\_\_

**Photograph (42):**

## RHAMNACEAE

*Ziziphus spina-christi* (L.) Desf., Fl. Atlant. 1:201(1798).

**Syn. :** *Rhamanus spina-christi* L., Sp. Pl. :195(1753),

*Rhamanus nodeca* Forssk. Fl. Aegypt-Arab. :204(1775); *Zizipha nodeca* (Forssk.)Lam, Engl. 3:320(1789); *Z. spina-christi* Desf., Var *inermis* DC., Prodr. 2:20(1825); *Z. spina-rocarba* Tal., In Ann. Sci. Nat, Ser, 4, 888:119(1857); *Z. eroensia* A. Chev., in Etud. FL. Afr. Centr.Franc. 1:59(1921); *Z. spina-christi* (L.) Desf; var *longipes* Engl., V. E. 3(2):307(1921): *Z. spina-christi* (L.) Desf, var. *mitssima* Chiov., FL. Somala. 2139(1932).

**Vern. names :**(Ar.) Sidr(tree) Nabak(Fruit )

**Description:** Armed trees up to 10 m high, stems short and branched, with grey fissured barks. Spines paired, one straight the other shorter and slightly re curved. Leaves alternate ovate to oblong- elliptic (3.5-4.5x1.5-3cm). Flowers cymes greenish- yellow and very small. Fruit globose drupes.

**Habitat :**Low land plains.

**Distribution :**Widespread in the study area.

**General uses :** Fuel wood, amenity, **dune control, charcoal, shade ,fodder, shelterbelt, timber,** pesticides, **fruit,** agro forestry , **hedging** (live and dead) (Vogt, 1995).

**Medicinal uses :**The powdered leaves are used to heal the swellings, where as the fruits are used to stop diarrhoea (El safori, 2000). The water extract of the roots and barks are used for gonorrhoea and stomach pains (EL-Ghazali, 1985). Where as the decoctions of the bark are used against intestinal spasms (EL-Ghazali,et al 1994). The maceration of the roots are used as anti-purgative (EL-Ghazali,et al 1997). The leaves are used against the losses of hair and dandruff, where as the

fruits are used for throat pains and the oil are applied for rheumatic (EL-Ghazali et al 1998). The ash of the stems and branches mixed with vinegar are used for serpent bites (Boulos 1983). leaves are used as astringent, anathematic, anti-charrhoeic, it is cataplasm for abscesses, also put on swollen eyes before going to bed, infusion of the fruit are used as febrifuges, emollient, laxative and reputed remedy for measles (Boulos 1983).



*Ziziphus spina-christi*(L.)

**Photograph (43):**

## TAMARICACEAE

*Tamarix aphylla* (L.) karsten.

**Vern. names :** (Ar.) Tarfa, Athl, Bigm, Fareq, Ubal

**Description:** Glabrous shrubs or small trees up to 8 m high; branches green with short internodes and rough fissured bark. Leaves half-clasping, ovate or deltoid. Flowers lax racemes, white to pink. Fruits capsules with valves.

**Habitat:** Along river banks and water courses on light silt soils.

**Distribution :** Fairly widespread in the study area.

**General uses:** Fuel wood, amenity, hedging, charcoal, shade, shelterbelt (local people of Soba area 2007).



*Tamarix aphylla* (L) karsten. \_\_\_\_\_

**Photograph (45):**



## TILIACEAE

***Grewia tenax*** (Forssk.) Firori Agric. Colon. 5, suppl : 23 (1912) .

**Syn:** *Chadara tenax* Forssk., Fl. Aegypt. .Arab.: 105( 1775); *Grewia bopulifolia* Vahl. Symb. Bot. 1:33 (1790)., *Gerwia beltifolia* Juss., Ann. Mus. Nat. Hist. Nat. Paris 4:92, t. 50, fig. 1 (1804).

**Vern. names:** (Ar.) Gudiem.

**Description:** Shrubs up to 4m high, with brown woody stems. Bark dark brown to grey, smooth. Leaves broadly ovate or cordate or orbicular,( 1.1-2.2x0.8-1.9 cm).Flowers solitary axillary, white or yellow. Fruits orange, globose, sweet-scented, edible.

**Habitat:** Low land plains.

**Distribution:** Widespread in the study area.

**General uses:** Fuel wood, amenity, dune control charcoal, shade, **forage, bark,** timber, pesticides, agro forestry, hedging,, shelter belt, **fruit,** (Vogt, 1995)..

**Medicinal uses:** The fruits are used for anemia (El safori, 2000). The infusions of the roots are used against Jaundice, whereas the decoctions of leaves are used against trachoma (EL-Ghazali 1994).The bark produced a sticky gum with medicinal value against insects (Kokwaro, 1993).



*Grewia tenax*(Forssk.) —

**\_Photograph (46):**

\_\_\_\_\_

## ARECACEAE

### (Palmeae)

*Phoenix dactylifera* L., Sp. Pl.: 1188(1753).

**Vern. names :** (Ar.) Tamor, Nakheil.

**Description:** Erect single- stemmed trees up to 20 m high, with un branched stems stem. Leaves pinnate up to 34 cm long; leaflets in duplicate, linear-lanceolate, apex modified into yellow stout spines. Flowers spatulate. Fruits variable in shapes, oblong- ellipsoid or cylindrical.

**Habitat :** On silty soils.

**Distribution :** Widespread in the study area.

**General uses:** Fuel wood, amenity, charcoal, timber, shade, dune control, leaves, shelterbelt, fruit, pesticide, agro forestry (Vogt, 1995).

**Medicinal uses:** There are many uses in local medicine. These include the treatment of mental disorders and the nervous system, ailments of the respiratory system, diarrhoea, and hemorrhoids. Decoctions are used as a tonic to stimulate lactation, as a haemostatic and to control fever. From the seeds an ointment can be made to heal boils and to treat biliary, bladder and kidney diseases. In addition, date products play a role in local crafts and in cosmetics and almost as a matter of course, in cultural and traditional practices (Maydell, 1986).



*Phoenix dactylifera* L. \_\_\_\_\_

**Photograph (47):**

## CHAPTER SIX

### CONCLUSION

The collection from the study area covered different habitats, and a total number of (47) plant species were studied. These species belong to (19) families (18 Dicotyledonous and 1 monocotyledons). Most of the species of the study area were widely distributed: Some families were represented with a reasonable number of species, others with only one species, due to lack of suitable habitats, irrigated schemes and farms, buildings and because of over grazing. From the above mentioned, vegetation conservation, must be considered so as to reduce the encroachment of desertification, and to preserve plant species of economical, environmental and medicinal values. The flowering plants of the study area were revised and updated, particularly the names and synonyms. The species studied were briefly described in an attempt to highlight their diagnostic characteristics. Photographs have taken for the all species to support and complete the brief taxonomic descriptions. From the identified species of the present study (38) species out of the total number were found to have medicinal values, these represent (79%) of the total species

The study explained that some names of families and species were changed. These were changed to recently published corrections. Also the study showed that the leaves and fruits dimensions of the species *Balanites aegyptiaca* (L.), differ clearly from the dimensions reported by Andrews (1952) and ELAmin (1990), being (2.5-5 cm & 1.5-3.5 cm broad). In the present study the dimensions reported are (1.5-4.2 x 0.6-2.5, 1.3-4.0 cm x 0.5-2.5 cm) and (3.5-4, 3.6 x 5.4 cm) for leaves and fruit respectively. Fig.(4), Fig. (5).

**Fig. (4)**



-Variability in fruits between individual trees .( *Balanites aegyptiaca* )

**Fig. (5)**



-Variability of leaves between individual trees. (*Balanites aegyptiaca* )

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