ADDIS ABABA UNIVERSITY

SCHOOL OF GRAGUATED STUDIES

COLLEGE OF NATURAL AND COMPUTATIONALSCIENCES

MultipurposeShrubs and Trees Used by Peoples at Woreta, Fogera District, South GondarAdministrative Zone

Emebet Gebru

A Thesis Submitted to the Department of Biology in Partial fulfilment of the requirements for the degree of Master Of Science (Biology)

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Approval Sheet I

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This is certify that the thesis prepared by Emebet Gebru entitled:**Multipurpose Shrubs and Trees Used by People at Woreta,Fogera Disitrict,South GonderAdministrative zone** and Submitted in partial fulfilment of the requirements for the degree of master of science(Biology) Complies with the regulation of the University and meets the accepted standards with respect to originality and quality.

Signed by the examing committee:

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Advisor _____ _____ Signature_____ Date_____

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ABSTRACT

Multipurpose Shrubs and Trees Used by People at Woreta, Fogera District,South Gonder Administrative Zone

Emebet Gebru,2017

The purpose of study is to document and analyze in formation on the useand conservation of multipurpose shrubs and trees around woreta ,Fogera district, south Gondar zone. Data were collected by using ethnobotanical methods that include field work, semi structured interview and questionnaires. Data collection was applied through active participation of traditional healers, stakeholder in each sampled Kebele, farmers and other communities.This included atotal of 77 informants of which 55 were key informants The analysis of the data involved informantconsensus,preference ranking, direct matrix ranking with support of tools.A total of62 plant species belonges to 51genera have been identified in the study area.Among these 31species were reported for their various culturalimportance,17spceiesused for traditional medicine,14species used as food sources.twenty eight of the total species distributed in the natural forest,23speciesfrom around homesteade,7species from road sides,6speciesfrom agricultural land in the study area. plantation of tree & shrubs is the main management system to contribute from soil erosion and atmospheric balance on the study area were recorded.

***Key Words**: Indeginous knowledge, informant consensus,traditional healers,shrubs,trees*

TABLE OF CONTENTES

Contents **Page**

LIST OF FIGURES

Pages

LIST OF TABLES

Pages

LIST OF APPENDICES

Pages

LIST OF ABBRIVATIONS/ACRONYMS

ANRS- Amhara National Regional State

BOFED- Bureau of Finance and Economic Development

DMP- Department of Medicinal Plants

FWHOS - Fogera Woreda Health Office Sector

FWOARD - Fogera Woreda Office of Agriculture and Rural Development

GIS- Geography Information System

IBC- Institution of Biodiversity Conservation

IDRC- International Developmental Research Center

IK- Indigenous Knowledge

IPK- Indigenous Plant Knowledge

Km- Killo meter

PGRI- Public Gaming Research Institute

TM- Traditional Medicine

WCWC- World Conservation Monitring Center

WWF- World Wide Foundation of Nature

CHAPTER ONE

1. INTROODUCTION

1.1. Background and justification

One of the biological fields, that plants and their reciprocal interaction to humans is ethno botany.Ethno botany is defined as the interaction of local people with natural environment.How they classify,manage and use plants available around them(Martin ,1995). It also interact with other fields of sciences such as chemistry, pharmacology and anthropology (Cotton, 1996). Ethno botanical research involved in documenting how plants are identified, classified by local people in different part of the world .In addition totaxonomic identification of selected plants,such researches involve chemical constituents of use full plants and their evaluation (Black and Cox 1996). In general, ethno botany is scientific investigation about use of plants such as cultures, food, medicine, construction, house hold utensil, fire wood, pesticides, clothing, shelter and other purposes (Urga Kelbessa *etal.*,2004). Shrubs and trees play vital role in economic development and environment management.They also occupy prominent place on land use system to enhance sustainable development (Azene Bekele Tesemma, 1993).Plant are also useful as sources of food and materials culture as it is revealed in certain ethno botanical studies(Yemane and Tsehaye,2006).

Although ministry of agriculture motivated to lead and enhance millions of seedling development and planting program every year,the cover of shrubs and trees in Ethiopia is still minimal. The major reason for these resources shrinkage is increasing intensive use of land for crop and livestock production.Cutting down trees for fuel wood and construction materials also plays a role .About 92% of the nation's total energy comes from biomass resources with wood and tree residues(Azene Bekele,1993). In addition to over harvesting,excessive replacement of natural shrubs and trees is another factor affecting the total coverage.This is mainly due to lack ofinformation about habitat suitability of different species and lack of awareness in conservation and management of resources.There is lack of conservation actions activities in fogera district which is

similar to other areas in Ethiopia. It is known that the Fogera district which is similar to other area in Ethiopia.It is known that the Fogera district has good coverage of plant resources but the resources were under estimated with respect to their traditional use and associated knowledge. This obivosly entell resources depletion and loss of indigenous knowledge like other area of country. Therefore,Ethnobotanicalresearchplaysvitaltodrawinformationabout plants related with indigenous knowledgeforconservationandsustainableutilization.Thestudyfocusongathering ,documenting and managent of shrubs and trees in Fogera district(around Woreta).

1.2. Statement of the problem

The study site,around Woreta town which is found South Gondar Zone of Amhara National Regional State.It is capital town of fogera district which is located in North western part of Ethiopia. The study area was selected because there is no documented report ethnobotanical information of multipurpose of shrubs and trees for local community around the town and these plants lost by people for different purposes. Thestudy area is protected & known by its rich plant species,it has been pressurized by the surrounding Society(Taye Bekele *etal.*,2001). To prevent different human & animal diseases and to preserve indigenous knowldedgeof various purposes of shrubs and trees , Ethnobotanical information is very important .Therefore the study to contribute traditional knowledge of people around woreta town about multipurpose shrubs & trees. Plants are natural resources for making drugs,food&other services. The majority of medicinal plants of Ethiopia used from wild resources(Zemede Asfaw,2002).

1.3. Objectives of the study

1.3.1. General objective

The main objective of this study is to document the uses ofshrubs and trees used by people of the around woreta.

1.3.2.Specificobjectives

The specific objectives of the study were:

- To document the role of shrubs and trees for treatment of human&animals health problem.
- To record the food and cultural uses of shrubs and trees recognized by the local people.
- To document plant parts used as traditional medicine,foodsource&cultural usesin the study area.
- To provide information on the distribution & abundance of medicinal, food ,cultural materials and values of shrubs and trees in the study area.
- To identify problems in order to conserve shrubs and trees by local people in the study area.

1.4.Research questions

The following research questions were prepared from the objectives

- Whatare the role of shrubs and trees used by indeginous people in fogera districtaround woreta.
- Which types of human and animal diseases treated byshrubs and trees?
- Whichpart of shrubs and trees used for food ,culture,making traditional medicineand how they can prepared?
- How shrubs and trees distributed in specific habitat in the study area?
- Howlocal people obtained anduse shrubs andtrees as a food, to treat various diseases and its cultural values?
- What are the problems to conserve shrubs and trees by local people ?

CHAPTER TWO

2. LITRATURE REVIEW

2.2. Indigenousknowledge of useful plants

Indigenous knowledge refers to accumulation knowledge rule, standards skills and mental sets which are possessed by local people in particular area. Indigenous knowledge is the body of knowledge by a group of people through generation of living in close contact with nature(Quanash,1998).Indigenous people of different localities have developed their own specific knowledge on plant resources, use, management and conservation(Cotton,1996).Rural people usually depend on agriculture for their survival.They also give great values trees and shrubs that are growing near by their farming land (Lampre*yetal*.1980),which are useful to people by providing various purposes(Skerman,1997).When used in human and veterinary medicine and also for environmental conservation appreciable work has been done levcaena species(Skerman,1977). To increase knowledge on exploitation of on many of the trees and shrubs locally found in tropical Africa,the grass root knowledge possessed by local people must be documented and conserved (Atta-krah,1989) and (Lampre*yetal.*1980).Indigenous knowedge is important in providing problem solving strategies for local community further more documentation of indeginous is fundamental to preserve this knowledge for current and future generation as well as protecting intellectual/property right (IDRC&PGRI,2000).

Multipurpose trees that are deliberately grown and managed in agrofrestysystems of trpical africa, supply food in the form of fruit, nuts or leaves . While all trees can be used to several purposes such as providing habitat shade or soil improvement, multipurpose trees have a greater impact on farmers wellbeing because they fulfil more than one basic human need.Multipurpose trees have primary role such as being part of living fence or windbreaker. In addition to this they will have one or more secondary roles most often supplying a family with food or fire wood or both. When multipurpose tree is planted, a number of needs and functions can be full filled at once. They may be intercropped into

existing fields to supply nitrogen to the soil and at the same time serve as a source of both food and fire wood.

2.2.Some common uses of multipurpse trees and shrubs in agrofrestry

2.2.1.Traditional medicine

The use of medicinal plants is very wide spread in many part of the world because it is commonly considerd that herbal drugs are cheaper and safer as compared to synthetic drugs and may be used minimumside effect.Peope use many species of plants for medicine,food,clothing,shelter,fuel and fulfilling of cultural and spiritual needs through out the world(Zemede Asfaw,2001).The appearance of resistance paved the way to the occurance of infection that are only treated by alimted number of antimicrobial agents the gradual rise in resistance of bacterial and fungal pathogens for antibiotics and antifungal highlits the need to find alternative sources from medicinal plants(Erdogrul OT,2002).Arround 80% of Ethiopian population(particularily rular societies) still rely on traditional medicinal plants to fight a number of diseases this was attributed high cost of modern drugs,paucity and in accessibility of modern health services and cultural acceptability of traditional medicine(Fikadu,2007;Desissa and Benggeing,2000). Communities in habiting different localities in the country have developed their ownmedicinal plants and knowledge on their utilization,management and conservation(PankhurstR,1965). Plants have provided humans withastore house of various drugs for all aliments(Sindiga *etal.*,1995).It is estimated that 70% of Kenya a rural population use a combination of traditional and modern medicine while 20% use traditional forms only(Sayer A,2000).Plant have been used as sources of traditional medicine in Ethiopia from the time immemorial to compacts different aliments and human suffering(Asfaw Debela *etal*. 1999).Lose or degradation of natural habitat create a conservation challenge and represents serious threat to the health care. Medicinal use of plants is the only source of traditional medicine for rural population and are high demand in the health care systems of these population compared to modern medicine(Abbiw,1996). This is because modern medicinal services are unavailable to

majority of local people to need high cost and lack of transport to and from health care centers.

Ethnoveterinary medicine which refers to traditional animal health care knowledge and practicecomprising of traditional surgical and manipulative techniques, immunization, magico-relgious Practices and beifies, management practice and use of herbal remedies to prevent and treat range of diseases problems encountered by live stoke holders (Tafesse Mesfin and Mekonnen Lemma,2001).Ethnoveterinary medicine provides traditional medicine which are Locally available and usually cheaper standard treatments. Livestock holders can prepare and use homemade remedies with minimum expense.so far many Live stoke holders in rural areas where there are relatively few veterinarians and shortages of other facilities, traditional medicinal plants are the only choice to treat many aliment (MCCorkle,1995).

2.2.2.Plants as food sources

Plants are sources of subsistence food, food supplement and means of survival during times indeveloping world. In Ethiopia wild food adds diversity and flavoring as well as providing vitaminsand minerals to grain dominated diet(Vivero JL,2001). Wild food that usedby traditional communitiescanprovide cluesfor selectingpotential plantfor domestication(Erich H ,1992).Accordingto (IBC,2005) showed that there are about 170 food plant species that are consumed in different part of the country including herbs, trees, shrubs and climbers. But, mostof thesespecies areendangers due to genetic erosion. These condition more pronounced in countries like Ethiopia due to high rate of population growth. Plants are fundamental toalmost allliveson the earth thatprovidingprotection and nourishment for organisms ranging from bacteria to largemammals (Cotton C.M,1996). Plants can serve to satisfy the water needs of our body, which is part of food(Tigist Wondimu *et al.,* 2006). Plant have been the sources of food material from thedawn of human civilization(Aronld,1995 cited in Khanal,2006).For instance about 300 millionpeople obtain part or their entire lively hood and food from wild,forest in the world(DMP,1982).Wildplants in Ethiopa are used as sources of plenty

and of food shortage and they a highnutritional content such as protein,vitamin B_2used as alternatives to convetional vegtablesin human diet(Fenthahun Mengistu &Hager H,2008).

2.2.3.Fuel wood and charcoal

Fuel wood as sources of energy for heating and cooking is a common use of plant resources inmany rural communities throughout Kenya while reliance on wood for fuel has been declined indeveloped world over the past century, it is still the Principe sources of fuel for many developingnations like Kenya (Cunningham and Saigo,1999).

2.2.4. Construction and fencing

According to (Were and Wanjala,1986) found that traditional pastoral communities of Kenya various trees and shrubs species as sources of construction materials. Fencing and housing is an activity for traditional maasai who have wet and dry season bomas as the activity primarily usetrees and shrubs (Were and Wanjala).

2.3. Treats and conservation status of plants in Ethiopia

2.3.1. Treatment of plants for different purposes

Recent evidence from Ethiopia as well as other countries indicate that existence of this indigenous resources is threatened and many plant species globally are threated with exiniction if deforestation,urbanization and drought are to continue(IUCN &WWF,1985).Rapid increase in population the need for fuel, urbanization, timber production,over harvesting,destructive harvestinvasive species,commercialization,honey cut degradation,agricultural expansion & habitat destruction are human caused threats to medicinal plants.

2.3.2.Conservationstatus of plants

Conservation is defined as sustainable use of biological resources. The cocept of sustainability is now seen as the guiding principle for economic &social development particularly with reference to biological resources.According to zemede Asfaw(2001) medicinal plants considerd tobe at conservation risk due to over use destructive

harvesting(roots,barks collection). Plants can be conserved by ensuring and encouraging their growth in special place as they have been traditionallythiscanbepossible in places of workships (Churches,mosques,grave yards etc,scardgrooves,farm margins,river banks,road sides,livefence of gardens& field.The local communities alienates from resources they had conservedanddepend uponfood,medicine,conservationarea (Sindiga I,1995 andRutten M,2004).Identification of muliple use of shrubs and trees in the study area very important from way of conservation &mangment of local people because the most valued should be given priority in order to conserve& management before extiniction takes them away(Cunningham,2001).

CHAPTER THREE

3. MATERIALS AND METHODS

3.1. Description of study area

3.1.1. Geographical location of study area

The study was conducted around woreta town, located in southGondor zone of Amhararegion.The district is located at an average altitude of 1820 above sea level in south Gondar zone Amhara regional state of North western Ethiopia. Woreta town is the capital city of the woreda, which is located at 11^0 41'13'and 12^0 02'54" north latitude and $37^0$29'11"and 37^0 58'46" eastlongitude (ANRS-BOFED,2006).The town is found between addis ababa to gondar and about 58 km from bahirdar and 622 km from Addis Ababa **See Figure** 1

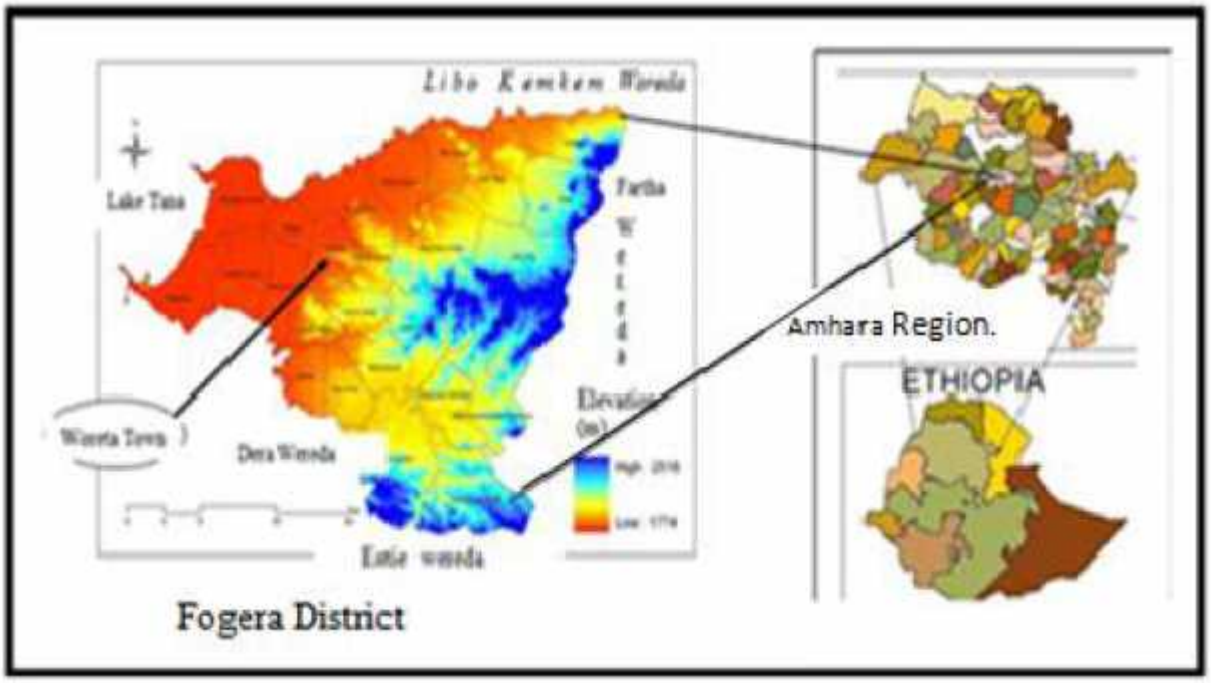

Figure 1: Map of Fogera district (Source; ANRS-BOFED,2006 GIS team)

3.1.2. Climate

The study area has registered an average annual rain fall of 1029mm and temperature ranging from 24-32centigrde(FWOARD,2011). Traditionally,the agroclimatic zone of the district is recognized as ‘weina dega’.

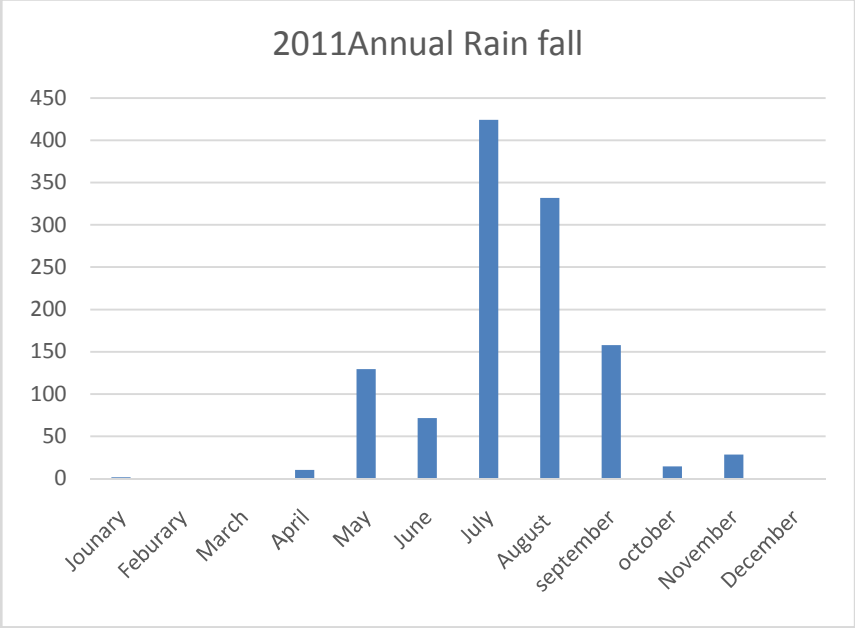

Figure 2 Annual precipitation of Fogera district 2011(source;National metrology agency)

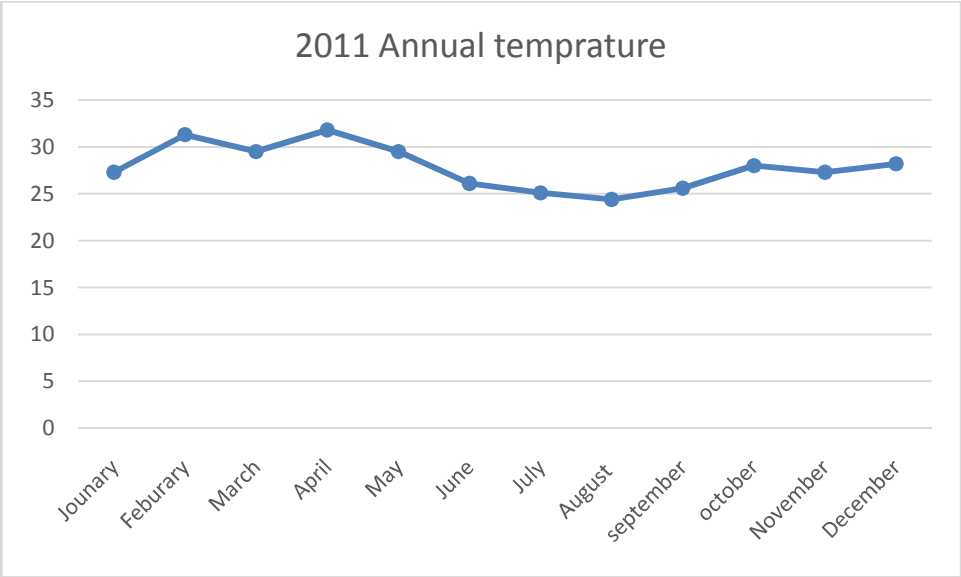

Figure 3 Annual temperature in fogera district 2011(Source:National metrology agency)

3.1.3. Topography and Soil types

Topography of the area is a flat land (i.e. accounts for 76% of the total land in the district). Soil texture of district is black soil (FWOARD,2010). The soil has high water drainage capacity for irrigation system to produce more cultivated crops such as rice, teff & dagusa.

3.1.4.Land use

As information from informant's land size of the study area were mostly used in agricultural expansion. Based on information from agricultural expert's land size in Fogera district were classified for different purposes (See Table 1).

Table 1: Land use system in FogeraDistrict

No	Land use	Land use in hectare	Percentage
1	Agriculture	60,200	60.5
2	Grazing	22,122	22.2
3	Forest area	8,442	8.5
4	Covered with settlement	7,075	7.1
5	Wetland	1,698	1.71
	Total	99,537	100

Source: FWARDO,2010

3.1.5. Population structure and medical services

The total population of Fogera district is estimated at 140,458 of which 76,762 are males and63,696 are females. Of the totalpopulation, a total of 105,085 are (53,893 are males and 51,192 are females) are rurar dwellers and 35,373 are urban dwellers. The estimated average family size is 6.97 persons per house hold larger than the region average family size (5 persons per house hold). The population density of the study area is 98 persons per km square FWARDO, (2012).The language of rural people of the district in Amharic and the life of people in the study area depend on crop production and animal breeding.

Based on information from Fogera district Health Office Sector FWHOS, (2008) the first top tenhuman diseases in the areawere malaria16,601(20.6%)people infected followed by acutefebrile illiness, Acute febrile illness affects 10,249 (12.72%) and others are listed the following Table 2.

Table 2: Top ten human diseases in fogera district

Types of diseases	Number of people infected	Percentage
Malaria(falciparum)	16,601	20.6
Malaria(other spps)	10,369	12.87
Acute febrile illness	10,249	12.72
Pneumonia	7,976	9.9
Heliminthiasis	7,952	9.87
Acute upper respiratory infection	7,477	9.28
Dyspepsia	7,140	8.86
Infections of the skin and subcutaneous tissue	4,733	5.86
Diarrhea(non-bloody)	4,239	5
Trauma(injury,fracture etc)	3,850	4.78

Source; FWHOS,(2008)

3.2.Methods of Study

3.2.1. Design of the research

A research design is the arrangement of condition for collection and analysis of data in a manner that aims to combine relevance to research purpose with economy in procedure (Kothari ,2004). The researcher to study and documented about the importance of shrubs and trees around woreta town. In order to develop the proposal, collect resources like published and un published books and other past thesis from September 15,2016 to November 10,2016. Reconnaissance survey conducted from September25,2016 to November, 2016.The data were collected from the end of March to April 25,2017 and develop the thesis from end of April to June22,2017.

3.2.2. Reconnaissancesurvey and selection of study sites

The study was made from November 10,2016 to March 15,2017. Data collection was accomplished from April 2017 to June 22/2017. There are four study sites were selected during data collection based on forestcoverage because other part of Kebele was pastural land using purposive sampling methods and the distance of study sites from Woreta town as follows.

- Kuhar found at 5km south of Woreta
- Gina found at 3km south of Woreta
- Medhanealem forest found at 3.5km east of Woreta.
- Alember Zuria found at 10 km east of Woreta

3.2.3. Selectedinformants

The researcher selected 77 informants from local communities including teachers,students(to improve the diversity of informants), local farmers, traditional healers and forest resource management in Kebele . 53 male and 24 females from the age 19 and above was included from these 4 study sites. 55 key informants were selected from students, teacher, local farmers, traditional healers and agricultural experts which they are native,lived for long time and knowledgable based on purposive samping. According to (martin ,1995) when recording knowledge held by traditional healers or by certain social groups such as women and elder the choice of key information is dictated.

3.2.4 Sex, age, educational and marital status of the respondents

There are 77informants were selected in the study area. The personal profile of respondents based on sex males are 53 and females are 24. The age incuded 19 and above 42 years. based on educational status of the respondents most of them are can read and write but some are cannot read and write . Concerning marital status of the respondents most of them are married but some are unmarried and divorce , this indicate that most of house holder respondents have responsibilities helps to advice their children and support their children how to use natural resources in an area.

Table 3 personal profile for the respondants

No	Item	specification	Frequency	percentage
1	sex	Male	53	68.8
		Female	24	31.2
		Total	77	100
2	Age	19-25	3	3.8
		26-34	23	32.5
		35-42	35	45.5
		above42 years	16	20.1
		total	77	100
3	Martial status	married	56	70.9
		unmarried	17	24.1
		divorce	4	5.1
		total	77	100
4	Educational status	Illitrate	2	2.5
		can read and write	22	27.8
		grade 10 completed	35	46.8

		diploma(teachers&agricultural experts)	4	5.1
		degree(agricultural experts &teachers)	12	15.2
		master(agricultural officer)	2	2.5
		total	77	100

3.2.5.Ethno botanical data collection

In order to achieve the objective of the study the researcher was prepared and distributed questionariesand data werecollected about different species of shrubs and trees, how they cantreated diseases, partsused, method of preparation and ways of conservation and management system. Data collection tools adopted from Dorneyei,2007, Kothari,2004 and Stake,2010.

Semi structure interview

The researcher collected data through semi structure interview by preparing open and closedquestionsinclude personal profile of informants in English (Appendix 3) and translated to in Amharic, name species of shrubs and trees used for medicine, food & cultural values, parts used, method of treatment for prevent diseases.The researcheruses direct communication with key informants by recording sound and using video of researcher questions and response of the informants.

Field observation

The researcher prepared check list about local name and number of shrubs and trees species in the study sites. Specimen are collected and identifiedby the researcherduring field walk.

3.2.6. Specimencollection and identification of shrubs and trees

Specimens were collected and important tools used to collect in field were plant press, bags, fieldnote book and camera. Based on Ethno botanical information provided by informants,specimens werecollected,numberd during guided field walk and given vernacular(local) names. Identification of plant specimens was in may to June 2017 by comparsion with collected specimens with assistance of experts at woreta town department of plant science collage.

3.2.7. Methods of data analysis

The study carry out field observation, and semi structure interview. Therefore, the data was obtained from those tools were analyzed by using quantitative and qualitative technique such as descriptive statics, informant consensus, preferenceranking and direct matrix ranking.

Descriptive statistics

A descriptive statically method including percentage and frequency were analyzing and summarize the data on species of shrubs and trees associated knowledge, use and conservation.

Informantconsensus

In the area information recorded from informants by semi structure interview and field observation were described common idea taken by the researcher & statically analyzed.

Preferenceranking

If plants have more important in an area this show that it has given more value for the society and plants have less important in an area which mean that it has less value for the society .So, the respondents identified and selected species of shrubs and trees in rank based on their function.

Direct matrix ranking

Direct matrix ranking was done (martin ,1995) in order to compare multipurpose of a given species and to related its utilization versus its dominance. Based on information gathered from informants five multipurpose of shrubs and trees were selected by key informats &give value of each species. The five use value of the species include medicine, food, construction, fire wood and fencing.

CHAPTER FOUR

4. RESULT

4.1. Multipurposeshrubs and trees in the study area

4.1.1.Traditional medicine

There are different types of human diseases occurring in the study area and these diseases were common cold,tapeworm,allergic,pain of joints aroundfeets and hands,bloodpressure,heartproblem,cough,hemmoroid,stomach ach and fungal diseases like ring worm,Parts of shrubs and trees were leaf which incuded 12(80%)species,fruit,root & seed were included 1(6.6%) species. The mode of preparation were crushed ,dried, boiled,squeezed and immersed in water.From the total 64 species of shrubs and trees17(25.8%)species used for traditional medicine from these 15(22.8%)species were used for treatment of human diseases .Shrubs have higher innumber andwhichaccounts11(73.3%)andtreeswereless in number and which accounts4(26.7%) in the study area(Table4).

Table 3: Human diseases&traditional treatment by informants

Types of human diseases	Scientific name	Parts used	Methds of preparation	Local name	No of informants respond	percentage
Common cold	*Combretum collium* *Ocimum lamfolium*	Leaf leaf	Smoked boiled	Shrub shrub	25 15	65.6
Tape worm	*Embela schimpema*	fruit	crushed	tree	30	49.2
Blood pressure heart problem	*Moringa oleifera* *Rhus vulgaris*	leaf seed	dried,crushed& boiled cooked	tree shrub	23 5	45.9
Cough	*Rumex abyssinicus* *Aloe vera*	root leaf	crushed squeezed	shrub shrub	19 8	40.9
Allergic	*Ocimum lamfollium* *Callotropis procera* *Rumex nervoses* *Osyris quadripatrit*	leaf leaf leaf	crushed crushed crushed	shrub shrub shrub	6 3 7	29.5

	ata	leaf	crushed	shrub	2	
Ring worm	*Coroton macrostachyus* *Rumex abyssinicus*	leaf root	squeezed crushed	tree shrub	7 5	19.7
Stomach ach	*Euclea dirovinum*	leaf	crushed&immersd in water	tree	10	16.4
Pain of jonts around foot&hand	*Dodonea viscosa*	leaf	crushed	shrub	8	13.1
Hemmoroide	*Pittosporum viridifoliu*m	leaf	crushed	shrub	5	8.19

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From the total key informants 40(65.6%) were respond *Combretum collinum* (tinjuit) &*Ocimum lamfollium*(damakassie) used for treatment of common cold,30(49.2%) were respond *Embelia schemperi*(enkoko) used for treatment of Tape worm,28(45.9%) were respond*Moringa olifera*(shiferaw) &*Rhus vulgaris*(yeregna kollo) used for treatment of blood pressure &heart problem,25(40.9%)were respond Rumex abyssinicus(mekmeko)and*Aloevera*(eret) used for treatment of cough,18(29.5%)were respond*Ocimumlamfollium*(damakassie)*Callotropisprocera(*tobiaw),*Rumexnervoses*(emb acho)&*osyris quadripatritata* (keret)used for treatmentof allergic,12(19.7%) were respond *Coroton marcostachyus* (bisana)&*Rumex abyssinicus* (mekmeko) used for treatment of ring worm(Table-4).

4.1.2.Ethno veterinary medicine

In the study area there are different types of animal diseases traditionally treated from shrubs and trees by local communites and they were tape worm,chiken diseases(fengil) &labour pain.From the total of 17(25.8%) species of shrubs and trees for traditional medicine 2(11.8%) species used for treated animal diseases belongs to 2genera.Parts used for treatment were leaf which included 2(75%) species and fruit included 1(25%) species were recorded and methods of prepration were used dried,crushed, squeezed,immersed in water and trees have more used than shrubs in the study area(Table-5)

Table 4: Animal diseases&traditional treatment by informants

Typesof diseases	Speciesof plant used	Parts used	Methods of preparation	Local name	Noof informants	percentage
Tape worm	*Embelia schmperi*	fruit	crushed	tree	40	65.6
Labour pain	*Acacia lahia*	leaf	dried&crushed	tree	35	57.4
Chiken diseases	*Justica schepema*	leaf	crushed&squeezed	shrub	8	13.1

From the total of key informants40(65.6%) informants were respond *Embelia schmperi*(enkoko)used for treatment of tape worm,35(57,4%) were respond *Acacia lahia(*chebha)used for labour pain&8(13.1%) were respond *Justica schimpema*(semiza) used for chiken diseases(fengil) in the study area.*Embelia schemperi*(enkoko) used both human & animals.

4.1.3.Sources of food

From the total of 62 species of shrubs and trees that were record 14(22.5%) species were used as sources of food&they are belongs to 11 genera.Parts used as food sources were fruit mostly used by the local communities which included 14(93.3%) species of shrubs and trees and leaf and flower were included 1(6.6%) species of shrubin the study area. the local people consumed these shrubs and trees as raw(fresh) form and trees have higher sources of food than shrubs in the study area(Table-6).

Table 6 Methods of consumption of shrubs and trees by informants

Scientific name	Parts used	Methods of consumption	Habit	No ofinformants respond	Percentage
Ficus sur	fruit	raw/fresh	tree	35	57.4
Syzygnum guineense	fruit	raw/fresh	tree	40	65.6
Mimspos kummel	fruit	raw/fresh	tree	20	32.8
Xinema americana	fruit	raw/fresh	tree	18	29.5
Carssia edulis	fruit	raw/fresh	shrub	26	42.6
Rhbus spp	fruit	raw/fresh	shrub	28	45.9
Rosa abyssinica	fruit	raw/fresh	tree	25	40.9
Opuntis vulgaris	fruit	raw/fresh	shrub	15	24.6
Caparis tomantosa	fruit	raw/fresh	shrub	8	13.1
Acantus senii	Leaf &flower	raw/fresh	shrub	22	36.1

Adansonia digitata	leaf	raw/fresh	tree	24	39.3
Celtis africana	leaf	raw/fresh	tree	15	24.6
Cordia africana	fruit	Raw/fresh	tree	50	81.9

From the total key informants 50(81.9%) of informants were respond *Cordina africana*(wanza),40(65.6%) were respond *Syzyginum guineense*(dokma),35(57.4%) were respond *Ficus sur* (shola),28(45.9%) were respond *Rhbus spp(injorie)*,26(42.6%) were respond *Carssia edulis* (agam),25(40.9%)were respond*Rosa abyssinica*(qega),20(33.8%) were respond *Mimspos kummel*(ishe),18(29.5%) were responed*Xinema americana*(inkoy),24(39.3%) were responed*Adansonia digitata*(bamba),15(24.6%) were respond *Celtis africana* (kawoot) are food sources in the study area(Table7).

4.2. Preference ranking

One of the use of shrubs and trees for local people were food sources.In this study the analysis of preference ranking of six most popular & widely used plants as food source were reported by five key informants in the study area showed that*Cordia africana*(wanza) was the most reported and 1st ranked whileMimspos kummel(ishe)was the least rank plant species(Table-7).

Table 5: Result of preference ranking on sixmost plants as sourcesof food that frequently used by respondants in the study area(6-most, 1-least)

Wild food plants	**R e s p o n d a n t s**			Total	Rank
	R_1R_2	R_3	R_4R_5		
wanza	6	5463		24	1st
dokma	2	3655		21	2nd
inkoy	3 4	1	4 2	14	4th
ishe	1 1	22	6	12	6th
shola	465	1	4	20	3rd
injorie	5 2	2	3 1	13	5th

4.3. Cultural materials & values of shrubs & trees in the study area

In the study area local people used different species of shrubs & trees for cultural materials such as construction of house,making furnitures,house utensil materials ,farm implementing tools and others are used for different cultural values as listed Table 8.

Table 6: Cultural materials & valuesof shrubs and trees in the study area

Types	Spps of plants used	Parts used	Habit	No of informants respond	percentage
Construction	*Juniperous procera*	stem	tree	23	37.7
	Albiza schepema	stem	tree	20	32.9
	Caesalpina spinnosa	stem	tree	15	24.5
	Ekeberigia capensis	stem	tree	10	16.4
	Entada abyssinicus	stem	shrub	6	9.84
	Cordia africana	stem	tree	18	29.5
Making furnitures and house utensil materials	*Cordia africana*	stem	tree	45	73.5
	Mytenus arbutifolica	stem	shrub	30	49.2

Fire wood& Charcoal	*Acacia bussei*	Stem	Tree	45	73.8
	Coroton marcostachyus	stem	tree	40	65.6
	Adanosia digitata	stem	tree	25	40.9
Teeth brush	*Olea africana*	stem	shrub	42	68.9
	Clavsena anisata	stem	shrub	28	45.9
Fencing	*Justica schepema*	leaf	shrub	35	57.4
	Capparis tomantosa	stem	shrub	30	49.2
	Acacia polyacamnta	stem	tree	10	16.4
	Acacia abyssinica	stem	shrub	7	11.8
Washing house utensil materials	*Veronia amygdalia*	leaf	tree	38	62.3
	Coroton marcostachyus	leaf	tree	28	45.9

Making Farm land implementing tools	*Acacia abyssinicus*	stem	shrub	25	40.9
	Celtis africana	stem	tree	18	29.5
	Diospyros abyssinicus	stem	tree	10	16.4
Fish catching	*Embelia schemperi*	fruit	tree	38	62.3
Traditional cosmetics	*Grewia ferruginea*	bark	shrub	46	75.4
	Echnopis kebericho	root	shrub	3	4.9
Ornamental purpose	*Albiza schemperina*	leaf	tree	36	59.1
	Juniperess procera	stem	tree	22	36.1

4.4.Direct matrix ranking

Result of direct matrix ranking of five most popular multi purpose of plants show that*Cordia africana*(wanza),*Coroton marcostachyus*(bisana),*Adonesia digtata*(bamba),*Justica schepema* (simiza),*Celtis africana* (kawoot), ranked,1st,2nd,3rd,4th and 5th respectively.

Table 7: Result of direct matrix ranking on five multi purposes of shrubs and trees based on the key informants(5-best,4-verygood,3-good,2-less,1-least,0-notuse)

Plant species name	medcine	food	construction	Fire wood	fencing	Total	Rank
wanza	0	5	5	4	4	19	1st
bisana	5	1	3	5	4	18	2nd
bamba	0	4	3	5	3	15	3rd
kawoot	0	4	3	3	0	10	5th
semiza	4	0	0	2	5	11	4th

4.5. Variation of indegineousplant knowledge

The number & uses of medicinal,sources of food ,cultural use of shrubs & trees that given by informants list and record during semi structure interview,guided field work, to determine varation of of indigenous plant knowledge among the ages in different study sites. During data collection three age groups were identified to compared their knowledge and experience in each interval with respect to name of species,their uses as medicine,food source and culrtural use. The informants whose age interval 35 and above respond highest and the age interval 19-25 were respond least number of multipurpose shrubs &trees(Table10)

Table 8: Variation of multipurpose shrub and trees among age groups of informants

No	Informants age	No of plants used for traditonal medicine	Percen tage	No of plants used as food sources	percen tage	No of plants used for different cultural services	Percent age
1	19-25	7	14	8	16	10	20
2	26-34	8	16	10	20	18	36
3	35 & above	14	28	11	22	25	50

4.6.Habitat anddistribution ofmultipurpose shrubs and trees

In the study area multipurpose shrubs & trees distributed in different habitats these are natural forest,around home steade,road sides and agricultural(farm)land. From the total of 62 species of shrubs and trees28(45.2%)speciesmore distributed from forest,21(33.8%) species from around home steade, 7(11.3%) species fromroad sides 6(9.7%) plants from agricultural land were recorded.From the total of key informants 21(38%) wererespondplants more distributed from forest,19(34.5%) respond from around homesteade,9(10.5%)respond from agricultural land 6(9.8%) respond plants from road sides in the study area(Table11).

Table 9: Habitat and distribution of shrubs and trees and their percentage

No	Habitat	No of plant species distributed	percentage	No of key informants were respond	percentage
1	Forest	28	43.8	21	38
2	Around home steade	23	35.9	19	34.5
3	Road sides	7	11	6	10.5
4	Agricultural land	6	9	9	16.4

4.7. Problems and conservation of multipurpose shrubs & trees

As informants reported before past 5-10 years the land coverd with shrubs and trees in the study sites and other kebeles was high So, people can get more available resources from these plants.But now a day these plants lost continoususe of different purposes such as fire wood, construction,agricultural expansion,charcoal,washing purposes,fencing& medicine.In the study area mostof the informants reported that fire wood and agricultural expansion was agreat problem.

5.DISCUSSION

5.1. Multipurpose shrubs and trees in the study area

5.1.1. Traditional medicine for treatment of human andanimal health problem

In the study area most of local people belived that most of diseases treated by traditional medicinal plants rather than modern system of treatment but some traditional healers are not voluntary to shair their knowledge during the study because .Indegineous knowledge of the local peope indicate that people of the study area prevent human &animal diseases by using surrounding natural resourcs.As from the result of the study indicate that informants were reported importance of shrubs &trees as traditional medicine in human diseases than animals this shows that,people live in the study area have more knowledge &great attention about human diseases than animal diseases.Indeginous knowledge refers to accumulation of knowledge, rules, standards skills & mental sets possed by local people in particular area(Quanash,1998).

5.1.2.Sources of Food

The analysis of the result indicated that the most important plant part were fruit in the study area(Beyafers Tamene ,2000 and Tigist Wondimu*etal*.,2006). Informants were respond that most shrubs & trees used as food sources for human but some of them used for animals such as *Capparis tomantosa*(gimero),*Celtis africana*(kawoot),*Adansonia digitata*(Bamba)& *Acanthus senii*(kosheshila).As the result of the study showed that local communities mostly used these ediable plants sold in market as sources of income to lead their life rather than Agricultural expansion and plants used for market are *Syzygium guineense* (dokma),*Ximeniaamericana*(inkoy),*Mumusoskummel*(ishe),*Rosa abyssinica*(qega) and*Rhbus spps*(injorie).The analysis of shrubs &trees as food sources using preference ranking from Table7 showed that*Cordia africana*(wanza)&Syzginum guneese(dokma) are the most important trees used as food sources in the study area.As reported from informants Cordia africana(wanza) is the most preffered plant used by

local people in the study area for different uses such as construction,making furnitures& fire wood which is mostly distributed around homesteade& agricultural land.Syzginum guneese (dokma) is the most preffered plant as sources food in the study area&mostly distributed around homesteade.Some plant speciesused more than one purposes,they were *Adanosia digitata* (bamba),*Capparistomantosa*(gimero)&*Celtis africana*(kawoot) for food &cultural values.

5.1.3. Cultural materials &vaules of shrubs and trees

5.1.3.1.Cultural materials

Constructionof house

From the total of 13(20.3%) species of shrubs and trees used for different cultural materials 8(61.5%) species were used for construction of house. The importance species of shrubs and trees used by local people for construction were *Ekeberegia capensis*(lol), *Albiza schemperina*(sesa), *Entada abyssinica*(kentefa), *cordia africana*(wanza), *Juniperousprocera*(tid) &*Caesalpina spinnosa* (kontir) and trees have higher in number than shrubs which accounts 7(87.5%) and shrubs were 1 (12.5%) belonges to 7 genera. Plant parts used for construction were stem . From the total of key informants 23(37.7%) were respond *Juniperous procera* (tid) used for construction, 20(32.9%) were respond *Albiza schemperina*(sesa), 18(29.5) were respond *Cordia africana*(wanza) 15(24.5%) respond *Caesalpina spinnosa*(kontir), 10(16.4%) were respond *Ekeberegia capensis*(lol) & 6(9.84%) were *Entada abyssinica*(kentefa)in the study area (Table 8).

Making furnitures andhousehold materials

From the total of 13(20.3%) species of shrubs and trees used for different cultural materials 2(15%) species were used for making furniture & house hold materials belonges to 2 genera and these important species of shrub and tree were *Cordia africana*(wanza) &*Mytenus arbutifolica*(atat).The important plant part used were stem & from the total of key informants 45(73.8%) informant were respond Cordia africana (wanza) used for making furnitures & 30(49.2%) were respond *Mytenus arbutifolica* (atat) used for making house utensil material in the study area (Table 8).

Making farmland implementing tools

From the total of 13(20.3%) species of shrubs & trees used for different cultural materials 3(23.1%) species of shrubs & trees used for making farm land implementing tools belongs to 3genera.The important plants used for these purposes were *Celtis africana* (kawoot), *Diospyros abbysinicus*(selechegn) &*Acacia abysinicus*(timbilka)& parts used for these purposes were stem used by local people in the study area. From the total of key informants 25(40%) were respond for *Acacia abbysinicus*(timbilka),18(29.5%) were respond for *Celtis africana* (kawoot) & 10(16.4%) were respond for *Diospyros abbysinicus*(selechegn) (Table 8).

5.3.1.2. Cultural values

Firewood andcharcoal production

There are 19(29.7%) species of shrubs and trees used for different cultural value for local communities. From these 5(26.3%) species were used for fire wood & charcoal belongies to 3 genera. The importance plant parts used were stem & these importat plants were *Acacia bussei*(girar), *Coroton macrostaychus*(bisana) &*Adansonia digitata*(bamba) in the study area. From the total key informants 45(73.8%) were respond *Acacia abyssinica*(girar), 40(65.6%)for*Coroton macrostaychus*(bisana)& 25(40,9%) for *Adansonia digitata*(bamba) (Table 8).

Fencing

From the total of 19(29.7%) species of shrubs and trees used for different cultural value 5(26.3%) species used by the local people for fencing belongs to 5 genera. The importance plants used for fencing were *Justica schimpema*(semiza), *Acacia polyacamnta*(gmarda), *Acacia abysinicus*(timbilka) &*Capparis tomantosa*(gimero). Parts used for fencing were stem and the number of informants were respond 35(57.4%) for *Justicaschimpema*(semiza). 30(49.2%) for *Capparis tomantosa*(gimero), 10(16.4%) for*Acaciapolyacamnta*(gmarda) & 7(11.8%) for *Acacia abysinicus*(timbilka) (Table8)

Washing household materials

There are 2(10.5%) species of trees used for washing purposes from the total 19(29.7%) species of shrubs and trees for different cultural value & belongs to 2 genera.The important plant species for washing house hold materials were *veronia amygdalia*(grawa) &*Coroton macrostaychus*(bisana) & parts used for washing purposes were leaf in the study area. From the total key informants 38(62.3%) informants were respond for*Veroniaamygdalia* (grawa) &28(45.9%) were respond for *Coroton macrostaychus*(bisana) (Table-8).

Fishcatching

In the study area the local people use 1(5.3%) species of tree used for fish catching from the total 19(29.7%) species for different cultural vaue and belongs to 1 genera.The & Parts used for catching fish were fruit used by local communities. From the total key informants 38(62.3%) were respond *Millitea ferruginea*(birbira) (Table-8).

Traditional cosmetics

From the total of 19(29.7%) species of shrubs and trees used for different cultural value 4(21.1%) species were used for traditional cosmetics belongs to 3genera. The important plants used for traditional cosmetics were *Grewia ferruginea*(leonkuata),&*Echnopi*s *kebericho*(kebericho) in the study area. Plant parts used for traditional cosmetics were bark, & root used by local community. From the total species used for traditional cosmetics 4(80%) were shrubs and trees were 1(20%) & the number of informants respond 46(75.4%) were *Grewia ferruginea*(leonkuata) used as traditional soup & 3(4.9%) were *Echnopis kebericho*(kebericho) used as traditional oil for skin in the study area (Table 8).

Making flavority of household materials

From the total of 19(29.7%) species of shrubs and trees used for different cultural value 3(15.8%) species were used for making flavority of house hold materias& they are belongs to 2 genera.The important plants used for this purpose were *Terminalia*

*browni(*abalo) &*Olea africana*(weira) that used by local community. Plant part used for this purposes were stem & leaf and the number of informants respond 28(45.9%) were *Terminaliabrowni*(abalo) & 27(44.3%) were *Olea africana*(weira) in the study area (Table 8)

Ornametal purpose

Species of trees used for decorating house in the study area were *Phonex receinata*(senel) &*Albiza schemperina*(tid) which included 2(6.1%) species from the total 19(29.7%) species for different cultural value & belongs to 2genera , part of plant used for this purpose were leaf *Albiza schemperina*& number of informants respond 36(59%) were *Phonexreceinata(*senel), 22(36.1%) were *Albiza schemperina* (tid) for decorating house in the study area(Table-8)

Teeth brush

From the total 19(29.7%) species of shrubs and trees for cultural value 3(15.8%) species used for teeth brush were *Clavsena anisata*(limich) &*Olea africana*(weira) & they are belongs to 2 genera. Plant part used for teeth brush was stem & number of informants respond 42(68.9%) were *Clavsena anisata*(limich) & 28(45.9) were *Olea africana*(weira) for teeth brush in the study area (Table 8)

5.2.Habit,parts used and mode of preparation

The result of the study indicated that shrubs more contributedthan trees for medicinal purposes. In the case of food sources trees more contributed than shrubs on the other hand trees more contributed than shrubs for different cultural value.From the result of the study indicated that leave mostlycommonfollowedstem,fruit,barkand root plant parts that used during preparation. (Endalew Alemu2007 and Fisseha Mesfine *etal.*,2009)stated that roots to be the most used parts.As the result of the study also indicated that the local people use different methods of preparation from collected plant species for treatment of diseases,food sources,different cultural value .Informants were repoted that crushed plant material mostly used in the study area and people belived that crushed leave and fruit part of plants by stone or other iron material and then added to water were very important way in order treat diseases and catching animals because chemicals gradually released from leave and fruit that inserted in water and give immediate response.Informants were reported that there are different human diseases that occurred in the study area (Appendix1) and the local people belived that modern medicine better than traditional medicine because in order to treat diseases traditional healers frequently prepared with out alimited in amount this was creat as side effect for health of the society.

5.3. Variation of indigenous plant knowledge

From the result of the study indicated that informants they have old age responded more information than younger age because they have more knowledge of traditional education than modern education.There is indeginous knowledge difference among informant and aged informant we also stated with otherstudies including cotton(1996),Debela Hundie *etal.,(*2004),Tizazu Gebrie(2005),Tilahun Teklehymanot *etal*.,(2007) and Fisseha Mesfin *et al* .(2009). As shown the result there is variation of

indigenous plant knowledge among informants age because there is problem of transferd traditional knowledge from old to younger generation.

5.4. Habitat and distribution of shrubs and trees in the study area

In the result of the study showed that the local people in the study area obtained multiple use of shrubs and trees from different habitats suchas natural forest in the woreda,agricultural land,Around homesteade&road sides.Informants were reported in the studythat highest plant species that used for medicine found around home steade and the least species found from Agricultural land,Species of plants used as food sources highly distributed around home and least species from Agricultural land . Habitats especially forests are found tobe higher source of medicinal use of plants make 60% of the home garden plant diversityamong garden crops in Ethiopia(Zemede Asfaw,1997).Higher species of plant diversity that used for different cultural services found fromforest..

5.5. Problems and conservation of multipurpose shrubs&trees

The result of the study showed that number of shrubs and trees species lost by local communities for various purposes. Plants provide for local community for food and they are forest products for construction ,medicinaluses,architectural works as well as human needs(Melakeselam Dagnachew,2001). As informants were reported that species of shrubs and trees that used for multiple uses distributed in different habitats are not conserved by local community because reduce the effort of agricultural experts to give awareness for local communities about role & how to conserve and manage natural resources in their area. Identification of multiple use of shrubs and trees in the study area very important from way of conservation and management of local people because the most valued should be given priority in order to conserve and manage them before extiniction takes them away (Cunningham ,2001).Plants can be conserved by ensuring their growth in special place as they have been traditionally(Zemede Asfaw,2001).

CHAPTER SIX

6.CONCULUISION AND RECOMMENDATION

6.1. Conclusion

The result of the study indicated that in Fogera district around woreta there are higher species diversity of shrubs and trees but these plants are gradually lost by local peope for various purposes including traditional medicine,sources of food and cultural values.The most common species of plants used by local peoplewereAcacialahia(chebha),Acaciabussei(girar),Acaciapolyacamnta(gmarda),Cordia africana(wanza)Corotonmarcostachyus(bisana),Dodoneaviscosa(kitikita),Grewiaferrugin ea(leonkuata),Justica schempema(semiza),Myetenus arbutifolica(atat) & Olea africana(weira).

There are 62 species of plants recorded from these 31(50%) species used for different cultural values,17(27.4%) used for traditional medicinal plants and 14(22.6%) were used as sources of food.In the study area utilization of shrubs and trees for different purposes the important part of plant were leave,stem,fruit,bark,root& seed.The common methods of treatment in the study area are boiled,crushed,cooked,dried,grind,immersed in water & squeezed.

Traditional knowledge of using & preserving natural resources transferd from generation to generation besides to their aging there is problem of transfer from elder to younger generation.In the study area plant species identified and collected 28 from natural forest,23 from home steade,7 species from road sides,6species from agricultural land

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Away of conservation shrubs and trees in the study area related to religion and cultural practices this make negative impact for the occurance of environmental condition and soil erosion. As from idea of local people in order to conserve natural resources there is contribution of local Communities and Agricultural experts.

6.2. Recommendation

Based on the result of the study to develop sustainable resources of shrubs and trees utilization and to reduce deforestation. The following recommendation were required.

- Agricultural experts create awareness for local people on various uses of shrubs and trees, to which they are more important and what will happen of the species of shrubs and trees totally used up.

- Increase awareness of young generation to avoid negative impact about multipurposes shrubs and trees with related to their knowledge.

- Organized local medicinewith modern medicine in order to avoid drying of plants in the area.

- To avoid over explotation of multipurpose shrubs and trees specific conservation strategy must be formulated and implemented.

- To develop good planning and management about natural resource more researches to be done and continued.

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APPENDICES

Appendix 1: List of human diseases traditionally treated from plants in the study area

Number	Local name	English name
1	Sibirat(wolemta)	Breaking of the body
2	Sal	Cough
3	Kusile	Wound
4	Kuakucha	Ring worm
5	Yekoda masakek	Allergic
6	Kintarot	Homoroide
7	Kurtet	Stomach ach
8	Kosso	Tape worm
9	Yelb dikam	Heart problem
10	Yedem gift	Blood pressure

Appendix 2: List of shrubs and trees corresponding to scientific name, family name, ,Local name, source, parts used, habit,function and Methods of preparation

Scientific name	Family name	Local name	source	Parts used	Habit	Function	Methods of preparation
Acacia abyssinica Hochstex.Benth	Febacea	timbilka	around home steade	stem	tree	cultural materials	cutted & softed
Acacia bussei- Harms .ex	Febaceae	girar	road side	stem	tree	cultural value	burned
Acacia lahia (L)wild ex.Del	Febacea	chebha	road sides	leaf	tree	traditional medicine	dried &crushed
Acacia nilotica	Febacea	chebha	road sides	leaf	tree	traditional medicine	dried &crushed
Acacia polyacamnta	Febaceae	gmarda	forest	stem	tree	cultural value	cutted
Acantus senii CB	Acanthaceae	kosheshila	around home	leaf	shrub	Food for goat	cutted
Adansonia digitata Friis I	Bombaceae	bamba	forest	leaf	tree	cultural value food for cattle	burned cutted

Albiza schemperin a Olive	Fabaceae	tid	forest	Stem	tree	cultural value	cutted
Albiza gummifera	Fabacea	tid	forest	stem	tree	cultural value	cutted
Aloe vera Reyoids	Aloaceae	eret	around homstea de	leaf	shrub	traditional medicine	squeezed
Bersama abyssinica Fresen	Meliantha ceae	azmair	around home	leaf	shrub	for setting Injera- cultural value	cutted
Acacia senegal	Febaceae	kontir	forest	stem	tree	cultural value	cutted
Callotropis procera (Ait)	Asclepind aceae	Tobiaw	forest	leaf	shrub	traditional medicine	crushed
Capparis tomantosa Lam	Capparida ceae	gimero	around home	stem	Shrub	cultural value	cutted
Acacia nubica	Capparida ceae	gimero	around home	fruit	shrub	food for birds	rushed
Carssia edulis	Apocynac eae	agam	around home	fruit	shrub	food	rushed

Caparis spinarum	Apocynaceae	agam	around home	fruit	shrub	food	rushed
Clavsena anisata (Wild) Benth	Rutaceae	limich	forest	stem	shrub	cultural value	cutted
Celts africana Brumif.o	Ulmaceae	kawoot	forest	Stem leaf	tree tree	cultural material food forcattels	softed cutted
Combretum collinum-Benth	Combretaceae	tinjuit	forest	leaf	shrub	treatment of common cold	smoked
Combretum molle	Combretaceae	tinjuit	forest	leaf	shrub	treat commoncold	smoked
Cordia africana-Lam	Boringaceae	wanza	agriculturalland	Stem fruit	tree	cultural for food	softed rushing
Coroton marcostachyus-Del	Euphorbiacea	bisana	around home	stem leaf	tree	cultural value traditional medicine	burned squeezed

Diospyros abbysinicus-Hiern	Ebenaceae	selechegn	forest	stem	tree	cultural materials	softed
Dodonea viscosa-Lf	Sapindaceae	kitikita	forest	leaf	shrub	traditional medicine	crushed
Echnopis kebericho -Mesfin	Macroheatusoaceae	kebericho	forest	root	shrub	cultural value	grind
Ekeberegia capensis-Sparm	Miliaceae	lol	forest	stem	tree	cultural material	cutted
Embela schimperi-vatake	Myrsinaceae	enkoko	forest	fruit	tree	cultural value	crushed
Entada abyssinicus-Forssk	Febacaceae	kentefa	forest	stem	tree	cultural material	cutted
Euclea dirnovium-Hiern	Eubinaceae	dedeho	forest	leaf	tree	traditional medicine	crushed
Ficus sur-Forssk	moraceae	shola	agricultural land	fruit	tree	food	cushed
Grewia ferruginea-Hocchst.ex	Tiliaceae	lenkuata	around home	bark	shrub	cultural value	crushed
Grewia villosca	Tiliaceae	lenkuata	around home	bark	shrub	traditional value	crushed

Grewia bicolorjuss	Tiliacea	lenkuata	around home	bark	shrub	cultural value	crushed
Juniperess procera-L	Cupperssceae	tid	forest	stem	tree	cultural matrials	cutted
Justica schepema-Host.ex	Acanthaceae	semiza	around home	leaf stem	shrub	traditional medicine cultural value	crushed&squeezed cutted
Millitea ferruginea-Host	Febaceae	biribira	forest	fruit	tree	cultural value	crushed&immersed in water
Mimspos kummel-Bruceexa.Dc	Sapontaceae	ishe	agricultural land	fruit	tree	food	rushing
Moringa oleifera-Chiov	Moringaceae	shiferaw	road sides	leaf	tree	traditional medicine	dried&crushed
Mytenus arbutifolica-Arich	Celastraceae	atat	forest	stem	shrub	cultural material	softed&dried
Ocimum lamiifolium-Benth	Lomiaceae	damakassie	around home	leaf	shrub	traditional medicine	crushed &squeezed
Olea africana-Lsubsc	Oleaceae	weira	around home	leaf	tree	cultural value	smoked
Olea europana	Oleaceae	weira	around home	leaf	tree	cultural value	smoked
Opuntis	Octaceae	beles		fruit	tree	food	rushing

vulgaris-L			agricultural land				
Osyris quadripatritata-Denc	Apocynaceae	keret	forest	leaf	tree	traditional medicine	crushed
Phonex reccinata-Jacq	Arecaceae	senel	forest	leaf	tree	cultural materials	dried
Pittosporum viridifoloru m-Vollesen	Pittosporacea	dengay seber	road sides	leaf	shrub	traditional medicine	crushed
Rhbus species-	Rosaceae	injorie	around home	fruit	shrub	food	rushed
Rhus vulgaris-meikle	Ancardiaceae	Yeregna kollo	road sides	seed	shrub	traditional medicine	cooked
Rosa abyssinica-schwienf	Rosacea	qega	forest	fruit	tree	food	rushed

Rumex abyssinicus-Jacq	Polygonaceae	mekmeko	around home	root leaf	shrub shrub	Traditional medicine cultural value (filter bitter)	dired &grind dried&crushed
Rumex nervosus-Vahl	Polygonaceae	embacho	around home	leaf	shrub	traditional medicine	crushed
Syzyginum guineense-DC(wild)	myrtaceae	dokma	around home	fruit	tree	food	rushing
Strychnos spinosa							
Terminalia browni-	Combretaceae	abalo	forest	stem	tree	cultural value	smoked
Veronia amygldalia-*Del*	Asteraceae	grawa	road sides	leaf	tree	cultural value	cutted
Xinema Americana-L	Olaceae	inkoy	around home	fruit	tree	food	rushed

Appendix 3: Sampled questions for informants

Questionnaires filled by people that live around Woreta town Gina kuharmecahel medhanealem forest and Alember zuria. these questionnaires designed to gather data about multipurpose of shrubs and trees in Fogera woreda around Woreta. the success of the study depends upon your willingness to give accurate information. Therefore, you are kindly requested to respond the questionnaires by following each instruction. I would like to assure that your answer remains strictly confidential.

Thankyou in advance for your cooperation

Data collector name ……...

Date ……

Sign……...

Part one: personal profile

Instruction

- Do not write your name
- Please respond the following questions by writing appropriate information on space provided by writing "/" mark.

1. Sex: 1. Male……. 2. female……...
2. Age …….15 – 25 years …… 26 -30 years ……... above 30years
3. Educational level
    1. Illiterate ……
    2. Can read and write …….
    3. Junior completed ……
    4. Secondary completed ……...
    5. Diploma …….
    6. Degree ……...

7. MSc ……...

4. Number of children: male ……. Female ……
5. Place that have you lived: woreda ……. Kebele ……
6. For how long have you lived in the area.
    1. since birth
    2. since look for occupation ……...years
    3. after marriage …… years

7. marital status

    1. married ……...

    2. un married ….

    3. divorce ……

8. Your farm land occupation size in hectare …….

9. your cattle number ……...

10. your sheep and goat number ……...

11.your horse, donkey, and mule number…….

Part two: the following questions are concerning multipurpose of shrubs and trees. therefore, please indicate your response by writing "⁄ " mark that describe your response on space provided.

12. does shrubs and trees live in your area

A. Yes B. No

13. If your answer yes lists them.

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..……
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14. Among shrubs and trees that you list which groups are mainly found in your area.

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15. what are the importance of shrubs and trees.

A. food B. culture C. medicine D. others E. all

16. based on question number15 if your answer is “E” Please lists them

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17.From question number15 if your answer is food in which shrubs and trees mostly used and how you can consumed

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18. From question number 15 if your answer is culture which shrubs and trees mostly used and how can used.

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19. From question number 15 if your answer is medicine which shrubs and trees mostly used and how can prepared.

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20. which types of human & animal diseases traditionaly treated by these plants?

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21. which part of shrubs and trees mostly used by the society.

A. flower B. root C. leave D. bark e. seed

22 Traditional medicine prepared from shrubs and trees better than modern medicine when you used?

A. agree B. disagree

23 If your answer is agreeing why?

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24 if your answer is disagreeing why?

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……

25.Where is shrubs &treesmostly distributed in your area.

A. Forest C.Agricultural land

B.Arround home D.Live fence E.Road side F.wild

26.which spps of shrubs and trees frequently disappeared in our environment? Why?

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27. shrubs and trees gets deforestation

A. Yes B. No

28.If your answer yes for question number 27 identify the cause in rank.

1.fuel food

2. construction

3. fire

4. grazing

5.charchol

6.medicine

7.others

29. who is responsible for deforestation

1.the government

2. the local community

3. agricultural experts from zone and woreda

4. Keble leader

3o. what is the contribution of community in shrubs and trees management?

1. very low 2.low 3. Medium 4. High 5. Very high

31. what factors decrease community participation in shrubs and trees management?

1. low awareness of community

2. implementation problem

3. luck of agricultural land

4. others

32. Based on question number 31 if your answer is other explain it ?

Appendix 4: Pictures taken during the study

Plate1.Photo of *Cordia africana*(amh-wanza) at all study sites

Plate-2Photo of*Grewa ferrugina*(Amh-lenkuata) at Kuhar mecaheal study site.

Plate-3Photo of *Corotonmarcostachyus*(Amh-bisana)in medhanealem forest study sites.

Plate-4. Photo of *Dodonea viscosa*(Amh-kitikita)at Gina and Alember zuria

Plate-5*Veronia amygdalina*(Amh-grawa)at all study sites

Plate-6*Mytenus arbutifolica*(Amh-atat) used for makingutensil materialis like spoon.

Plate-7.*Acacia polyacamnta*(Amh-gmarda)used for fencing and construction in the study area

APPROVAL SHEET II

I,the under signed,supervisor of Emebet Gebru have read and evaluated her thesis entiteled "**Multi purposes of shrubs and trees used by people at Woreta ,in Fogera District,SouthGonder Administrative zone''**and approved for submission in partial fulfilment f the requirments for the degree of Masters of science in Biology.

_____	_____	_____
Name of principal Advisor	Signature	Date
_____	_____	_____
Name of Co-Advisor	Signture	Date