



**SCHOOL OF GRADUATE STUDIES**  
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**DEPARTMENT OF OROMO FOLKLORE AND**  
**LITERATURE**

**Indigenous Mechanisms of Environmental Conservation in Major**  
**Coffee Producing Area of Jimma Zone: Forest and Soil Fertility**  
**Management among Limmu Kossa Oromo**

BY: Kamil Mohammed Abba Dima

May, 2014

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**Indigenous Mechanisms of Environmental Conservation in Major  
Coffee Producing Area of Jimma Zone: Forest and Soil Fertility  
Management among Limmu Kossa Oromo**

**A Thesis Submitted to the Department of Folklore and Literature**

**In Partial Fulfillment of the Requirements for the Degree of Master of  
Art in Oromo Folklore and Cultural Studies**

BY: Kamil Mohammed Abba Dima

Advisor: LammessaMergo (PhD)

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Jimma

# Contents

Contents .....	iii
Acknowledgements .....	v
Abstract .....	vi
Chapter One: Introduction.....	1
1.1. Background of the study.....	1
1.1. Statement of the Problem .....	1
1.1.1. Basic research question .....	4
1.2. Objectives.....	5
1.2.1. Specific objectives.....	5
1.3. Significance of the Study .....	5
1.4. Methodology.....	<b>Error! Bookmark not defined.</b>
1.4.1. Data Analysis.....	<b>Error! Bookmark not defined.</b>
Chapter two: Literature Review .....	<b>Error! Bookmark not defined.</b>
2.1. Definitions of indigenous knowledge.....	9
2.2. The Oromo worldview in relation to Environments.....	11
2.3. Forest in coffee production Area .....	12
2.4. Farmer’s knowledge on soil fertility .....	13
Chapter three: Background of the study area .....	15
3.1. Physical setting.....	15
3.1.1. Location.....	15
3.2. Climate and Agro ecology.....	15
3.3. Natural resource .....	16
3.4. Economy.....	16
3.4.1. Modes of Livelihood .....	16
3.5. Demography of the area .....	17
3.6. Historical background .....	18
4.6.1. The people.....	18
3.7. Socio-political system .....	19
3.7.1. Gadaa system.....	19
3.7.2. Monarchical state of Limmu Enariya .....	20
3.8. CULTURE OF THE PEOPLE .....	21

3.8.1. Rite of passage.....	21
3.8.2.1. Shanan ceremony.....	21
3.8.3. Marriage .....	22
3.8.3.1. Hasa’anna .....	22
3.8.3.2. Ababalii (Fedhii) .....	23
3.8.3.3. Farda Dhaabaa .....	23
3.8.3.3. Aseennaa.....	24
3.8.3.4. Butii .....	24
3.3.5. Dhaala.....	25
Chapter Four: Results and discussion.....	27
4.1. The Oromo concept of Land .....	27
4.2. Land use in Limmu Kossa.....	28
4.2.1 Lafa Qe’ee’ (garden).....	29
4.2.2. Lafa Qonnaa (Farmland) .....	29
4.2.3. Communal grazing land.....	29
4.3. Limmu Kossa Oromo’s perceptions of forests and trees.....	30
4.3.1. Religious roles of forest in Limmu kossa .....	31
4.3.2. Oromo protects forest for economic and ecological purpose .....	33
4.2.1. Coffee plantation or (coffee forest) .....	34
4.4. The Limmu Kossa Oromo’s Indigenous Knowledge of Soil Classification .....	37
4.5. Declining of soil fertility in Limmu Kossa district .....	38
4.5.1. Factors for the Declining Soil Fertility in Limmu Kossa .....	38
4.6. Oromo indigenous knowledge (mechanisms) in improving Soil Fertility .....	39
4.6.1. Systematic plowing .....	39
4.6.2. Manure and Crop waste.....	41
4.6.3. Lafa baasuu (Fallowing).....	42
4.6.3. Crop Rotation .....	43
4.6.4. Mixed Farming .....	43
4.7. The role of women in forest and soil conservation .....	43
4.8. Current Status of Oromo Indigenous Knowledge in Forest and Soil Fertility Managements among Limmu Kossa society.....	44

4.8.1. Factors Attributed to the Changing Oromo environmental conservation in forest and soil fertility management in Limmu Kossa.....	45
4.8.1.1. Ethiopian regimes misguiding policies.....	45
4.8.1.2. The influence of foreign religions .....	48
4.8.1.3. Population growth in Limmu Kossa.....	50
4.8.1.4. Western education and market economy.....	51
4.8.1.5. Adaptation of chemical fertilizers .....	52
4.8.1.6. Outsider settlement in the district.....	54
Chapter five: Conclusion.....	55
5.1. Conclusion.....	55
Reference.....	57
Web source .....	60
Informants list.....	60
Acronyms .....	61
Field Photos.....	63

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***Abstract***

*This research was conducted in Limmu Kossa, which is located in Jimma Zone of Oromiya region. The purpose of the study was to examine Oromo indigenous mechanisms of environmental conservation in major coffee producing area of Jimma zone by focusing on forest and soil fertility*

*management in Limmu Kossa. The goal of this research was to explore the contributions of Oromo indigenous knowledge in forest and soil fertility management. To achieve this goal, the research was made to collect primary data from Oromo elders, farmers, and development agents who were purposely chosen from three gandas in the district based on their sex, age, and status in the society. In-depth interviews and group discussions were held, observations were made and informal discussions were employed. The findings revealed that the Oromo people have positive attitudes for the forest and protect and respect forest for its religious and economic benefits they get from the forests and big trees. The Oromo people of Limmu Kossa consider big trees with great respect. The big sacred trees are called Qolloo tree which is used to put sacrifice for thank giving to Waaqaa by Oromo religion followers and by the elders. In this research the indigenous knowledge of the farmers in soil fertility managements and the ways they used to classify soil and how the land becomes fertile after indigenous treatment. Nowadays, this remarkable respect for trees and environment are decreasing. Some of indigenous soil fertility management is also declining because of various factors. Those factors are expansion of foreign religion, population growth, adaptation of chemical fertilizer and misguiding government policy on land and natural resource.*

## **Chapter One: Introduction**

### **1.1. Background of the study**

Nature is an integral part in the day-to-day existence of many African countries so that they have developed an organic conception of nature which promotes an ecological balance or interdependency between human, plant, and animal life. Their environmental knowledge also relies on the relationship between humans and nature, the visible and the invisible world (Opoku 1978)

According to Bitwy (2005:13), indigenous and local communities exchange information and views on how to conserve, manage sites which often have highly symbolic and cultural significance, scenic beauty, as well as on how to prevent adverse impacts on the traditional knowledge and lifestyles of indigenous and local communities concerned. Similarly, Opoku (1978) state that African religion is[a] way of life, [with] the purpose of order[ing] our relationship with our fellow men and with our environment, both spiritual and physical.

Countries like Ethiopia, where the lives of many rural communities directly related to natural resources, forest is everything, and thus, all efforts, towards conservation of natural resources and sustainable use of its products are a challenging task. Bulk of these forest resources exist outside of protected areas and beyond active management of authorities of conservation programs and projects. Local communities, therefore, are the primary stewards of forest resources. These resources are usually characterized by the local communities' culture and management systems, where cultures are materially and spiritually built upon the physical world of the forests (Regassa Feyissa, 2001).

Forest and culture therefore, have been intertwined throughout human history, and just as people have acted upon and altered forests throughout human history, so forests have profoundly influences human consciousness and culture.

This research deals with indigenous knowledge in environmental conservation. According to Dirribi (2011), the Oromo gives particular attention to the environmental protection since their safuu principle, their laws and their worldview in general gives respect for nature which is very important in environmental conservation so that the Oromo indigenous knowledge in environmental protection and natural resource management is contributing more. The cultural and environmental value of natural forests among the Oromo of Horro Guduru is plain from practical observations made on Caato sacred forest. The simultaneous sacred and forest status of Caato endorses it with cultural and environmental ethos (Lemessa 2012)

AsMwaura, 2008 stated, UNEP the global scientific community acknowledged the relevance of indigenous knowledge and endorsed it at the world conference on science held in Budapest, Hungary, from 29 June to July in 1999 by recommending that scientific and traditional knowledge should be integrated particularly in the field of environment and development.

Forests and other wooded land have always been a major component of our life. When they clear bushes for agricultural purpose, the Oromo never clear bigger trees. They are part of the land scape used by the people for social, ecological and economic purpose. They create multiple benefits for economic welfare, biological diversity, environmental, social and recreational services to the rural as well as to the urbanized society.

In recent years, agro ecology has increasingly become a topic of global interest and concern. This rise in popularity is due to the need to respond to the diverse challenges facing agriculture such as sustainable production, food security, climate change, conservation of biodiversity in agro ecosystems, and rural development (Campbell& López Ortiz, 2010)

Forests are part of landscape used by people for socio ecological and economic purposes. They create multiple benefits for economic welfare, biological diversity, environmental, social and recreational services to the rural as well as to the urbanized society.

In Ethiopia, coffee grows over a wide range of agro- ecology zone and geographical regions. Alongside, it is apparent to observe different coffee production system that is mainly by smallholder farmers. These systems are mostly forest-based traditional coffee production systems. Coffee naturally occurs under story shrub or small tree in the rain forests (Tadesse & Fayera, 2008)

As a result, this knowledge and beliefs of the people is gathered and analyzed in this paper. Also the research focuses on the parts which forest coverage is high in Ethiopia. Large forest land scape in the country are found only in the major coffee growing areas in southwestern, southern, and southeastern parts of the country, including Jimma zone.

This study deals with mechanisms of Oromo indigenous environmental conservation in major coffee producing area of Jimma zone by focusing on forest and soil fertility management in Limmu Kossa. In this paper I discussed the interacting relationship among Oromo indigenous soil fertility and forest management and how they protect forest for their religious purpose and economic benefits and how they treat the soil for crop production. The farmer's experiences on forest and soil fertility management were analyzed and document from its practitioners point of view.

### **1.1. Statement of the Problem**

The link between indigenous values and environment has been considered by different scholars in the world. Oromo indigenous knowledge is based on inherited experience gained over many generations and is passed on verbally from generation to generation and by observing the actual techniques of managing soil fertility and forest.

According to Pound and Ejigu (2005) the farmer soil classification is strongly based on the requirements for most favorable crop production as a function of the climatic conditions of the area, and its application is oriented towards a traditional and sustainable form of agriculture and coffee plantations. As a result of population growth, the current sustainable land-use practices in coffee producing area is coming under pressure and will inevitably have to adapt to changes in the physical environment. Such rapid changes represent a risk of losing their indigenous knowledge about the local soils, traditional management procedures, including crop types, their rotation, and length of the fallow period and their traditional way of managing forest in their coffee plantation. Accordingly, it has been unfortunate for the prosperous Oromo indigenous knowledge about the environmental and how to keep the fertility of the soil to come to the academic arena and modern type of learning system with this and other researches on Oromo.

In fact, many studies have investigated the potential of integrating indigenous knowledge with the scientific system to improve agricultural sustainability (Workineh 2001, Tadesse and Fayera 2008, Yemanu and Desalegn 2002, Abdena, Negassa and Tilahun 2002, Desta 2000, Lemessa 2012). But

almost all of them did not focus on the role of indigenous knowledge in coffee producing area to understand forest conservation and soil fertility management. Therefore, exploring this gap in knowledge with due emphasis on indigenous knowledge which the Oromo people used to treat the soil fertility and degradation and protect forest from damage is important.

Yet, Oromo indigenous way of managing forest and soil fertility had contributed for the sustainable environment and soil fertility since time immemorial. However the Oromo used indigenous knowledge they inherit from their forefathers to keep the forest and their farm land fertile. Therefore, it is the need to address these notions and fill the gap that has attracted my attention. The central problem on which this study boards is to put in to consideration the interrelation of indigenous knowledge in forest and soil management among the Oromo of Jimma zone. The other problem that attracted my intention was that the research conducted on the environment especially on Oromo indigenous knowledge have focused on the dynamics in the values, practice and beliefs in relation to Oromo and the forest management in general but the given focus to the Oromo in coffee production areas and their indigenous skills and knowledge in forest management and how to keep fertility of soil is not adequate from folkloric and cultural point of view. So I tried to dig out the forgotten knowledge of the people to activate and make one of the solutions for alarming issue of climatic change the world facing now.

#### **1.1.1. Basic research question**

1. How do the Oromo of LimmuKossa manage forest and soil fertility?
2. What techniques do theLimmu Kossa Oromo used to keep the fertility of soil?
3. What is the Limmu Kossa Oromo perception of forest and land?
4. Does the Oromo indigenous knowledge contribute in solving environmental degradation and crop productivity?
5. What is the current status of Limmu Kossa Oromo indigenous knowledge in forest management and soil fertility?

## **1.2. Objectives**

The general objective of the research aims at reconstructing the experiences of the people concerned in one of indigenous knowledge among the Oromo. Accordingly, the research aims at investigating the contributions of Oromo indigenous knowledge in managing forest and soil fertility

### **1.2.1. Specific objectives**

The specific objectives of the study are to:

- Identify the knowledge of Oromo in managing forest and soil fertility.
- Reveal the contributions of Oromo indigenous beliefs and practices to avoid environmental degradation.
- Document the role of Oromo indigenous knowledge from environmental protection point of view.
- Show the ways of renovation of Oromo religious concepts and indigenous way of forest management and soil fertility conservation for the future environmental sustainability and crop productivity.

## **1.3. Significance of the Study**

The question of indigenous knowledge viewpoint and environment has occupied some degrees of significance in contemporary global political and socio economic discourses. Thus, the significance of this study will consist in coming up with new facts through detailed investigation about different patterns of forest and soil fertility management to fill the gaps. Which are rarely focused of indigenous environmental conservation and soil fertility management in major coffee producers of Jimma zone like Limmu Kossa from cultural point of view. The effects of environmental changes and new forms of agriculture on the environment and the process of renovation of indigenous Oromo natural resource management strategies form nucleus of this study and this were done in relation to the current burning global questions about ecological issues. It was attempted to investigate the degree to which Oromo peasants' indigenous knowledge about environmental sustainability was twisted by access to land and the expansion of privileged control over production resources. I assessed the current practices and status of indigenous knowledge in this issues as well as the diversity of local natural resources in crops, natural vegetation and cultural agricultural systems. Consequently, the research result will serve different bodies to conduct research on indigenous knowledge, Ethiopian institute of agriculture, and other centers of Oromo study as source material to make further research about socio-economic and ecological knowledge of the people concerned

## **1.4. Methodology**

The source of data for this study is both primary (oral sources, archival materials etc.) and secondary (published & unpublished) sources were used. The secondary data were gathered through extensive reading of existing literature related to this research topic. The primary data depend on a systematic collection of Oral information from both individual and group interviews were meticulously gathered. Key informants were selected purposively and extensively interviewed. In-depth interviews with elders, farmers, leaders and knowledgeable persons were made. To give the opportunity to raise further information and to understand the ways in which indigenous customs have been transmitted I used open ended questions.

I was spent some times with these people, by asks few general questions to them and holding informal talks. Also I wastook field notes and record the scene and discussions by digital photo camera while. Moreover, focus group discussion was employed in which farmers were participated and discussed about different ways managing forest and soil fertility in their cultural farm. Qualitative sampling techniques used in line with nature of the proposal or research question and objectives proposed. The research design was employed appropriate qualitative data collection instruments, sampling size and techniques. The studies were conducted among Limmu Kossa Oromo are the study population by traveling in relevant area of study. The data was analyzed by qualitative approach and the research was guided by standard research ethics in research and social science methods. The research was written from the vantage point of the local people or at grass root level rather than from the perspective of the center, it hopefully overcome some of the major shortcomings that arise with dependency on politically oriented government documents by shifting the focus to local sources. The religious and ecological history is too vast to be fully reconstructed in so narrow scope. However, it is possible to take a step towards the reconstruction of a complete history on the subject.

### **1.4.2. Study Area and Population**

This study will be conducted among Oromo of Jimma Zone of Oromia Region. For comprehend indigenous knowledge of managing forest and soil fertility actual fieldwork is essential in limmu Kossa district from coffee producer.

The target population for this study will be Oromo community of Limmu Kossa, district. These include female and male elders including farmers who have long age knowledge, DA's, Culture and Tourism office, agriculture and rural development office, administrators, religious leaders. These social classes are very important. Hence, the fieldwork was taken one month from February – march 2014.

### **1.4.4. Methods of data collection**

#### **1.4.4.1. Interview**

Formal in-depth interview sessions were made to obtain information on the current status of indigenous knowledge in managing forest and soil fertility farmers in use. Researcher interviewed the proper individuals including the farmers, community leaders, natural resource experts, elders both female and male, the districts Cultural and Tourism, Agriculture and Rural development. Throughout the study, the informants were asked to illustrate the indigenous knowledge of plants, soil type and /or any other component. Where possible photographs and samples of the forests in the study were captured.

Through informal interviews, different informants from different categories of the society who are knowledgeable about the culture of the study community were interviewed in different places like on coffee ceremony. I was used this form of interview which is even more important than the formal one. This instrument was helpful for me to get information about people's attitudes towards indigenous way of keeping soil fertility and its significance in relation with current governmental approach to issues like tracing development in scientific way.

In-depth interview were made mainly through semi-structured interviews. The interviews was conducted by taking into consideration different criteria such as age, sex, expertise of agriculture (plant science and natural resource management), cultural leaders, farmers and knowledgeable persons. During this formal interview, key informants were interviewed. These included Oromo elders who are knowledgeable on indigenous of forest and soil fertility management in rural areas and religious leaders, relevant office experts, community.

#### **1.4.4.4. Focus Group Discussions**

Focus group discussions were also carried out with key informants. Men and women, farmers, community leaders, elders and other informants in the surrounding area known by their knowledge, past experience, degree of participation in the study under discussion and position of the culture area were incorporated in their category.

#### **1.4.4.5. Observation**

Observation is one of the top research methods used in cultural studies. Also, in this research participant observation was used to collect data related to participating in farmers farming land. This method is a solution to dilemma especially in studying the knowledge and practice of indigenous ways of managing forest and keeping soil fertility while they are making terrace for their farm land and forest in coffee plantation by participating in their settings.

#### **1.4.4.5. Document analysis**

Data seen deferent offices in Jimma zone and Limmu Kossa were analyzed. The data on forest distribution and coverage in research area was assessed.

#### **1.4.4.6. Data Analysis**

Data gathered through the above mentioned methods was analyzed qualitatively after fieldwork. And the data were arranged to reconstruct the data in a meaningful style. In analyzing qualitative data, the ethnographic method (interpretative approach) from both from etic and emic perspective were utilized. All important information were referred and interpreted in descriptive and narrative form and also quantitative data were analyzed by organized, presented and interpreted.

## **Chapter two: Literature Review**

### **2.1. Definitions of indigenous knowledge**

The dictionary definition of indigenous knowledge is ‘the study of human-kind’, the discipline has largely concerned itself with the documentation and understanding of so cultural traditions, worldwide, which encompasses local knowledge by default.

This shown by the range of alternative terms used for indigenous knowledge by different writers vying for prominence and claiming to more representative as they argue over the content of, and approaches to ,this field. They include local knowledge, rural people’s knowledge, insider knowledge, indigenous technical knowledge, traditional environmental knowledge. People’s science and folk knowledge. It is difficult to draw lines between these; even the words indigenous and address the same broad issues. Some writers contrast this knowledge, prompting others to query the status of ‘non-scientific’ western beliefs and the implication of contemporary accelerating globalizing tends. This difference s takes us into difficult eggshell terrain with a contentious political edge which has connotations of superiority and inferiority. The absence of any consensus over terms intimates the flux that characterizes this fast-moving and exciting field in development practice.

The working definitions (Ellen & Harris 2002:2-6) indigenous knowledge in development context may relate to any knowledge held more or less collectively by a population, informing understanding of the world. It may pertain to any domain, particularly natural resource management in development currently. It is community based, embedded in and conditioned by local tradition. It is culturally informed understanding inculcated into individuals from birth onwards, structuring how they interface with their environments. It is also informed continually by outside intelligence.

Traditional knowledge refers to the knowledge, innovations and practices of indigenous and local communities around the world. Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds. Traditional knowledge is mainly of a practical nature, particularly in such fields as agriculture, fisheries,

Traditional environmental knowledge is a body of knowledge and beliefs transmitted through oral tradition and first-hand observation. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use. Ecological aspects are closely tied to social and spiritual aspects of the knowledge system. The quantity and quality of Traditional Environmental Knowledge varies among community members, depending upon gender, age, social status, intellectual capability and profession (hunter, spiritual leader, healer, etc.). With its roots firmly in the past, Traditional Environmental Knowledge is both cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socio economic changes of the present”

Posey (1996:7) indigenous people are ‘Indigenous and local communities embodying traditional lifestyles’, a formulation which indicates the inevitable immanence of tautology. Moreover, it is impossible to use ‘indigenous’ in a morally neutral or apolitical way. Peoples identify themselves as indigenous to establish rights and to protect their interests; NGOs are established to support them, and government departments to administer them.

Roy Ellen, Peter Parkes, Alan Bicker (ed) argue that Indigenous environmental knowledge can hardly be ignored in development contexts and that it is an essential ingredient in any pragmatic development strategy, especially those which claim to achieve a degree of sustainability, as well as having applications in industry and commerce.

And yet, equally, we suspect, most of us will also accept that the claims made for the environmental wisdom of native peoples have sometimes been misjudged and naive, replacing denial with effusive blanket endorsement and presenting an ‘ecological Eden’ to counter some European or other exemplary ‘world we have lost (Ellen, Parkes, Bicker. ed .2000).

Macchi (2008) explains about indigenous knowledge of the people; “traditional societies in many cases have built up knowledge over long periods about changes in the environment and have developed elaborated strategies to cope with these changes” However, traditional knowledge systems in moderation and adaptation have for a long time been neglected in climate change policy formulation and implementation and have only recently been taken up into the climate change discourse. Traditional and indigenous peoples, who have survived over long periods to many kinds

of environmental changes, including climate change, may have valuable lessons to offer about successful and unsuccessful adaptations which could be vital in the context of climate change.

## **2.2. The Oromo worldview in relation to Environments**

Also sources attest that the Oromo indigenous beliefs had important functions in protecting the environment. One of such beliefs relates to the ways Oromo in their tradition perceived lafaa (land) and Waaqaa (God) to the same appreciation and respect both in speeches and expressive acts. Agreements and commitments towards certain actions were (and still are) made in reference to *Lafaa* and *Waaqaa*. Strong conviction persists among Oromos that a mythical bond exists between humans and land, which cannot be easily broken. Likewise, the relationship between the lower and upper parts of the soil is considered as the mother-child relationship specifically a mother who carries her child on the back. In many occasions, reference is made to *Lafaa* as a mother and *Waaqaa* as a father. Indicating that people are the off springs of the two (Terefa, 1998). There were also Oromo religious ideas of respect for and honoring of green nature and the practice of not cutting growing trees as well as culture of planting growing trees on the burial places rather than erecting tombstones (Deressa, 2008).

Mamo (2006) portrays the relationships between land and lineage, focusing on historical, economic and ritualistic or religion relationships. For the people in the study area in relating with away the territory was initially acquired each territory has its own history. Therefore, Among Arsi Oromo possessing and transmitting land is not only the matter of providing, but also it is a moral and social responsibility. In whatever case, a man who lost his land, he considered as he “ate” his father “ear”. This is means insulting as dishonor and spoils his father’s name.

Furthermore, Gadaa (which includes all aspects of Oromo life) was directly related to the economic production of society and regulated the allocation of resources to different social functions and communal tasks without discrimination. It did not allow appropriation of surplus by a specific group or category in society. Land was thought as an archive of a qomo (clan or lineage) history in the sense that a given territory of land was used, by a group of agnatically related men who would also pass it on to their heirs. And this was a great inducement for proper management of land and its resources to symbolize and reflect the strength and social prestige of the lineage. Equally important was that land was controlled communally by qomo (kinship) with emphasis on equality and there was no taxation (Asmarom, 1973). By and large, decisions on the use of land conformed to the

norms and values of the society and traditional management jurisdiction of each locality and did not entail serious resource degradation. These traditional resource management mechanisms were decimated or made ineffective due to the disintegration of Gadaa system especially after the conquest of Oromo land by Ethiopian imperial state (Asafa, 1993). The conquest led to increasing pressure on resources and disruption of the balance between population and environment. The above points are all sketchy references to the Oromo beliefs and practices in protecting environmental degradation. Thus, this research will make efforts to deeply scrutinize Oromo religious concepts related to environmental conservation.

Whatever the case, there was disguised intimidation that the local people could not resist. It was to get defense from further threats that the peasant was forced to relinquish his land in favor of the naftagna and this form of surplus extraction contributed to individualization of agricultural land with great pressure on land. The sources, nonetheless, do not discuss the impact of these changes on the environment of Oromo. The sources do not especially explain how the downgrading of Oromo indigenous religious conception greatly exacerbated the adverse environmental changes in Oromia. This research will investigate the above related issues and show how the renovation of this knowledge can contribute for the sustainable environment in the future. Thus, it will look at the issues in prospect and retrospect.

The sources, however, do not cite the specific conditions seen as a result of the neglecting of indigenous religious concepts. This research intends to fill the gap, showing how far this happened.

### **2.3. Forest in coffee production Area**

Another source also describe that “some of the unique floristic composition of Haranna forest includes *Podocarpusfalcatus*, *Ocoteakenyensis*, *Filiciumdeciapiens* and *Warburgiaugandensis*. In particular, *P. falcatus* is one of the few best-quality timber species that dominate the Haranna forest” (Tadesse and Feyera)

This statement shows the major trees, shrubs and climber species recorded in the Haranna forest. There is a clear vegetation donation in the Haranna forest.

Written sources have not yet been concerned with and given specific references how far these various ways of accessing land greatly altered the Oromo indigenous religious views on protecting the environment from dangers. This study will try to examine these alterations.

Since the sources do not cover these issues, this research will discuss the interacting relationship among religion, ecological and environmental factors and their impact on the overall land use system.

In UNESCO's Regular Programme a joint Main Line of Action between the Science Sector and the Cultural Sector was approved to look at the link between cultural and biological diversity.

Many of the natural heritage properties with forest coverage are linked to cultural value both tangible and intangible, to rituals and myths, stories and language, cultural remain archeological sites and other tangible heritage (Bitwy, 2005)

#### **2.4. Farmer's knowledge on soil fertility**

The Farmer Soil Classification is strongly based on the requirements for most favorable crop production as a function of the climatic conditions of the area, and its application is oriented towards a traditional and sustainable form of agriculture. As a result of population growth, the current sustainable land-use practices in coffee producing area is coming under pressure and will inevitably have to adapt to changes in the physical and political environment. This process may ultimately lead to a more intensive land-use based on mechanization, chemical fertilizer application and new crop types. Such rapid changes represent a risk of the farmers losing their traditional knowledge about the local soils, traditional management procedures, including crop types, their rotation, and length of the fallow period and fertilizer applications.

The farmers' soil classification system was based on the texture and color of the soil, and on the topography. The yield potential of the land was assessed using indicators such as dark soil color, texture, and a high vegetation density on a flat surface. Sloping lands, especially those directed to the east, or light colored soils with a high density of grasses were considered as poor farmland. The farmers' preference for level land might be explained by the higher nutrient leaching on low wetplots. (Brouwer and Powell 1998).

In all households waste and animal droppings were swept daily on a heap located at a protected area inside or outside the compound. The farmers ranked the importance of the ingredients of this farmyard manure in the following order: animal feces feed left-over are litter, grass kitchen residues ash. They had a clear concept of the quality of the muck of the different animal species. Cattle dung was the most preferred manure, followed by small ruminant droppings. Donkey droppings ranked

last in all cases, because it was believed to cause fungus diseases in millet at the seedling (Irene Hoffmann 2002)

Integrated Soil Fertility Management (ISFM) is to be an approach to sustainable and cost-effective management of soil fertility. ISFM attempts to make the best use of inherent soil nutrient stocks, locally available soil amendments and mineral fertilizers to increase land productivity while maintaining or enhancing soil fertility. ISFM is a shift from traditional fertilizer response trials designed to come up with recommendations for simple production increases (<http://www.aglearn.net/isfmMod1.html>). From these descriptions we can understand that how Oromo indigenous knowledge and resource contribute for integrated soil fertility management.

This research will also try to determine whether this applies to Oromo or not and whether or not Oromo indigenous knowledge was also revive and contribute for environmental protection.

Almost all of the accounts have nothing more than side-line references to the topic. A number of popular and professional scholars have used the relation of Oromo indigenous beliefs and environment as points of references while studying other themes. Such very few materials do not provide brilliant or thorough descriptions of the topic and have their own defects and distortions since some of them are wrong in their understanding and inadequately explained. The literatures seem to be uneven both in quantity and quality. Therefore, it is indispensable to highlight these significant issues of indigenous knowledge and environment (forest and soil fertility management). This study will try to discover how far the Oromo indigenous knowledge and facilitated environmental protection. I will study these conditions to come up with concrete evidence and exhaustive information on the related issues in the area.

## **Chapter three: Background of the study area**

### **3.1. Physical setting**

#### **3.1.1. Location**

Limmu Kossa is one of the districts in the Jimma zone. It is named in part after the former kingdom of Limmu-Enariya, whose territories included the area this district now covers. Limmu Kossa is bordered on the south by Kersa, on the southwest by Manna, on the west by Gomma, on the northwest by the Didessa River which separates it from the Illubabor Zone, on the north by Limmu Sakka, on the northeast by the Cora Botor district, on the east by Xiro afeta and on the southeast by Kersa district. The administrative center of this district is Genet; other towns include Ambuyyee and Baboo. Cora Botor district was separated from Limmu Kossa. Its astronomical location lies between 7050' and 8036N latitudes and 36044 and 37029'E longitudes geographical grids and globe. The altitude of this district ranges from 1200 to 3020 meters above sea level. It is topographically characterized by dissected plateaus Guddoo Bakaree, Gabana and Mole etc. and valleys Dhidhessa, Gibe etc.

As a whole Limmu Kossa has 1462.46 km<sup>2</sup> total land area. It is one of the largest districts in Jimma zone. The capital of limmu Kossa is Limmu Gannat located 75 km to the northwest of Jimma town the capital of Jimma zone and 425km to west of regional and national capital Finfinnee (source: culture and tourism office of the district a compiled document 2000 )

#### **3.2. Climate and Agro ecology**

Limmu kossa mean annual temperature ranges between 100c and 280c and mean annual rainfall ranges between 1500-2800mm. in the coldest months, October and December, mean temperature ranges between 30c-180c, while in the hottest months, February to May, it seems to 300c. The rain fall in this area is weakly bi modal with small rainy spring March and May season while season is a long rainy moths of June, July and August. The agro ecological zones of the districts are:-

Gammojjii: - this covers 10% of the area of Limmu kossa district it has dry weather with 410-820mm annual rainfall and 18 -280c temperature. Sami-desert valley bottoms and gorges with extremely arid marginal steeply sloping area are described as *kakkaa*.

*Baddadaree*- this climatic zone covers 65% of Limmu Kossa district with moderate climate of mid highland (subtropical) area. Annual rain fall in this area ranges between 800-1400mm and its relatively warm temperature ranges between 160c-230c.

*Badda*- covers 25% of the area with cold moist area. The annual amount of rainfall of this area ranges between 1200-2200mm and cold temperature ranges between 100c-200c. The extreme part of this area is called dilallaa, is sometimes cover with hailstones or ice but usually with cold moist with less than 110c. Mean annual temperature and above 2200mm rainfall per year yet it is confined to small parts of the district (source: Agriculture and rural development office of the district)

### **3.3. Natural resource**

The known big and swift dominant perennial rivers in limmu Kossa district are Gibe, Dambii, Aweetuu, Indiris, and Daggidaggee etc. Waamaa, Huursaa, Qarsaa etc. are from minor or small interment streams that emanates from Limmu Kossa.

Notable landmarks include the Laalo Bolo Caves. Protected areas include the Babia Folla forests, which cover 938.22 square kilometers. A survey of the land in this district n shows that 34.9% is arable or cultivable (24.6% was under annual crops), 20% pasture, 39.7% forest, and the remaining 15.4% is considered degraded or built-up areas (source: Agriculture and rural development office of the district).

### **3.4. Economy**

#### **3.4.1. Modes of Livelihood**

The Oromo were mixed agriculturalists (farmers and cattle-herders) before they began their sixteenth century expanded settlement in the Horn of Africa. They primarily reared cattle and sheep and grew barleys. The Oromo have used these animals and this cereal crop for economic and ritual purposes. After they expanded and settled, most Oromo continued their practices of cultivating barely and other crops on the highlands and cattle herding on the lowlands (like Tanaboo and Gammojjii Abbaduula area). Until Ethiopian colonialism forced them to stop, most Oromo practiced both farming and herding. They grew crops on the highland around their homes and took cattle down to the lowland plain for pasture. Later colonization and confiscation of land forced most Oromo to remain either in the lowlands or in the highlands. Cattle and cereal crops have been parts of the Oromo livelihood. They have used cattle for food, ritual, status, wealth accumulation, and sacrifice

in initiation ceremonies. They also used cattle products for fertilization, fuel, clothing, etc. Cattle-rearing has long been part of their lives. They have also reared horses, donkeys, sheep, goats, dogs, cats, fowls, civet cats in the research area. The Oromo of Limmu Kossa district has cultivated grain crops, such as xaffi sorghum, maize, barley and wheat, using the hoe and plough and various spice around their homestead. Coffee has been an important cash crop in Limmu Kossa (Agriculture and rural development office of the district)

In Limmu Kossa district we can found different knowledgeable and skillful individuals and clan known by metal and wood work. Iron instruments, such as swords, spears, hoes, axes, sickles, knives, etc., have been very important but today they are highly decreasing. Woodworking has been known for a long time in the area. The known wood instruments are stool table, Bed, like eating material dish and farming instrument like Plough other objects such as platters, stools, spades, tables, ploughs, bows, wooden forks, honey barrels, etc. Pottery making, weaving, and tanning have been practiced by specialized caste groups in limmu Kossa district this is also decreasing.

According to Asafa Jalata, *Abba Worra* (literally head of the family), has authority over his wife or wives, unmarried sons and daughters. Next to the family, ollaa (neighbor) and ganda (community) have been very important social networks. Before the disintegration of the Gada system, land was controlled by the *qomoo* (clan), whereas cattle belonged to an individual family.

Coffee is another important cash crop of this district. Fruits and sugar cane are important cash crops. Over 50 square kilometers are planted with this crop.

Limmu Kossa has 71 kilometers of dry-weather and 111 all-weather road, for an average of road density of 75.3 kilometers per 1000 square kilometers. About 75% of the urban and 5.9% of the rural population has access to drinking water (source: Agriculture and rural development office of the district).

### **3.5. Demography of the area**

Industry in the district n includes 57 Farmers Associations with 32,194 members and 19 Farmers Service Cooperatives with 17,962 members.

The 2007 national census reported a total population for this district of 161,338, of whom 81,462 were men and 79,876 were women; 14,842 or 9.2% of its population were urban dwellers. The

majority of the inhabitants were Moslem, with 72.6% of the population reporting they observed this belief, while 24.41% of the population said they practiced Ethiopian Orthodox Christianity, and 2.72% were Protestant.

Based on figures published by the Central Statistical Agency in 2005, this district has an estimated total population of 254,911, of whom 128,770 are men and 126,141 are women; 19,932 or 7.82% of its population are urban dwellers, which is less than the Zone average of 12.3%. With an estimated area of 2,880.00 square kilometers, Limmu Kossa has an estimated population density of 88.5 people per square kilometer, which is less than the Zone average of 150.6.

The 1994 national census reported a total population for this district of 182,160, of whom 90,477 were men and 91,683 women; 11,141 or 6.12% of its population were urban dwellers at the time. The five largest ethnic groups reported in Limmu Kossa were the Oromo (89.94%), the Amhara (5.33%), the Dawro (1.61%), the Kafficho (1.02%), and the Tigray (1.01%); Afaan Oromo was spoken as a first language by 91.07%, 4.81% spoke Amharic, 0.92% spoke Dawro, and 0.85% spoke Tigrigna; the remaining 2.35% spoke all other primary languages reported. The majority of the inhabitants were Muslim, with 87.03% of the population having reported they practiced that belief, while 10.31% of the population said they professed Ethiopian Orthodox Christianity, and 2.72% were Protestant (source: culture and tourism office of the district )

### **3.6. Historical background**

#### **4.6.1. The people**

The people inhabited the district ethnically belong to the Oromo who intern belong to the Cushitic language family of afro Asiatic super family. The Oromo consist of various clans and sub-clans. The clan structure of Oromo society has a genealogical tree with major branches that are further sub-divided into smaller branches and reduced into so many little branches with wide networks of ties. In other words the Oromo clan structure does have a family tree which starts from one man Horroo, and gets divided into major clans and sub clans. The great major of the inhabitants of the distinct under study are the Maccaa , one of the major Oromo branches the that occupied Westshewa zone(west of Awash river),Wallaga, Ilu Aba Bora and Jimma. Among the Maccaa branch of Oromo that settled in Limmu Kossa are Awayee, Badii, Busasee, Dagooyyee, Ganjii, Laaloo, Kubee, Leeqaa, Sapheeraa, Tuulamaa etc. Historically, the name Limmu Kossa has been derived from one

of the sub-clans of Maccaa, Limmu and from the name of local person called “Kossa” who ruled the current Limmu Kossa area. Before getting the name limmu Gannet the capital of the district had been known by name Kossa, the name of town located thirty kilometers to south. However after fascist Italian conquest of 1936-1941, imperial regime’s mobility devised the current town for the purpose of administrative convenience and for the exploration of the resource of the region (source: Culture and tourism office of the district)

### **3.7. Socio-political system**

#### **3.7.1. Gadaa system**

The traditional Gada government developed by the Oromo organizes and orders society around political, economic, social, cultural, and religious institutions. We do not know when and how this system emerged. However, we know that it existed as a full-fledged system at the beginning of the sixteenth century. During this century, Oromo’s were under one Gada administration. Bonnie Holcomb notes that the Gada system “organized the Oromo people in an all-encompassing democratic republic even before the few European pilgrims arrived from England on the shores of North America and only later built a democracy. This system has the principles of checks and balances (through periodic succession of every eight years), and division of power (among executive, legislative, and judicial branches), balanced opposition (among five parties), and power sharing between higher and lower administrative organs to prevent power from falling into the hands of despots. Other principles of the system included balanced representation of all clans, lineages, regions and confederacies, accountability of leaders, the settlement of disputes through reconciliation, and the respect for basic rights and liberties. The Gada government, though based on democratic principles, excluded caste groups (such as smiths and tanners) and women.

There are five miseensas (parties) in Gada; these parties have different names in different parts of Oromia as the result of Oromo expansion and the establishment of different autonomous administrative systems. All Gadaa officials were elected for eight years by universal adult male suffrage. The system organized male Oromo’s according to age-sets (hiriya) based on chronological age, and according to generation-sets (luba) based on genealogical generation, for social and political and economic purposes. These two concepts – Gada-sets and Gada-grades – are important to a clear understanding of Gada. All newly born males enter a Gada-set at birth, which they will belong to along with other boys of the same age, and for the next forty years they will go through

five eight-year initiation periods; the Gada-grade is entered on the basis of generation, and boys enter their luba forty years after their fathers. In incorporating the age-classification system, *Gada* is similar to age-sets practiced by the Masai, Kikuyu and the Nuer. However, its use of genealogical generations as its organizing elements makes it different and unique (Asmirom Legesse, 2000).

### **3.7.2. Monarchical state of Limmu Enariya**

The Maccaa groups formed their own confederacies of Sadacha or the confederacy of three from Obboo, Suuboo and Hakakoo clans who moved to Gumar, Shat and Konch were later establish the Oromo monarchical states. One of the Oromo monarchical state was Limmu-Enariya established at the same location of my study area. After the Oromo groups (Abukakoo, Agaloo, Badi Follaa, Billoo, Diggoo, Harsuu, Laaloo and Qoree) cross Gibe River they had to crush stiff resistance of Enariya leaders including Banichoo, Gu'amchoo and Banaroo.

Enariya was mainly conquered by Abbaa Duulaa Teessoo but Limmu states were formed by Abbaa Gomol or Bofoo (r.1800-1861). Ibsaa prevented Jabarti, merchants from moving beyond his capital Saqaa to monopolize trade of the area and succeeded by his on Abbaa Bulgaa 1861-1883. After the year 1885, the area was conquered and ruled under combined force of Jimma Abbaa Jifar and Imperial regime of Minilik (Abyssinia).

Different secondary information reveals that Limmu Kossa was recognized as a district many years ago i.e. in 1943E.C. Limmu Kossa district has maintained its status during Emperor Hailesillase and Derg regimes. Pre the year 1988 Limmu Kossa district was one of the districts of Limmu Awrajja of Jimma province. After the abolishment of the ruling system of Hailesillase and derg administrative of district as awurajja, the organ is re structured. As a result Limmu Kossa district was structured as independent awurajjaa considering Limmu Gannet town as a capital Limmu Kossa awurajja of Limmu Kossa under Jimma administrative region. This structure did further continue during the transition of 1991G.C. with the formation of Oromiya regional state during 1992G.C. it has been structured as Limmu Kossa district as one district of Jimma zone maintaining its former land area.

After several years the district divided into two independent districts (Limmu Kossa and Cooraa Botor). Now a day the district has forty (40) rural *gandas* or peasant associations with four three centers (Limmu Gannat, Ambuyyee and Baabbuu) and three state farming village (coffee plantation of Gumer, Kossa and Suntuu).

Accordingly, one of the kin lords of Hailesillase Ras Masfin Silashi concentrated his attention upon area and its surroundings for strategic purpose. His predecessor's lord or king of Kafa, Woldegorgis Abbooyee had concentrated upon military expansion of land rather than permanent seat development. Contrary to Woldegorgis, Masfin made attention upon strategic location by connecting the area with communication facilities like telephone.

Masfin's vassals continuously expanded coffee plantation to villages like Debello, Suntu and Dooraa Gibee. One of the major vassals of Masfin who put Masfin's plans in to practice was Bajarond Yitina T/sillase. In due course, the name of the capital was changed from Kossa to Limmu gannet. The name Gannat was coined from Afaan Oromo *ganna ati* i.e. you are summer and which the Amhara land lord changed to Amharic word gannet which means paradise any ways the contextual meaning of the name connote that the area is green biomass with ample rainfall and suitable to live in (Culture and tourism of the district A document compiled in 2000) .

### **3.8. CULTURE OF THE PEOPLE**

#### **3.8.1. Rite of passage**

There are three things Oromo's talk about in life: birth, marriage, and death. These are the events that add to or take away from the family. In Limmu Kossa the Oromo people celebrates different rites of passage like birth right, marriage and death. Let see one by one:

##### **3.8.2.1. Shanan ceremony**

In Oromo there are different routes of passage which celebrated on different age through life. Shanan is rite of passage celebrated on the fifth day after the mother gave birth to child. Shaman is the Oromo term w/c means five because the ritual is on the fifth day. In addition the number five in Oromo has good fate or symbolized as everything?

There are different celebration called shanan because of the Oromo love to celebrate after cultural events either rite of passage or different cultural event for example. *Shanan*, ritual of weeding, *shanan* ritual of hunting (after killing the wild animal, (shanan, rituals after *butta* ceremony and etc.

Shanan is a ritual which celebrated by women after the mother gave birth to a child on the fifth day. On these ceremonies there are various ritualistic activity, song, performance blessing (prayer), food and drinks (cultural) also medication for mother & infant. The day is a thanks giving day for god and

mean (a mother of child). For that ritual there are different things needed to fulfill and mandatory for the celebration. Those are prepared a day before celebration. Crops from porridge made are wheat, maize, teff and etc. milk (cheese), butter, and coffee bean for Bunakela (Coffee slaughter). Also women who participate on the shaman ritual are invited on the fourth day after the mother gave birth (one day before shaman ritual). On this day the seat (place for reception) was organized or furnished.

Accordingly on the fifth day after the mother gave birth to child the ritual held. Because as mentioned under introduction number five has a great place. This day for women a gathering together. For these ritual different trees, grass, leaf roots of bushes and cover of big trees; like ulmayee, bayaa, dammakasee, somboo, ancabbii, baddeessa, makkannis, laaftoo, coqorsa are important to the ceremony as a medicine, symbols of fertility and for the attractive odor. In relation to the attitudes or beliefs of the society those above mentioned trees and bushes are respected and important for medicine. So cutting such tree is forbidden in a society (Culture and tourism of the districta document compiled in 2000)

### **3.8.3. Marriage**

In Oromo culture marriage has great respect. From this one can understand that marriage procedures through which adult of opposite sex marry each other according to the culture of the society. Marriage as a great bond of one girl and boy who have no blood relation as custom and law of the society. This bond legalizes sexual intercourse and child procreation. Thus marriage allows the birth of powerful person and continuity of human being. As Oromo culture marriage take place between girl and boy of different clan. There are different marriage types practiced earlier in Limmu Kossa those are Hasa'anna, Ababalii (Fedhii), Farda Dhaabaa (Karrataa'ii or Raraa), Aseennaa and Butii (Culture and tourism of the districta document compiled in 2000)

#### **3.8.3.1. Hasa'anna**

Hasa'anna a form marriage mostly arranged by the parents of the bride and groom with a great deal of negotiation. Traditionally the groom's parents search for a bride for their son. Before they make any contact with the bride's parents, the groom's parents research back seven generations to make sure that the families are not related by blood. Once this has been done, the boy's parents then make contact with the girl's parents through a mediator. The mediator goes to the home of the girl's parents and asks if their daughter will marry the son of the other parents. The girl's parents often impose conditions and the mediator will take the message to the boy's parents, and then arrange a

date for both parents to meet at a mutually convenient location. When the parents have reached an agreement, the man and woman get engaged (betrothed). The parents then set a wedding date and they meet all the wedding expenses. After the betrothal is conducted, both parents prepare food and drink for the wedding and invite (Culture and tourism of the districta document compiled in 2000)

### **3.8.3.2. Ababalii (Fedhii)**

This mode is characterized by that when a boy remains qerroo (bachelor) for several reasons either because he is not handsome or he is from a family of low social status, the way he gets married is advised by his parents. The boy has no consent of the family of the girl. Sometimes, the girl's mother is involved in arranging marriage of her daughter through *hawwii*, but she keeps the secret in order not to make it known to her husband (the girl's father). This type of marriage is common among poor people and because of this the best alternative is secret selection type of marriage. Then the boy tells his father to go on negotiating the marriage where by then the father or any representative, or even the boy himself starts finding a friend around her house. It is mostly the girl's sayyuu (wife of the girl's brother) that the boy approaches and whom he thinks that she can keep secret and acts on a go-between (Culture and tourism of the districtA document compiled in 2000).

### **3.8.3.3. Farda Dhaabaa**

Karrataa'ii (Farda Dhaabaa is one of a marriage type among this society from ancient time. This marriage type is practiced in a hurry. It is asking a girl for marriage which is done by breaching appointment arrangements or it is asking a girl for marriage without prior arrangement.

Farda Dhaabaa literally means tying a horse in front of the bride's family gate (*karraa*) and the case is desired to get its conclusion right there and Raraa is literally means close-up to the house of the bride's family.

Karrataa'ii was practiced for the various reasons. If the boy lack money (poor) one he cannot fulfill the dowry for bride family, if the bride becomes pregnant from the other person he forced to marry other daughter by Karrataa'ii type of marriage. If the betrothed girl becomes sick or died or leave the house because of abduction or lack of interest on the groom. Those reasons are forced the boy to marry any girl he expect that the family are permitted to give their daughter to him or he asks for marriage from his equivalent moiety. If the boy lack money (poorer) one he can't fulfill the dowry for bride family. Under this occasion the process to they follow is differ from others reason. According my informant Haadha Qoroo Abba qoyyas , first the boy love the girl but he can't

afforded the needed gift for her family to marry through betrothal type of marriage; then he call for company (*amaamota*) and well known elders among the society on the proper date secretly. Because to capture the compound of the girls without any awareness of them. If the bride becomes pregnant from the other person he forced to marry other daughter by *Karrataa'ii* type of marriage. Here the boy betrothed the girl but while he prepared to hold wedding ceremony he know that the girl is pregnant from other person. According to Oromo culture it is shame to marry the one commit sexual intercourse before marriage. So that he forced to use *Karrataa'ii* to his immediate problem. If the betrothed girl becomes sick or died or leave the house because of abduction or lack of interest on the groom. Those reasons are forced the boy to marry any girl he expect that the family are permitted to give their daughter to him or he ask for marriage from his equivalent moiety (Culture and tourism of the districta document compiled in 2000)

#### **3.8.3.3. Aseennaa**

For a woman to remain unmarried into her twenties is incomprehensible, though, she must go beyond herself, called *aseennaa*, literally means “entry”. Nowadays, the people who practice *aseennaa* are insignificant in number.

When a girl is left unmarried or when her father wants to give her to someone whom she does not like, she chooses unmarried young man and then runs a way to his house without the knowledge of the man mostly in the evening. On the arrival she enters into the main room of the house (*diinqa*), scatters *iddii* and holding *qadaa bukoo* (big dosh container gourd). The scattered *iddii* implies that she wishes more wealth to the family she has joined while that of *qadaa bukoo* is an expression of her status as the housewife in that family. She does this mostly when the boy's mother and some members of household are not at home. The young man whom the girl wanted to get married cannot reject the marriage whether he likes it or not. The rejection of this type of marriage results in ostracism by the society. The next day the parents of the girl informed that the girl has come to the house of somebody (Culture and tourism of the districtA document compiled in 2000).

#### **3.8.3.4. Butii**

The first form of *butii* type of marriage conducted where the girl's family suffers from economic problems. In this case, almost everybody dares not to ask the girl of this family for marriage. Here, as years roll the girl's age will go over the above age customarily required for marriage. Consequently, the society develops a negative attitude towards the girl and stigmatizes the girl as

haftuu, which means remaining unmarried. Thus, the girls at this stage desires to escape the curse of her family for marrying without their permission, by arranging for her subsequent abduction by the boy whom she is in love with. She does this without the knowledge of her family. She usually specifies the way of abduction, which the boy should take into action. Such ways are when she collects firewood, fetching drinking water and other similar situations. The boy is often informed of one of the above satiations and abducts the girl accordingly (Culture and tourism of the districta document compiled in 2000).

The second form of butii is that where the boy with his friends abducts the girl from where he hides himself. The boy, however, waits for the girl in this hiding until she comes to his share. In this situation, if it happens that the girl is not alone; a combat is almost always likely to occur between the boy's friends on the one hand and the women or men with the girl on the other.

In this combat the boy is likely to succeed in the fighting as he often goes out prepared for abduction. Thereafter, the boy takes the girl with him and then places her in a certain house of his relatives or bush so that no one from the girl's family might discover her whereabouts. The same night, where the abduction carried out, the boy deflowers the girl for a girl who has lost her virginity will not go back to her family (Culture and tourism of the districta document compiled in 2000).

### **3.3.5. Dhaala**

Dhaala literally means "inheritance". It is a type of marriage between a woman and the brother of a deceased husband or levirate. The reason behind this is to preserve the children of the deceased man within the family and save them from mistreatment by the stepfather to whom the widow may marry. According to the traditional practices of the Oromo society, the woman is obliged to stay idly thinking of her husband's death for a period of at least one year. After her stay for one or two years without husband she is given the deceased husband's brother, classificatory or full brother. The deceased man's brother refuse to marry the widow thinking that as if she is his own blood relative. But he accepts when he is told to do so either by his family or elders in the community. This type of marriage depends on the number of children born to the couple and on how well the widow is liked by the parents of the deceased man. If the man has married his own wife before this arrangement, he turn to work in the fields between the two households, but if he is a bachelor (qerroo), he will latter marry a girl because it is culturally credible and socially valued to marry a young girl and shave the qarree.

On the other hand, if there were no children born to the deceased man and the widow, she will return to her parents and gets married there unless she is beyond her child bearing age. Levirate union will also not be arranged for older widow, but her adult son's will support her (Culture and tourism of the districta document compiled in 2000).

## **Chapter Four: Results and discussion**

This chapter introduces the result of the research presented the indigenous knowledge of the Oromo people in conserving environment and how they manage forest and fertility of soil. The discussion under this chapter indicates the indigenous knowledge of the Oromo people in conserving environment and how they manage forest and fertility of soil. In the research area most agricultural tasks are carried out by individuals, rather than larger social groups, and every information and knowledge was transferred from forefather and highly practiced. In this portion I tried to explain the farmer's knowledge in major coffee producing area of Limmu Kossa on soil fertility and forest management in detail. Such as the signs and the weather observations, is collected by individuals, people discuss information with others. Moreover, all the components of this knowledge on historical patterns, the worldview and perceptions of the people for forest and their norms and beliefs are discussed, the knowledge of the Oromo people in soil fertility management and the farming system are widely available and widely shared. Elders are treated with respect in conversation skills and stored knowledge of Oromo knowledge and their stock of personal experience is considered to be valuable. Also the factors for declining indigenous forest and soil fertility management and the current status of this knowledge gathered from primary data collected on the above stated issues in Limmu Kossa were discussed.

### **4.1. The Oromo concept of Land**

As Tesema, 2002 cited from Krapf (1968) over the course of several centuries, the Maccaa Oromo of Western Ethiopia have developed a highly diverse and complex *qotiisa* (farming system), using indigenous agricultural knowledge and practices. Through the application of their agricultural knowledge and practices, the Maccaa Oromo have been able to obtain surplus harvests and maintain harmonious and balanced relationships between crop cultivation, livestock raising, plant life, and the environment. Their farming systems and practices have also provided a certain degree of continuity and sustainability during periodic disruptions due to climatic variations and political upheavals. The above idea attempts to shed light on several aspects of the Maccaa Oromo farming system and their implications for sustainable development.

Land is best of the property for the farmers of Oromo in general and Limmu Kossa in particular. The land is different according to their originality and its nature. Because, they give high priority for land

they born over and their *hadhura* (cord) was graved on is the place we see the only special also the place and land were our forefather was born.

In the Oromo, possessing and transmitting land is not only the matter of providing, but also it is a moral and social responsibility. Whatever the case, a man who lost his land is not simply sit down but sacrifice up to his life. Because it is not only about losing land but about losing the name of the clan and the fame of his ancestors. According to Mamo (2006) people respect their land because giving birth to the *lafaafi lafee*' symbolic analogy and *Waaqaa- Lafa*' ritual value of land. He also attests the land is regarded not as a mere economic object but also as a religious value in Arsi Oromo beliefs.

According to Abba Garoo Abbaa Diimaa in time immemorial the Oromo of Limmu Kossa associate land with the descent clan based system. The land transmission or heritage of land use right from father to son, or direct to their father's moieties. At those early days the number of people is small so they had free access to the communal land under the control of specific *gosa* (*moiety*) and every *gosa* have their own land for grazing, farming and forest coverage in their village. But the land use and holding system were emerged before the conquest of Minilik II for some reasons: the emergence of division of *gosa* land into several linages and the emergence of mix farming and coffee plant (Abbaa Diggaa Abbaa Fiixaa and Abbaa Garoo Sheikh Suleman).

On the other hand, land is the one which is symbol of the indigenous (original) people of the area. The land is named by the original owner and or the clan who settled on it. Oromo People of the study area identify the new comer and the original settler of the area by the land they live on, which means the land belongs to the clan settled first on that land and not on the clan of new comer. Therefore, land symbolizes the indigenous owner of it and its products.

## **4.2. Land use in Limmu Kossa**

For a land-use system to be sustainable requires conservation not only of soil but of the whole range of resources on which production depends including forests in the area. Forests use must be proper to the rate of forest in the area. However, the most direct and primary requirement for sustainability is to maintain soil fertility and to keep forest from deforestation.

People used their land by dividing according to their significances. The society named their land based on different criteria: their significance and distance from the home. *Lafa qe'ee* (homestead), *Lafa Qonnaa* (farm land), *lafa dheedichaa* (communal grazing land) and land for coffee plantation.

#### **4.2.1 Lafa Qe'ee' (garden)**

The Oromo plant various types of spices and crops, vegetables, coffee and kchat on the land around the home. This land is very important to live and to grow cash crop and spices. According to the elders of Limmu Kossa district wives and husband plant different spices near their home and the husbands also plant coffee, vegetables and fruits on this land. The women used different mechanisms like manure, compost and hoeing to fertile the soil of their garden. This land is very important to grow vegetables including Oromo potato, Irish potatoes, sweet potatoes, cabbage, pepper, taro, kale, onions, garlic, carrots and cut flowers; fruits including papaya, orange, lemon and banana, avocado, mango, and various plants used for commercial spices and medication purposes are cultivated. Wives grow plants like insets, *shinkirii*, *ceredama*, *kefoo*, *margoo*, *dimbilala*, *irdii* (curcuma longa), *jinjibila* (ginger or zingiber officinale), etc. and the husbands plant fruits like papaya, orange, lemon and banana, avocado, jackfruit, mango etc. This land is under the supervision of women due to its closeness to their residents (Haadha Qoroo Abbaa Qoyyaas)

#### **4.2.2. Lafa Qonnaa (Farmland)**

Farm land is the land which is far from residents. It is used for extensive farming. This land is a property of a clan or individual's. It is wider in size than homestead land (*lafa qe'ee*). The farmers in the study area use this land for different purposes such as farming, commercial vegetables (mango, avocado, jackfruit), kchat and it also used for grazing. The society cultivates this land through their indigenous or traditional knowledge. They divided the land into plots to grow different crops and used fallow period method for increasing soil fertility (Abbaa Garoo Sheikh Suleman).

#### **4.2.3. Communal grazing land**

Communal grazing land is common in most parts of Oromia. In Limmu Kossa the communal grazing land was familiar in all *gandas* of the district. Every village had their own communal land for grazing around the village. They keep their cattle on that land by gathering their cattle and shepherd according to their *dabare* (shift for keeping). This land is wider than any individual farm land and it is found in two or three distinct area for the sake of graze rotation.

The arid and semi-arid rangelands of southern Ethiopia (Borana rangelands) are almost entirely occupied by a pastoral population, which employs a communal resource system for livestock production and some traditional grazing enclosures (local name-*kaloo*) that emerged in recent decades. These enclosures are relatively new trends that allude to a new dimension in the dynamics of community based resource management and could account for 9–18% of the total land area of the semi-arid Borana (Kamara et al., 2004; McCarthy et al., 2003).

In Limmu Kossa *gandas* that I visited during my field work has communal grazing lands in their villages. For example the *ganda*Dangajja communal grazing land was around Gibe rive cross the village, the *ganda*Garadi, around Turoo and the *ganda*Ambuyyee also around Gibe river on wide plain and the *ganda*Suntu has communal grazing land around Bolosoo plain and Daggidage river basin, etc. This communal grazing land nowadays shifting to individual property. For instance, the communal grazing land in Walensu *ganda* was shared by the farms and became farm land. According to Abbaa Garoo Abbaa Diimaa, the farmer decided to share this communal grazing land to overcome the shortage of farm land.

### **4.3. Limmu Kossa Oromo's perceptions of forests and trees**

“The green environment has special significance to the Oromo” Workineh Kelbessa (2001). It is the symbol and fertility of all good things. The survival of Plants and animals depend on green environment. It is believed that green environment is the source of life or a symbol of lifecycle. The Oromo relate all things in forest as birth, life and death. For example, they believe that water springs from forest; different wild lives which we use as food are from the forest. The materials we construct our houses with, and the materials we plough with are from forest. The living plants and the greenness by itself are the symbols of prosperity and humidity. Green trees and grasses symbolize various aspects of reality and society's life (Abba Diggaa Abbaa Fiixaa).

The Oromo people believe that it does not look after the land, one is not only frustrating his own desire instrumentally but he/she also negatively affects the future generations. The society fated those who divest their children's children. Thus, the depilation of a species to the point of extinction is strictly forbidden among the Oromo. That is why they are concerned with the health and peace of environment and its inhabitants. Hence the Oromo religious belief and indigenous moral values and laws indirectly impose a system of ecological protection (Abbaa Garoo Abbaa Diimaa).

Some Oromo clans and individuals have been so inspired by the nature that they have named their clan and their children's after trees. These trees have symbolic value for the individuals and groups concerned, and are respected by the people. The Oromo considered the cutting of growing trees as cutting one's own child. Especially trees like *birbirsa* (*Podocarpus gracilior*), *qilxu* (*Ficus vasta*), *ejersa* (lea Hoth Setteri) are highly protected.

The Oromo indigenous belief and practices have had positive influence on the environment. Their beliefs are environmentally friendly and involve practices that promote an ecological balance. They perform prayer ceremonies under tree shades. In Limmu Kossa there are trees and mountains around which the society performs prayers for instance, Birbirsa Heddo and Birbirsa Ombarawichare found in Walensu ganda, Birbirsa Abbaabora which is found in Dangajja ganda and Mole Mountain which is found in Walensu are the best places where Oromo of Limmu Kossa pray for wellbeing of the society, cattle, crops and for everything.

They also give thanks to God when the crops ripen and become ready to harvest and under trees. They celebrate the ripening of crops under tree shades while eating foods cooked from the ripened crops. Thus, they value and protect trees.

#### **4.3.1. Religious roles of forest in Limmu kossa**

Moreover, Oromo religion recognized some trees as sacred and salubrious. Certain trees are believed to have association with Waaqaa. Social agreement and experience favored some trees over other mundane trees. Some trees called as sacred because of their physical appearance, size, color, shade, function and location, for instance, trees like *somboo*, *birbirsa*, *qilxu*, etc. In particular red *Odaa* is symbolized as *Waaqaa's* tree. As to complex Oromo ecological world view and basic ethical principles, cutting sacred trees down is tantamount to violation of the will of Waaqaa. So, it is wrong to cut down these trees.

According to the teachings of Oromo indigenous religion, trees around *Qaalluu* institution, wells, springs and other places of worship are respected. *Qolloo* trees are held to be sacred and are believed to be inhabited by some powerful spirit. Cutting these trees is believed to result in annoying the spirit and may cause death. It is even wrong to use the dead branches of these trees and old fallen ones (Sheikh Ahmed Abbaa Duulaa).

The Oromo belief has respected for and honoring of green nature and practice not cutting growing trees (Abbagaro Sheikh Suleman).

The shades of big trees like *birbirsa, Harbuu, qilxuu, Odaa, Somboo, homoo* (*Pigium Africanum*) are used as place of prayer during drought, famine and thunders. The ceremony is called nuuroo. Nuuroo is a ritual practice the Oromo people of this area. Under a big tree which is called qoollo grown near the forest or river they gather to pray to their Waaqaa (Oromo deity) to enable them to overcome ones occurred disaster. On this ritual they slaughter grey sheep and buna qalaa prepare under the qoollo tree. So cutting such kind of sacred trees is forbidden among the people of the research area (Abbaa Garoo, Abba diggaa and Haadha Qoroo March, 2014).

The Limmu Kossa Oromo has their own specific sacred trees in their clan and their villages like other Oromos in different parts of Oromia. Qoollo trees are found near the village and near the road (street). It is used during scarification and thanks giving while they go to markets or any other journeys. Qoollo tree is a symbol of peace and stability and is believed to be a link between Waaqaa and the people. So, they offer *Waaqagrass (coqorsa)* or coin (money) or lemon under *qoollo* tree which usually stand near the street. The as qoollo tree are selected based on size and type in the Limmu Kossa. Qoollo trees are *Birbirsa, Harbuu, Qilxuu, Somboo, Bottoo, homoo* are qoollo trees. As Workneh (2001:43) writes on Ambo Oromo *Dakkii* tree which used for giving thanks to Waaqa by putting sacrifice under it .

*Ejersais* one of the respected trees which are used as a symbol of purity and it is also medicine for toothache and to clean teeth. What is more, the elders use qoollo around their villages trees to discuss socioeconomic problems of the society. So, the respect given for big trees is high and they consider qoollo trees as the property of the village. Thus it is forbidden to cut the branches and leaves to sit on or for other purposes.

In Limmu Kossa district even today people celebrate Nuuroo rituals under qoollo tree during spring to pray to Waaqaa for rain which is important for their crop and animals. Following the custom they sacrifice sheep and prepare buna qalaa. The slaughtered sheep and buna qalaa are eaten there no remain is taken home. Because it is believed that the food and drink prepared that day is to sacrifice of the ayyaana which is *roobsituu* or *caansituu* who is the ayyaana of rain was manifest through this person (Jamaal Abbaa Maccaa March 7, 2014)

In the past the Oromo used to plant trees on graveyards. These trees are taboo for any use. They respect *Adaamii* (*Euphorbia* spp.) very much. For this reason, nobody wants to cut this tree. It is believed that trees on a grave look like the flesh of the dead person and serve as statue. This tree is planted on the tomb of the dead for remembrance of the dead person by his /her family. So usually after the death of the person, on the seventh day the family or relatives construct a fence and plant growing tree like *birbirsa*, *homoo*, *bayaa* (*Olea welwetschii*), *weddeessa* (*Cordia Africana*), *somboo* etc. near the grave if the weather is rainy. If not they wait for rain and plant one of the stated trees. In one of the village of my research area, I observe a grave yard which is full of these trees. Another belief among the Oromo of Limmu Kossa is the respect for grave yards. Cattle are kept from entering the grave yard. Cutting or collecting fire wood around this area is forbidden too.

#### **4.3.2. Oromo protects forest for economic and ecological purpose**

In the culture of the Oromo of Limmu Kossa entering into forest to cut tree for different purpose is impossible according to their social rule; because every forest or coffee forest is under the control of individuals or clans. So, if there is an urgent need for tree (wood) during mourning, weeding and social gathering getting permission from the owners of a certain forest. This is usually coffee plantation.

The farmers in Limmu Kossa district conserve forest for other economic benefits like honey extraction. For honey production there are some trees that are preferred for bee keeping. To some, *qilxuu*, *qararoo* (*Akacaathera schimperi*), *somboo*, *Ambabessa* (*Albizia schimperiana*), *harbuumakkannisa* (*Corton Macrosstachys*) are trees specially preferred and conserved for this purpose. These trees are long and have many branches so they are preferred for hanging beehives in them.

The other economic benefits of trees are the production of different materials like furniture and farming tools. The trees used to make furniture and other useful materials are *weddeessa*, *qararoo*, *ulaagaa* (*Ehretia cymosa*), *bayaa*, *doddotaa*, *homoo* and the like. Some trees are also important to construct house. For this reason people conserve and plant such kinds of trees for their benefits in coffee forests as well as in dense forests.

In Limmu Kossa area farmers have different small forests around their lands or homesteads which are important for cattle's shade during winter season. On the other hand, forests are preferred to get

grasses and leaf of different trees and bushes that are used for fodders. For example, cows, sheep, and goats eat leaves of *bosoka* (*Bersama abyssinica*), *incinni* (*Triumfetta pilosa*), *sondii* (*Acacia abyssinica*), *abbayyii* (*Maesa lanceolata*), *gooraa* (*Acacia Meliferia*), etc. They keep forests for the foraging purposes like *gumari* (*Syzygium guineense*) and *gooraa*. Some trees also provide shade for coffee. For instance, *Ambambessa* is planted in coffee gardens to provide light shade and nutrient recycling through leaf fall (Tamam Abbaa Garoo March 11, 2014).

#### **4.2.1. Coffee plantation or (coffee forest)**

Agroforestry refers to land-use systems in which trees or shrubs are grown in association with agricultural crops, pastures or livestock, and in which there are both ecological and economic interactions between the trees and other components (Young, 1988). Essential nature is that it covers combinations of trees with plants or animals, and that there must be interactions between the tree and non-tree parts of the system. It is the ecological interactions that are the most distinctive feature, and which differentiate agroforestry from social forestry (forestry carried out by communities or individuals), although there is a large overlap (Duulaa Abdulkadir, March 8, 2014)

As already touched upon earlier, the Limmu Kossa society also conserve and use forest as shade or abode of the coffee plants. Different tree species are preferred and conserved by the farmers to grow coffee under them. For example, *ambambessa*, *makenisa*, *gumerii*, *bosoqaa*, *bayaa*, *Somboo*, *Sondii* and many other species are important and good shade of coffee plantation. These trees have long size and full of green leaves and branches which are important to protect the coffee plants from direct rain splash and snow or ice and make the light moderate for them. In addition, appropriate water can reach the coffee plant without causing damage to them. Also the leaves of this tree fall down on the earth and keep the soil fertility (Abbaa Garoo Abbaa Waarrii March, 12, 2014).

The Oromo people have been utilizing coffee from time immemorial, and the art of preparing coffee is a central element in their every-day cultural practices. In the society coffee has always been used as a medicine, a food and a beverage, as well as in ritual performances. It is traditionally believed that the first coffee plant sprouted from the tears of *Waaqaa* (Bartels, 1983).

The Oromo people of the research area always use coffee for major feature of every ceremony and it has an essential cultural and spiritual element across the diverse range of the cultural practice including welcoming guests.

Although coffee has great economic, ritual and medicinal significances among the Oromo, today the diverse uses of coffee among the community have not been systematically documented. Presented here are the traditional uses of coffee plantation among Oromo coffee farmers in Jimma zone, Limmu Kossa district, the linkage between the indigenous coffee tradition and the environmental protection and keeping the green area.

Every household in Limmu Kossa rural village has coffee plantation in broad and small coffee forests around their farm lands. Coffee is also a major source of income. The income generated from coffee is used to pay taxes and to supply children and the rest of their family members with resources which are not produced by the household. Rural people also believe that planting coffee is one of the means to control more land and pass it onto the children because it helps establish long-term land ownership. The people already aware not to think about coffee plantation without forests and big trees. As a result, the Oromo of this area indirectly protects the forest in coffee farm to get shadow for their coffee.

On the other hand, coffee is ever-green crop. Since a green color symbolizes fertility and coffee is ever-green, Oromo traditional farmers plant coffee trees even next to their compound gates to take pleasure in the presence of Waaqaa with them which reflects itself through the coffee plants (Abba Jihad AbbaWarrii). Furthermore, they believe that coffee plants provide shade for domestic animals and shelter for the wild ones. Thus, although coffee trees avoid yielding fruits after some year, traditionally the Oromo usually do not prune to maintain a source of new fruiting wood because they take care of coffee not only for economic benefit but also linked socio-cultural factors (Bula, 2011).

Planting trees including coffee plantation is believed to be clothing the earth and appeasing Waaqaa. Coffee is incorporated into the cosmology of the Oromo people. Oral tradition on the origin of coffee indicates that once upon a time Waaqaa ordered a man to do what he ordered him. The man refused to fulfill the will of Waaqaa. Eventually Waaqaa became disappointed and annoyed with him which resulted in his death. When Waaqaa visited the area the next day, he found the corpse of the person lying in the grave, and tears burst from his eyes. At that very moment, a coffee plant sprouted from the spots where his tears had dropped. According to this tradition, from among the trees, coffee is believed to be sprouted from the tears of Waaqaa. This prompted the community to believe that other trees grew from rain while coffee trees grew of the tears of Waaqaa (Bartels 1983).

Coffee also symbolizes women (Bartles 1983). Bunakela designates killing at which blood is shed. A coffee-bean also metaphorically represents a female reproductive organ. The coffee fruits are bitten open and stewed in melted butter. The opened coffee fruits are a symbol of the female organ. This biting open of the coffee fruits is a symbol of the first sexual intercourse on the wedding day (Bartels 1983).

Because of the symbolic meanings attached to coffee plant and coffee bean and coffee slaughter they plant coffee and thereby they make their surrounding green.

Farmer's coffee forest



Qabana'aa forest

Kubee, coffee Forest

#### 4.4. The Limmu Kossa Oromo's Indigenous Knowledge of Soil Classification

Farmers classified soils based on what they saw and felt about that particular soil. There were certain inherent factors which farmers used to classify and characterize soil types. The most important ones were color, fertility, land type and depth of the soil. Farmers are easily able to differentiate between soil types in the area, and have local names for different soil types. Farmers consider soil as a living entity that grows, matures, becomes old and even dies so that even grass cannot grow (“*lafti akkuma namaa dhukkubsata*”(Abbaa Garoo Sheikh Suleman). A ‘sick’ soil can be cured with the right inputs, and a ‘tired’ soil can be revitalized. For this kind of land the society said ‘*lafti kun kankofteetti*’ or ‘*lafa kankee*’ (Abbaa Garoo Sheikh Suleman). Farmers are aware where each soil type exists, and know the crop type grow on each soil type within their own land. Farmers are also able to identify variability between soils at their field.

In Limmu kossa district people classified the soil into five types. They are *biyyee diimaa* (red soil), *biyyee Kootichaa*, *biyyee suppee*, *biyyee gurraacha* (black soil) and *biyyee cirrachaa*.

*Biyyee diimaa* (Nitosol) is one of soil type found in Limmu Kossa area which has low fertility but important to grow different types of crop and to plant vegetable. It is important to sow *xaafii* (*Eragrostis teff*), *nuugii* (*guzotia abyssinica*), *talba* (litreed) and maize in some extent.

*Biyyee kooticha* (vertisol) the soil type which found in humid area (*caffee*). This soil has a grey color and not prefer for farming but sometimes the people sow maize on this soil during dry time through irrigation (Tamam Abbaa Garoo).

*Biyyee Suphee* (clay soil) is the soil type used for making clay material used for various purposes. There are clans who have knowledge of making house material from *suphee* (clay). This soil is not preferred for sowing crop.

*Biyyee gurraacha* (Moll soil) is a most fertile soil which preferred to sow various crop like garbuu (barley), *qamadi* (wheat), bean, *xaafii*, and *dagussa* (Finger millet). It is suitable for all crops growing in the region even without fertilizer, but *Xaafii* suffers from lodging sometimes even under no fertilization indicating high level of nutrients content. This is thus considered the best among the other soils. It is also important to plant coffee and different vegetables like avocado, mango etc.

*Biyyee cirrachaa* (Sandy soil):-this found on the summit or where there is high rate of erosion. It is exposed after the removal of the red soil (sub soil) due to erosion and extensive tillage for a long time. In this case it is likely that the parent materials are being exposed (Ayyubee AbbaaDiimaa, Sheikh Ahmed Abbaa Duulaa and Abbaa GarooSheikh Suleman March, 2014)

#### **4.5. Declining of soil fertility in Limmu Kossa district**

Rapidly declining soil productivity among diminishing per capita holdings of arable land poses a severe threat to sustainability of agricultural production and livelihoods for the majority of the farming population in the district. Due to their heavy dependence on agriculture, efforts to sustain the soil resource base are critical to stimulating economic development in these countries. For this reason the farmer highly working on the soil fertility through their indigenous knowledge (Abbaa Garoo Sheikh SulemanMarch 10, 2014)

##### **4.5.1. Factors for theDeclining Soil Fertility in Limmu Kossa**

The declining in soil fertility has four root causesin Limmu Kossa. The first is lack of farm land; this has reduced the land fertility because of grazing and repetitive farming on the same farm land. The second is the extra pressure on the land due to increased population, as the same land has to support an ever-increasing number of people. The third is the decline in the amount of manure available because of decreasing number of livestock, and have recently been further depleted by drought, disease and forced sale to meet economic needs and the shift of livestock rearing to coffee plantation. Even if the livestock numbers are reduced the lack of grazing land is observable because it has been converted to farm land. Yet still, land use problems in this area are increase in human and animal population, overgrazing and expansion of cultivated lands in these areas, which are not suitable for cultivation. Owing to rapid gully expansion and because of the absence of preventive and control measures, there is considerable loss of soil from grazing and cultivated lands.

Although other factors like shortage of rainfall are the principal contributing factor to the low and declining agricultural productivity in Ethiopia, the major one is low soil fertility due to excessive degradation of soils (FAO, 2000)

The *qe'eeland* type is nearest the house, which the household is always trying to expand through improvement of soil fertility (*lafa boroo*). This land is accessible for compost and different waste products from the house like ashes to make it fertile. In proceeding sub topic I would try to discuss

how, when, and what the Limmu Kossa Oromo use to maintain soil fertility using the discussed method (Abbaa Garoo Sheikh Suleman March 10, 2014)

## **4.6. Oromo indigenous knowledge (mechanisms) in improving Soil Fertility**

### **4.6.1. Systematic plowing**

To discuss soil fertility management it is proper to refer to slope or landform classes, where the terms steep, moderate and gentle may refer to individual slopes or to landscapes in which such slopes are predominant. It has also become common to recognize sloping lands (steep lands), dissect or hilly areas dominated by moderate to steep slopes in which erosion is a basic problem.

Farmers are responding to the decline of soil fertility in numerous ways. They inherit from their forefathers. These mechanisms are discussed as follows:

*Bo'oo (canal)* and shallow earth banks (*gadoo*) are constructed on private lands to reduce the overflow of water (rain) that also washes away soil, organic matters and dissolves nutrients. *Gadoo* is the remaining between farm lands of neighbors. Earth bunds are also made at the edge of the farm, while drainage ditches are used to reduce the flow of flood water and mitigate its effects. The plough style is also important for soil conservation. *Yafaroo* is made by farmer against the drainage systematically. Both structures are constructed mainly by oxen drawn plough, but depending on the runoff expected, which depends on the slope length and gradient, intensity of rainfall and the type of crop planted upstream of the field, re-enforcement by hoeing may be necessary (Abbaa Garoo Abbaa Waarii).

Relief plough is practiced where soil is vulnerable to erosion because of the slope. As all farmers plough land for four times. The first is *baqaqsaa* (newly plough), the second round plough is called *garagalchaa*, the third round plough is *buroo* and the final round plough is called *facaasa* which is for sowing crop. At each level, the mechanism they used helps to conserve soil from erosion and degradation. The society have to plough side and nailing-down plough the slope and make drainages in the farm and leave the land with grasses and bushes in middle of sloppy land. And they plough across the slope on the same day because it is dangerous to leave the field with vertical furrows in case a storm comes and the water rushes unchecked down the furrow, causing serious erosion (Abbaa Garoo Abbaa Diimaa and Abbagaro Sheikh Suleman March, 2014).

Most farmers hold that hoeing is better for maintaining soil fertility than plough. This may be because plough turns up less fertile subsoil. Unfortunately this is not an option for large areas in Limmu Kossa. The fields sown with small cereals, like *Xaafii*, higher overflow rates are expected. So, to prevent the seed and soil loss due to runoff drainage furrows known as *Bo'oo or yaa'a* is constructed at relatively closer interval depending on the slope (Abbaa Maccaa Abbaa Diimaa March 11, 2014).

Land users practice traditional ditches to drain excess water from crop fields and have traditional rules that govern the community members to abide by. Draining excess water needs agreement to be reached among land users whose plots are in the same drainage system. So, land users form groups to construct waterways to safely dispose runoff from the ditches. No land user can dispose water on the plot of the other. Hence, neighbors (*biddaruu*) agree to construct ditches and waterways that carry runoff from all fields to natural drainage ways. Traditional rules for protecting and managing natural resources around churches and graveyards exist. The churches normally have the traditions of maintaining and protecting trees around the church premises.

This soil fertility replenishment approach has several limitations. Although, fallows perform well, they are not attractive to farmers at the margins of humid tropical forests of the area because they have better land-use alternatives due to population growth. Fallows also do not perform well in shallow soils, poorly drained ones, or frost-prone areas.

Generally, after the soil's fertility is replenished, high-yielding crop varieties, integrated pest management, conservation tillage, high-value trees, vegetable crops, and dairy cattle should come into play. Such land-use change also has positive environmental effects.

As alternative, the on-farm production of firewood reduces encroachment onto nearby forests and woodlands may help to preserve their remaining biodiversity. The diversity of plant species grown in these farms also mitigates the effects of pest attacks and market price fluctuations. These agroforestry systems are also healthy, suffering less of a decrease in crop production when droughts hit because the soils are more porous and hold water better.

#### 4.6.2. Manure and Crop waste

The Oromo have used cattle for food, ritual, status, wealth accumulation, and sacrifice in initiation ceremonies. They also use cattle products for fertilization, fuel, clothing, etc. Cattle-rearing has long been part of their lives (Asafa Jalata, 2010)

Most farmers use manures and household waste, ash and different leaf of different tree or food remain in their soil fertility maintenance activities. *Haraa* is a practice of spreading households' wastes to the field for soil fertility maintenance. It consists all kinds of human and livestock residues (leftovers) in and around the residence waste and ash. In the farm household, cleaning grains before grinding is among the daily practices. Farmers say that manure improves fertility for a number of seasons, rather than just improving yield for one season as in the case of inorganic fertilizers. Manure is used flexibly over space and time. It is applied to the farm field after the harvest. Unlike the chemical fertilizer this type of compost has not any negative impact on the fertility of soil (Abbaa Diggaa Abbaa Fiixaa and Haadha Qoroo Abbaa Qoyyaas March 6, 2014)

The first step of this process is to identify the best site for dung. This requires careful thought as it is a scarce resource and must be used strategically in their qa'ee (homestead). Manure is transported to the field by women, and is distributed over the field step by step.

Most farmers indicate a shortage of manure as a major constraint. This is due to the reduced number of livestock. Richer farmers are deterred from loaning animals to poor farmers who cannot afford veterinary medicines, because of the risk that they will not be treated and might die. In addition, manure is also used for fuel (especially in the highlands, and particularly by those who brew local beverages), which means that less is available for adding to the land. Manure was traditionally reserved for application to the land, but decreased access to wood is forcing farmers to use manure as fuel (key informant Abba Diggaa Abbaa Fiixaa March 6, 2014).

The major ingredients used for composting are: manure (where available), household refuse, crop residues (except xaafii straw), tree leaves (especially that of waddeessa and makkanisa), grass, and water during dry periods. The manure adds nitrogen, to improve the balance between nitrogen and carbon and thus improve decomposition (Duulaa Abdulkadir March 7, 2014).

The crop wastes have potential for use as forage, fuel or soil improver. Typically, farmers of the area use barley straw, *nuugi*, linseed and maize Stover for fertilizing chat garden. In those areas where fuel and fodder are not scarce farmers leave some crop residues on the land.

After the removal of grain, grasses and leaves and stalks of corn that are left in the fields after harvest are dried for use as fodder at harvest, and stubbles remain on the field. Livestock are confined in these fields to graze off the growths and provide manure for the land directly. This practice is more common in the lowlands of the district.

Some indigenous tree leaves are believed to add fertility to the soil. Many of the farmers use leaf litter as a mulch to enhance soil fertility. However, some species of trees are not welcome on the farm; as their roots suck nutrients from the soil. Therefore, leaves of these species are collected from outside and carried to the farm. In Limmu Kossa, farmers plant borders of the farm *migira* (hard grass) and *coqorsa* (grass) around crop fields (Abba Garoo Abbaa Diimaa March 6, 2014.)

#### **4.6.3. Lafa baasuu (Fallowing)**

Fallowing is a practice of abandoning land for rejuvenation when the nutrients are exhausted. Fallow land is commonly used as a grazing ground for five to seven years depending on land holding of the farmer and the nature of the land to recover. This practice is diminishing and becoming only things of the past.

Although the benefits of fallowing land for one or more seasons are well known in Limmu Kossa but today land shortage increasingly limits its application.

Fallowed land can be invaded by weeds such as *kusaaye* (*Lippia javanica*) and *reejjii* (*Vernonia auriculifera*), which are important to fertilize the land by itself recover and become productive. What is more, within farming, social arrangements are used to bridge resource gaps (land, labour, livestock and capital), such as share-cropping and share-breeding, and there is increasing use of early maturing crops to get more crops per season on the same piece of land (even though this is detrimental to soil fertility) (key informant Abbaa Garoo Sheikh Suleman March 10, 2014).

### 4.6.3. Crop Rotation

Farmers in Limmu Kossa district use crop rotation to enhance soil fertility and to increase productivity. The farmers use crop rotation between cereals and root crops, with few legumes in their farming land. The systems of rotating crops have their own steps. Let us see them one by one. On the land where *xaafiis* is harvested from the farmer next sows maize because *xaafi* makes the land strong. On the land maize was harvested from, they use it for sorghum. They also use maize land for *biriiso* (winter) barley after the maize is harvested. They start to plough the land for *birriso* barley. The system requires an integrated campaign to increase productivity and soil fertility (Abbaa Diggaa Abbaa Fiixaa).

### 4.6.4. Mixed Farming

Mixed cropping is the growing of two or more plant species in the same field at the same time. Mixed species is often perceived as a viable tool to increase on-farm biodiversity in organic agriculture and is a potentially important component of any sustainable cropping system. Apart from increasing total farm productivity, mixed species cropping can bring many important benefits such as improvement of soil fertility management and suppression of pests and diseases. Mixed cropping also ensures food security by reducing the risk of mass crop failure, due to its different water and nutrient requirements (key informant [Abbaa Garoo Abbaa Diimaa, Sheikh Ahmad Abba Duulaa](#) [March 6, 2014](#))

### 4.7. The role of women in forest and soil conservation

Among the Oromo, women have a great role in forest and soil conservation. Regarding forest management women can contribute to the existence of trees in coffee forest, they know which trees are sacred and valuable for coffee and they also know trees which are for firewood. During they collect firewood they select trees which are less in size and low dignity (respect) than sacred trees like *askiraa* (*Millettia ferruginea*), *Abbayyii* (*Maesa lanceolata*) and *Xaaxessaa* (*Allophylus* spp.) which are less important for coffee plantation. On the other hand, they do not cut the living trees instead they collect the dead part of trees. As I discussed under the above sub topic they protect some of tree species for different purpose like for cleaning milk containers and *elemtu* (milking material) to make good *Oder* (*foolii*). The other thing is the way that they protect trees which are

medicine for different disease and used to different rituals (key informant. Hadha Qoroo Abbaa Qoyyas March 7, 2014)

Women have a responsibility to keep their homestead clear and green. They evaluated in the way they plant different spice in their garden and to get good product they make the soil fertile by using different mechanism. According to my informant Ayyubee Abbaa Diimaa, earlier time we bought only salt and kerosene for light. The other spice and different fruits and vegetables are grown around the home by women. They distribute manure and ash on the farm and different waste material in and around the home. They believe that storing ash in one place of their farm land is not advisable because it is dangerous for children and other person while they pass over it may break the leg according the belief of the society. So, they distribute over the farm (Ayyubee Abbaa Diimaa, March 6, 2014).

#### **4.8. Current Status of Oromo Indigenous Knowledge in Forest and Soil Fertility Managements among Limmu Kossa society**

Now a days, the experiences of forefather are decreasing and becoming forgotten except few of them. The belief systems of the Oromo people are destroyed because of different factors discussed below. The transmission of indigenous knowledge from parents to younger people is still continuing but minimal in the study area. Only a minority among young people are well versed in the indigenous knowledge of agroforestry. The majority of young people are not equipped with a level of indigenous knowledge that is required for the sustainable use of agroforestry. Today, young people that attend school are no longer interested in becoming farmers and they give no respect for norms and values of their ancestors too.

Farmers with livestock use farmyard manure to increase soil fertility by applying it on farm land and by constructing barns on their lands. Practice according to the farmers was that the effects were seen immediately they applied the manure. However, the major drawback was that quantities of farmyard manure were generally low and numbers of cattle are very few when we compare with earlier. Now a day it is only used by distributing near to the homestead which is used to fertilize vegetable gardens.

Another factor for decline of using manure on farm land is the unwillingness of farmers to transport and thinking as backwardness and farmers perceived numerous benefits of using the inorganic

fertilizers compared to the organic sources of fertilizers such as quick yield response (meeting food security needs), easy to apply and easy to access as most of the fertilizer is sold in many rural markets, the high cost of inorganic fertilizers and the introduction of the structural adjustment program have forced government to explore alternative and economically feasible (Abbaa Diggaa Abbaa Fiixaa). Additionally, the change of the socio-economic life of that society from pastoralist, farming also can be other factors.

#### **4.8.1. Factors Attributed to the Changing Oromo environmental conservation in forest and soil fertility management in Limmu Kossa**

Different factors have had impacts on the transmission and development of indigenous culture these will be explored and examined as follows one by one.

##### **4.8.1.1. Ethiopian regimes misguiding policies**

The above environment friendly indigenous resources management mechanisms for sustainable environmental conservation were depressed, or made ineffective due to the disintegrations of Gada system especially after the conquest and the incorporation of Oromo land in to Abyssinian imperial state. The conquest led to increasing pressure on resources and disruption of the balance between population and environment. Through the last century and half, there was the extension of political and economic power of the Christian highland state over the population and economic resource of Oromia. Minilik's 1865-1900 eased land litigations or congestions in north by providing new areas of settlement in Oromia. The conquest transferred northern land tenure system to Oromia. Consequently, fixed annual tribute (qurt gibir) and surplus corves labor the two major economic bases of north conquerors' were extracted from peasant who owned communal egalitarian hereditary land (rist) (Mamo Hebo, 2002). Moreover, what Ethiopian incorporation of Oromo land (together with population expansion) speeded up was also a change of emphasis from animal husbandry to cereal production and individuation of land. As a result, the previous privileged right over grazing land of large majority of local population was denied. In late 1960s and early 1970s tenants' conditions became even more precarious. Landlords (Ethiopian Entrepreneurs) preferred to convert their lands to mechanized agriculture which led to large scale of tenants' insecurity, exploitation, soil erosion and deforestation. Government control over all uncultivated or unutilized, grazing land, forests, lakes, rivers and river valleys claiming that such lands had no legal owners.

Consequently, some peasants intentionally destroyed forests on these lands and deforestation of such forests was a form of protest against possession legislations government.

The most important process in Ethiopian political economy of the last century and a half was the extension of political and economic power of the Christian highland state over the population and economic resources of Oromia. By stress two diverging views concerning state intervention in the production conditions of the Oromo from the end of 19th century up to the last quarter of 20th century. Some of the authors indicate that Menilek II's conquest c. 1875-1900 resulted in the confiscation of land from the conquered and its distribution to the conquering settlers, the Orthodox Church and local collaborator chiefs. As a result, a large majority of the local people lost their traditional rights and became tenants (Gadaa, 1988; Asafa, 1993; Jabeessaa, 1995). Some other sources conversely allege that for the first five decades following the conquest, the majority of producers continued to enjoy ownership rights to cultivable and grazing lands by paying taxes to the state agents. What the state allocated to its military/ malkagnas, civil and ecclesiastical employees was the right to extort tribute (with curve labor) from the specific number of landowning peasantry known as qutur gabbars (Workineh, 2005).

Whatever the case, there was disguised intimidation that the local people could not resist. It was to get defense from further threats that the peasant was forced to relinquish his land in favor of the naftagna and this form of surplus extraction contributed to individualization of agricultural land with great pressure on land. The sources, nonetheless, do not discuss the impact of these changes on the environment of Oromo. The sources do not especially explain how the downgrading of Oromo indigenous religious conception greatly exacerbated the adverse environmental changes in Oromia specifically in Limmu Kossa. This research was investigated the above related issues and show how the renovation of this knowledge can contribute for the sustainable environment in the future. Thus, it was look at the issues in outlook and remembrance.

What Ethiopian incorporation of Oromo land and the gabbar system (together with population expansion) speeded up was a change of emphasis from animal husbandry to cereal production from which the gabbar was to pay tax and this in turn accelerated individualization of land. This change from group-temporary tenure to a kind of private-permanent tenure gradually led to exacerbated deforestation (McCann, 1995). The sources, however, do not cite the specific conditions seen as a

result of the neglecting of indigenous religious concepts. This research intends to fill the gap, showing how far this happened.

The period after 1941 post Italian Occupation of 1935 - 1941 saw a spectacular change in the socio-economic conditions of Oromia. The period was characterized by the intensification of the procedure of individualization of land. The major factors behind the speeding up of individualization of land were land registration, land measurement and the grants of plots of land to government officials, patriots, exiles and some of the local elite.

Extensive land registration prepared the way for land measurement. The measurement of land helped the government to grab vast tracts of land from its local owners, which in turn enabled its dignitaries to own big expanses of land. The measurement also raised state revenue by imposing heavy taxes on local peasantry. Default on taxes (Gibraltar) led to the loss of land by local people. As a result, the large majority of the local population were dispossessed; their previous privileged right over land was denied. Tenancy became normal. Written sources have not yet been concerned with and given specific references how far these various ways of accessing land greatly altered the Oromo indigenous religious views on protecting the environment from dangers. The benefactors enjoyed greater social status at the expense of the tenants, who worked on the land but benefited little from what they produced (Workineh, 2005).

The 1950s and 1960s marked the expansion of the commoditization of land in Oromia. The major reason for this increase in land sales was the increasing demand for food and cash crops in the international market. The rise of the commercial value of the land motivated the indigenous population, especially the distressed peasants, to sell their land. The major effect of this increase in land sales was the increasing concentration of land in the hands of few individuals (mainly absentee landlords) in spite of increasing population pressure (McCann, 1984). This study tried to discover how far this procedure of commercialization of land diminished the Oromo religious indigenous knowledge and facilitated environmental changes in Oromia.

Under the Derg, the government played an active role in forest management, using harsh enforcement practices to ensure that the forests were preserved. Knowing that arrest, a prison sentence or even death could result from cutting down a tree or illegally settling in a forest or national park, people refrained from environment-damaging activities. Under strict government

control, the forests were preserved. But, this strict Derg forest policy had a devastating effect on natural resources in Ethiopia thereafter (Sheikh Ahmed Abbaa Duulaa)

Military government's land nationalization in 1975, after 1974 revolution, did not reduce deforestation pace. The rural population and embittered landed classes resented state ownership of all forests and trees. The Derge government made a serious attempt to improve environmental degradation involving majors like construction of physical structures (bunds, terraces micro basins and check dams), planting trees and construction irrigation scheme, villagization and settlements (inf. Abba Diggaa Abba Fitaa). Nonetheless, these measures were mainly introduced through arranging food for work program as motivating force in people's participation. This led the peasants work for food in rehabilitation rather than responsible for land owners (Sheikh Ahmed Abbaa Duulaa).

#### **4.8.1.2. The influence of foreign religions**

The second serious treats to the maintenance, empowerment and further development of Oromo indigenous beliefs and practices contribution to sustainable environment has been the introduction of religion which have challenge the very existence of Oromo indigenous beliefs system. Muslims and Christian's number increased in the various regions of Oromia by leaps and bounds within a short period of time. Internal dictators discouraged development of Oromo indigenous religion primarily.

Moreover, the introduction of religions like Christianity and Islam has challenged the very existence of African indigenous belief systems (Omari, 1990:172).

African religious beliefs have been regarded as primitive and useless, and the people have been considered as pagans without real religion. Missionaries claimed to civilize the non-European people.

Christianity and Islam looked down upon traditional religion of the Oromo. In the study sites, the number of Christians and Muslims increased by leaps and bounds within a short period of time, particularly in Limmu Kossa. They divided the people into two camps—the converts who looked down upon the old traditional religion, and the devotees of traditional religion (Abbaa Diggaa Abbaa Fiixaa)

The acceptances of foreign religions were conceived as the acceptance of civilization. In particular, the influence of Christianity has become serious in Oromo lands since the last quarter of the

nineteenth century, when the Abyssinians conquered the Oromo and other Southern ethnic groups of the present day Ethiopia. In particular, the influence of Christianity has become serious in Oromo lands since the last quarter of the nineteenth century, when the Abyssinians conquered the Oromo and the Limmu Kossa district in particular the land lords from Amhara expanded coffee plantation and farms by taking the land from the Oromo peasants (Abbaa Garoo Abbaa Diimaa). The Abyssinian rulers regarded the Oromo religion not as true but as superstition and the Oromo were expected to accept the new religion. The local chiefs most of the subject people were baptized into Christianity during this time (Abbaa Garoo Sheikh Suleman)

When we come to Islam also decline the Qaalluu institution with coming of Muslim to Oromia through trade routes and Qaallu position was diminished in its importance with increasing Islamization of Oromo. Muslim has subverted many of Oromo indigenous religion. For this reason in different part of Oromia especially in Limmu from Jimma zone. It is hardly possible to argue that Islam and Oromo indigenous religion coexist together although some individuals have followed both indigenous and Islam religion. On the other hand, the Northern Oromo, such as the Raya, Azebo, Yeju and Wollo accepted Islam during the eighteenth century. The Gibe states embraced Islam owing to the influence of Muslim merchants in the mid-nineteenth century. The Turko-Egyptian colonial powers forced the Oromo in Harergie, Eastern Ethiopia, to accept Islam between 1875 and 1885 (Asafa Jalata, 1993:25). Besides, most Oromo turned en masse to Islam in order to avoid the domination of Christian Abyssinians. For instance, the Arsi Oromo accepted Islam as their religion and their shield after they lost their institutions in the last quarter of the 19th century (Asmirom Legesse, 2000:95).

For example, in Limmu Kossa in recent years the religious leaders of Islam regarded the Oromo religion as superstition and ignoring people who respect sacred tree in the area. So, they undermine Qallu's roles in a society. They condemned as paganism; marginalized or outlawed and its role was restricted under cultural pressures with expansion of Islam in the area. According to, the analysis of primary data the question of burial places monopolized by churches and considering all ayyaana and other beliefs and practices related to grave taboo are seen as belief evil practices. So, the major previous religious activities like going to Galma of Aba Muuda, Irreecha etc. were forbidden in this area because of the influence of Islam. They also start cutting sacred trees to start

farming and plating coffee on sacred areas like on the top of mountains (Abbaa Garoo Abbaa Diimaa, Abbaa Maccaa Abbaa Dimaa and Haadha Qoroo Abbaa Qoyyaas).

#### **4.8.1.3. Population growth in Limmu Kossa**

Ethiopia has a total population of over 65 million with 3% annual growth rate and a density of more than 90 persons per km<sup>2</sup> (CSA, 2001). Most people (88%) live in the highlands (above 1500 m) that constitute 43% area of the country. The country's ecological setting is quite diversified in altitude, climatic and ecological features. Ethiopia had 40% forest coverage before the last three to four decades. Unfortunately, to date forest areas have dropped to 2.7% (2.7 million hectares), of which only about half of this is natural forest, and the decrease is at an alarming and furious rate (Tedla and Lemma, 1998).

The 1994 national census reported a total population for this district of 90,544, of whom 45,067 were men and 45,477 women; 2,741 or 3.03% of its population were urban dwellers at the time. The 2007 national census reported a total population for Limmu Kossa district of 161,338, of which 81,462 were men and 79,876 were women; 14,842 or 9.2% of its population were urban dwellers.

Human interference, mainly for subsistence and economic reasons, is the most important reason for fast depletion and serious degradation of natural resources in Ethiopia. The conventional, futile and unsuccessful protection and guarding of state forests by employed guards rather than empowering and shifting the responsibility to the community has failed to contribute much in this case.

The effect of population size depends on consumption; the effects of consumption depend on how many people are consuming at that level (<http://eponline.com/articles/2012/06/12/article-population-growth-leads-to-environmental-stress.aspx?admarea=ht.globalwarming>). The unprecedented surge in population has caused and is still causing rise in individual consumption of food, water, and exploitation of natural resources like land, water, fossil fuels, minerals, vegetation etc. The combined effects of population growth, consumption, overuse, wastage and misuse of resources has strained the capacity of the earth to sustain life. The environmental and ecological impact of population means impacts of population on environment and its various components.

The Ecological Impacts of population growth includes - impacts of population growth on Physical and Biological components of the natural environment. The state of the environment and varying population factors affect each other in many ways. Their interactions are also dual directional. One

of the major influences on deforestation is the expansion of cropland. The change in cropland is equal to the sum of the change in population, change in income, change in appetite, the change in the amount of nonfood crops and the change in average crop yields (Waggoner & Ausubel, 2001). When the amount of cropland increases, given all of these factors, the forests are in danger if they are on arable land that is good for growing crops. Their land is ideal for agriculture. There is also a rural population/urban population aspect to consider when looking at population/forest interaction. Many rural populations use forest resources for subsistence. However, they also extract these resources in order to fulfill demand coming from urban areas. Rural communities are close to the forests and can gauge if the resource is in distress. It has been found in India that in cases where environmental resources were scarce, environmental improvement efforts increased (Bhattacharya & Innes, 2008). This finding implies that some locations that do not fall under the "vicious cycle" category. Thus illustrating that the interactions between human populations and forests are complicated and rely on many factors. Forest conditions affect population growth and population growth affects forests. These interactions take place in varying ways.

#### **4.8.1.4. Western education and market economy**

Cultural influences clearly play an important part in social change. For example, secularization and the development of science have had major effects on the way in which we think, attitudes to legitimacy and authority, and have thus also influenced social structures, systems and values (Giddens and Duneier, 2000).

Some Western scholars and Western trained intellectuals in many developing countries have challenged indigenous knowledge. Both groups have tried to promote scientific knowledge by belittling the accumulated knowledge of the local people. The irony is that they did not take time to critically study indigenous environmental knowledge. Early European adventurers, missionaries and anthropologists formulated their narratives about Africans "in terms of the conceptual schemes of their own upbringing" (Olusegun Oladipo, 1996:162).

In Africa, the young people have been alienated from their culture through the influences of missionaries, modern schooling and the mass media. Subsequently, the great majorities of Africans now active in conservation were trained in the traditional Western methods of wildlife management and have hindered the growth of an African conservation ethic by promoting European management systems (Jonathan S Adams and Thomas O McShane, 1992: xvii).

Besides, community members who moved to cities and other places may forget the principles and rules of the cultural practices of their society. Likewise, descendants of immigrants will be alienated from the environmental sagacity of their forefathers (H Odera Oruka, 1997: 277)

Because of the negative attitudes of educated persons towards indigenous knowledge, elders pass away without transferring their knowledge. Also, the neglect of indigenous knowledge and governments' linguistic acculturation and assimilation policies have led to the disappearance of various indigenous languages that have had a crucial function in developing, creating, encoding, sustaining and transmitting indigenous knowledge and patterns of behavior in different parts of the world. The decrease in native language will lead to the disappearance of people's knowledge of the natural environment. According Abbaa garoo she Suleman, "this generation are forgot their tradition they do not care about indigenous knowledge and ways of life. While we try to teach them they ignore us, I think this is of influence of their education and Medias".

It has been estimated that half the world's languages – the storehouses of peoples' intellectual heritages and the framework for their unique understandings of life – will disappear within a century (Henrietta Fourmile, 2006).

For the local people, language has a paramount role for their identity, livelihood, biodiversity conservation and for the continued development of their knowledge systems and cultural traditions.

#### **4.8.1.5. Adaptation of chemical fertilizers**

According the primary information on agricultural experience of the farmer that lasted until now; the focus was primarily on aspects of crop quality, and the fertilizer application rates for the various treatments were adjusted to bring about comparable yields.

During the time of using organic soil fertility improvement and chemical fertilizer the yield increased in all treatments in accordance with the overall trend in the farm land, but the increase was highest in the organic treatments than the in organic one. The other issue the farmer experienced that the chemical fertilizer is helps for only one year and reduces the fertility of land. The effects of the different fertilizer treatments on product quality and yields are reducing through time (Abbaa Diggaa Abbaa Fixaa)

Compared with the conventional treatments, the crude protein content of potatoes and wheat was lower in the organic treatments, but protein quality was higher (i.e. relatively pure protein and essential amino acids, lower amount of free amino acids). Resistance to decomposition and store quality for potatoes were higher in the organic treatments and in wheat starch quality seemed to be higher.

On (<http://www.ilri.cgiar.org/InfoServ/Webpub/fulldocs/WP30/Nature.htm#P34> April 24, 2014) the history of agricultural research and extension in the region is not very long. Moreover, research and extension activities throughout the past periods have concentrated on cropimprovement and productivity increasing technologies and inputs. Conservation per se has received little attention. Also, research and extension have served the large-scale private and state-owned commercial farms rather than the smallholder sector. Consequently the vast majority of smallholder farms has benefited very little from research and extension programmes. Some efforts have been made by both government and development agencies to introduce conservation technologies but these technologies were not sustained once the outside initiatives and support were discontinued

The organic treatments resulted in a higher soil fertility capacity and in crops with higher quality protein, higher starch content, and a greater ability to tolerate stressful conditions and long-term storage in comparison with the inorganic treatments. Furthermore, the crops produced in the organic treatments developed a structure that can be studied through a picture formation method. This has also been described as a higher organizational level which is evident in terms of both soil and crop formation as a result of the long-term effects of organic manure compared with conventional chemical fertilizer.

According to the experiences farmers on the effects of different chemical treatments on farms and as a result differences between organic and inorganic treatments, but indicate also that the effects of liquid organic manure on quality parameters are more similar to those of inorganic fertilizer but the durability of organic soil fertility treatment is high.

On the other hand, the ease access of chemical fertilizer decline the practice of indigenous soil fertility management and this leads to low crop product. According to Abba Garoo Sheikh Suleman, the chemical fertilizers is not the demands of the farmer but we used for the fear of government. We expense our labor forces on compost preparation according the teaching of development agent in our

ganda. Still it is not appropriate because we know in our culture how to use manure and different crop remains to soil fertility but this one is leftover time”.

#### **4.8.1.6. Outsider settlement in the district**

The other factors which affecting the forest in the district was the alarmingly growth number of settlers on sacred and dense forests of the area from different ethnic group. The people who are deforesting the dense forests of the area are the people retired from state coffee plantation and the Yam people who settled in the Sekkar forest. Because of their background they do not know the culture of the Oromo people and belief; so that they carelessly destroyed the big tree and dense forest for crop cultivation and for coffee plantation. As a result the local people start using the forest for competition they also expand their farm land by cutting the forest (Abbaa Garoo Sheikh Suleman)

In past time the Oromo respect for growing tree and for sacred trees. But the new comers do not respect trees. On the other hand the retired people from state farm of the area are grow coffee in a way they learn from and they grow it under sparse tree and the species of coffee is also not suitable under big tree and dense forest because of the size of that coffee is short. According my informants, the settlers from Gumer coffee plantation are highly an affect our environments. They bought a land from farmer and expand to dense forest and communal land. To compete with them the local people start cutting the forest for farming.

Because of the above mentioned factors the Oromo indigenous knowledge in forest and soil fertility management is decreasing in the study area. So that the agriculture and rural development and tourism and culture office need to focus on peoples indigenous knowledge which is very important to conserve environment in a very least cost.

## Chapter five: Conclusion

### 5.1. Conclusion

Traditional environmental knowledge is a body of knowledge and beliefs transmitted through oral tradition and first-hand observation. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use. Ecological aspects are closely tied to social and spiritual aspects of the knowledge system. The application of their agricultural knowledge and practices, the Maccaa Oromo have been able to obtain surplus harvests and maintain harmonious and balanced relationships between crop cultivation, livestock raising, plant life, and the environment. Their farming systems and practices have also provided a certain degree of continuity and sustainability during periodic disruptions due to climatic variations and political upheaval.

Land is best of the property and has strong social and psychological values and symbolizes identity for the farmers of Limmu Kossa. The land is different according their originality. We give high priority because the land we bore over and our *hadhura*(chord) was graved on is the place we see as an only special place and also the place and land were our forefather was born on it. However, the most direct and primary requirement for sustainability is to maintain soil fertility and to keep forest from deforestation.

People used their land by dividing according their significances. The society named their land based on different criteria. Based on the significance and distance from the home .The land around the home or homestead, farm land, communal grazing land and land coffee plantation.

It is believed that green environment is the source of life or a symbols life cycle the Oromo relate all things in forest as birth , life and death for example they belief that water was spring from forest, different wild life which we eat are from forest. The big trees like qilxu, oda, birbirsa, homoo are used as place of prayer during drought, famine and thunders. The ceremony is called *nuuroo*. Nuuroo is a ritual practiced by the Oromo people of this area under the big tree which is called qoollo near the forest or river or in the forest to beg their Waaqaa (God) to overcome the occurred problem.

In the culture of the Oromo of Limmu Kossa entering into forest to cut tree for different purpose is forbidden by the rule and regulation of the society. Because every forest or coffee plantation is under

the control of individuals or clan. So that if there is an urgent issue increases the need for tree (wood) like mourning, weeding and other getting permission from the owner of that forest in coffee plantation. For coffee plantation they also conserve and used as shade and home for the coffee plant. Different tree species are preferred and conserved by the farmer to grow coffee under those trees.

Farmers classified soils based on what they saw and felt about that particular soil. There were certain inherent factors which farmers used to classify and characterize soil types. The most important ones were color, fertility, land type and depth of the soil. Farmers are easily able to differentiate between soil types in the area, and have local names for different soil types. In Limmu Kossa district people classified the soil into five types. They are *biyyee diimaa* (red soil), *biyyee Kootichaa*, *biyyee suppee*, *biyyee gurraacha* (black soil) and *biyyee cirrachaa* (sandy soil).

Farmers are responding to the decline in soil fertility in numerous ways. They inherit from their father. Those mechanisms are *bo'oo* and shallow earth banks (*gadoo*) are constructed on private lands to reduce the overflow of water (rain) that also washes away soil, organic matter and dissolved nutrients. In Oromo women have a great role in forest and soil conservation. Regarding forest management women can contribute to the existence trees in coffee forest, they know which trees is sacred and valuable for coffee and they also know trees which are for fire fuel.

Now a day the experience of for father are decreasing and became forgotten except few of them. The belief system of Oromo people are distorted because of different factors. The transmission of indigenous knowledge from parents to young people is still continuing but at a very slow rate in the study area. There are various factors for the decline of indigenous Oromo knowledge and beliefs on soil fertility and forest management there are Ethiopian regimes misguiding policies, the influence of foreign religions, population growth, Western education and market economy, adaptation of chemical fertilizers and outsider settlement in the district.

Generally, this paper tried to describe the indigenous knowledge of the Oromo people of Limmu Kossa from insider's point of view.

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## Informant list

No.	Name	Age	Sex	Job	Place of live
1.	Abba diggaa Abbaa fiixaa	80	M	Farmer	Walensu
2.	Abbaa Garoo Abbaadima,	75	M	Farmer	Walensu
3.	She Ahmad Abba Duulaa	65	M	Farmer	Walensu
4.	Abbagaro she Suleman	70	M	Farmer	Ambuyyee
5.	Haadha qoroo Abbaa Qoyyas	60	F	Farmer	Walensu
6.	Ayyubee Abbaadima	63	F	Farmer	Walensu
7.	Jamaal Abbaa diggaa	55	M	Farmer	Walensu
8.	Tamam Abba Garoo	45	M	Farmer	Ambuyyee
9.	Asheetuu Mohammed	33	M	Farmer	Walensu
10.	Jabal she Ahmed	40	M	Farmer	Walensu
11.	Abbaa garoo Abbaa Waarrii	50	M	Farmer	Dangajja
12.	Mahabubaa Tamam	40	F	Farmer	Dangajja
13.	Duulaa Abdulkadir	35	M	DA	Walensu
14.	Mahammanur Abba Simal	45	M	Head, Tourism and culture office	Limmu gannat
15.	Abbaa Maccaa Abbaadima	85	M	Farmer	Dangajja
16.	Tajitu Ababe Dhuguma	46	F	Farmer	Walensu
17.	She Husein Abbaa magal	55	M	Farmer	Walensu
18.	Tamaam Mohammed	45	M	Farmer	Walensu

## **Acronyms**

*Yafaroo:* - It implies the direction which the farm land is plough

*Biddaruu:* -It implies the farmer who has farm land near to each other and who decide the crop they sow at one season.

*Kanke:* - It implies the farm land loose its fertility

*Gosa:* - moiety

*Dabaree:* -It implies the shift used to keep /herd cattle among the community

*Facaasaa:* It implies the time of sowing the prepared land

*Baqaqsaa:* -It implies the first round of land plough

*Buroo:* -It implies the third round of the land plough

*Galalchaa:* -It implies the second round of plough of farmland

*Caamsituu:* - It implies the man /woman who has sprit ayyaana to control rain (the sprit to stop the rain)

*Roobsituu:* -It implies the man /woman who has sprit ayyaana to control rain (the sprit to rain the rain)

*Kakkaa:* - desert area

*Ganda:* - peasant association (kebele)

*Gadoo:* - virgin land

*Buna qalaa:* - roasted coffee beans mixed with batter

heroine

**Field Photos**

