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## RESEARCH ARTICLE

## Role of Indigenous Land and Crop Management Practices for Sustainable Development: A Study in the Gimbi Woreda of West Wollega Zone of Oromia, Ethiopia

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### Abstract

This study attempted to arrive at the ways of indigenous practices for promoting sustainable land development in selected kebeles of Gimbi Woreda, West Wollega Zone, Oromia Regional State. The study area is typical for the high potential coffee production, mixed farming, and cereal crops in the Southwestern Ethiopian highlands. Land is a precious natural resource which demands efficient management in order to use it in a sustainable manner. A cross sectional research design was employed with descriptive survey method. About 319 household heads were selected using simple random sampling technique from three kebeles (kebele: Lowest Administrative Division) which were chosen purposively. In addition, thirteen key informants and nine household heads for FGD were selected by purposive sampling technique. Data collection tools included questionnaire, focus group discussions, key informant interview and field observation. The factors that affect sustainable land management include land holding size, fragmentation, land ownership security, size of livestock, and availability of labor and farm tools, and education of farmers. Finally, based on the findings of the study, it has been recommended that farmers need to get basic education and family planning services. They have to be organized in team and get access to credit and saving services. The local knowledge of farmers has to be encouraged and supported through continuous training. A few selected breeds of livestock should be encouraged in order to reduce overgrazing.

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### Introduction:-

Land is the major wealth of Sub-Saharan Africa (SSA). The region is characterized by a very rich diversity of natural ecosystem resources, including soils, vegetation, water and genetic diversity. These together, constitute the region's main natural capital. It is from these assets that the provision of food, water, wood, fiber and industrial products, and essential ecosystem services and functions are derived. And they must be maintained in order to support African populations into the future. Simultaneously, it is from the land that 60 percent of the people directly derive their livelihoods - from agriculture, freshwater fisheries, forestry and other natural resources (FAO, 2004).

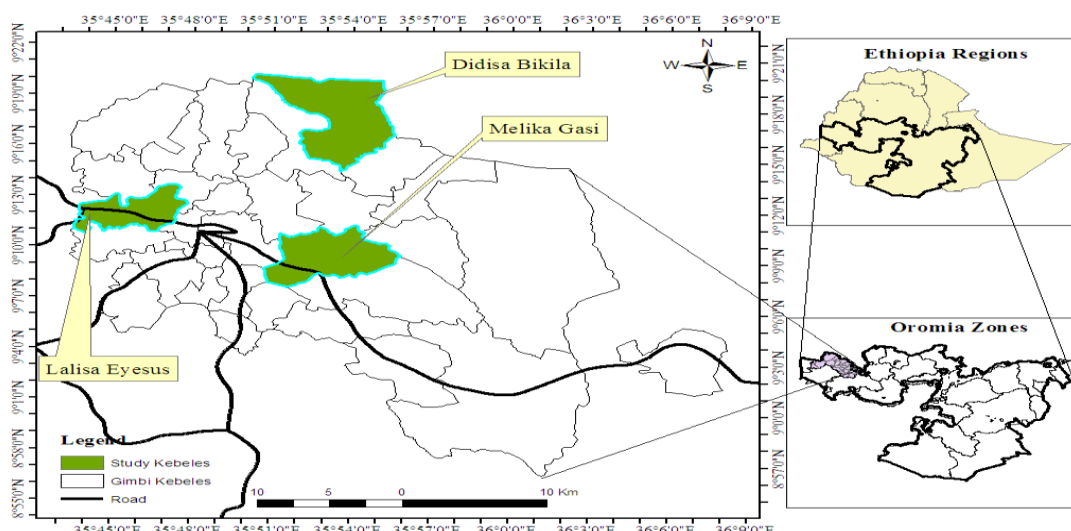
However, African land and water resources in some areas are seriously threatened through overuse although per capita availability is one of the highest in the world. This is a direct result of the increasing needs of a growing population, combined, often, with inappropriate land management practices. Thus, on one hand, the African population is growing at over two percent a year (FAO, 2008), requiring a doubling of food production by 2030 to keep pace with demand; on the other hand, productivity of natural resources is in general in decline. Additionally, the number of natural disasters has increased and climate change is already taking its toll.

Land degradation, resulting from unsustainable land management practices, is a threat to the environment in Sub-Saharan Africa (SSA), as well as to livelihoods, where the majority of people directly depend on agricultural production. There is a potentially devastating downward spiral of overexploitation and degradation, enhanced by the negative impacts of climate change - leading in turn to the reduced availability of natural resources and declining productivity: this jeopardizes food security and increases poverty. Sustainable land management (SLM) is the antidote, helping to increase average productivity, reducing seasonal fluctuations in yields, and underpinning diversified production and improved incomes (WOCAT,2008).

Therefore, this study was to seek mechanisms of promoting sustainable land management in the study area through integrating farmers' indigenous practices.

### Research methodology:-

**Study Area:** It is located in the eastern part of West Wollega Administrative Zone at a distance of 441 km from Addis Ababa. Astronomically the study area is located between  $9^{\circ} 10' N$  to  $9^{\circ} 17' N$  latitude and  $35^{\circ} 44' E$  to  $36^{\circ} 09' E$  longitude.



**Location of Gimbi Woreda (study area)**

### Research Design:-

In designing a research, it is important to identify which philosophy or paradigm to follow. Research philosophy can be defined as the development of the research background, research knowledge and its nature (Saunders and Thornhill, 2007). Research philosophy is also defined with the help of research paradigm. In the words of Cohen, Manion and Morrison (2000), research paradigm can be defined as the broad framework, which comprises perception, beliefs and understanding of several theories and practices that are used to conduct a research. It can also be characterized as a precise procedure which involves various steps through which a researcher creates a relationship between the research objectives and questions. Accordingly, this research design belongs to the Positivist paradigm. The concept of Positivism is directly associated with the idea of objectivism. This study employed cross sectional research design with survey method.

The study area, Gimbi woreda consisted of 32 kebeles. In order to select and determine the sample Kebeles from the woreda, purposive sampling technique was employed. Accordingly, three kebeles, namely Didisa Bikilal, Lelisa Eyesus and Melka Gassi with total households, 566, 528 and 471 respectively, were selected on the basis of the author's judgment. The author employed simple random sampling technique or the lottery method to select 319 household heads from the three kebeles out of total 1565.

For this purpose primary data were collected through household survey, key informants interview Focus Group Discussion and observation method. Secondary information was collected from various relevant publications, other national and international journals published recently.

## Results and Discussion:-

### Land Holding Size, Fragmentation, Tools of Production and Types of Crops:-

The size of land holding varies among households for different reasons. In Ethiopia rural land redistribution occurred during the Dreg regime in the 1970's. Since then, farmers who got land in the system became permanent owners. The land distribution of the time depended on family size. The larger the family size, the larger the land holding size and vice versa. The Federal Democratic Republic of Ethiopian (FDRE) government states that peasant farmers, pastoralists and semi-pastoralists can transfer their rural land-use rights through donation (FDRE, Proc. No. 456/2005, Art.5.2) or inheritance (FDRE, Proc. No. 456/2005, Art. 8.5) to members of their family and can also rent/lease part of their holdings to other farmers or investors for a specified period (FDRE, Proc. No. 456/2005, Art.8.1). The federal rural land proclamation on land transfer through donation and inheritance clearly states that being a rural resident and engaged or wishing to engage in agriculture is a condition of eligibility, while transfer through rent/lease can be for rural and urban residents who are engaged in agriculture (FDRE, 2005).

The same is true in Oromia National Regional State (ONRS, Proc. No. 130/2007, and Art.9.1). The proclamation in ONRS facilitates a rural resident a condition for inheriting rural land. Rural land that is transferred through inheritance must be in compliance with the minimum size of holding (FDRE, Proc. No. 456/2005, Art.11.2). The farmers in the study area utilized different tools of production and cultivated various types of crops.

The Table 1 given below clearly portrayed that the majority of land users 81.7% owned less than three hectares of land, 43.4% had land area between one to three hectares and 38.8% had below one hectare of land. Again about 14.9% owned between 3.1 and five hectares of land. Only 3.4% of the sample household heads have responded that they own above five hectares. The total average size of the plot is 1.9 hectare. This indicates that in spite of the fact that the land is the major economic base, farmers in the study area owned small size of land which resulted in over cultivation and then intensified land degradation.

The land that farmers own was not only small in size but also fragmented i.e., farmers' plots of land are found in isolated areas. As illustrated in table 1 significantly more than half, 54.9% of the household heads have responded to have plots of land at a distance between 1km and 3km apart from each other and from their home. About 20% have responded to have plots of land located at a distance between 3.1km and 5km apart and nearly 4.7% of the household heads had plots of land with a distance of more than 5 km apart from each other and from their homes. Only 20.4% have responded that they own plots of land which are relatively closer to each other and nearer to their homes with a distance of less than 1km. The total average distance between plots of land is 2.3 km.

Therefore it is possible to conclude that plots of land located relatively closer to one another and to homes of land users get the opportunity to be more conserved as compared to those located farther apart and fragmented.

**Table 1:-** Land Holding Size, Fragmentation, Means of Acquiring Land, Tools of Production.

Variable		Mean	Frequency	Percent
Size of the plot of land	0.1-0.9 hectare	0.5 hectare	122	38.3
	1.0-3.0 hectare	2 hectare	138	43.4
	3.1-5.0 hectare	4 hectare	48	14.9
	5.1-10. 0 hectare	7.5 hectare	11	3.4
	Total	1.9 hectare	319	100
Means of Acquiring Land	1970's land distribution	79.8	163	51.1
	Inheritance	79.8	46	14.5
	Gift from parents/ relatives	79.8	7	2.1
	Rent	79.8	103	32.3
	Total	79.8	319	100
Distance of plots from each other and from home(fragmentation)	0.1-0.9 km	0.5 km	65	20.4
	1-3 km	2 km	175	54.9
	3.1-5km	4 km	64	20
	5.1-7.1km	6.1km	15	4.7
	Total	2.3 km	319	100
Tools of production	Traditional tools (plough, hoe, axe, sickle, shovel)	159.5	296	92.8
	Modern tools(hand pumps, spray cans, watering tubes)	159.5	23	7.2
	Total	159.5	319	100

**Source:** Field Survey, 2013

Table 1, also shows that nearly more than half 51.1% of the sample household heads got land by the 1970's land redistribution of the Dreg regime, and not a few number 32.3% were forced to use land by rent. About 14.5% obtained land through inheritance, and only 2.1% of the land users acquired land by unreturned gift or donation from their families and closer relatives.

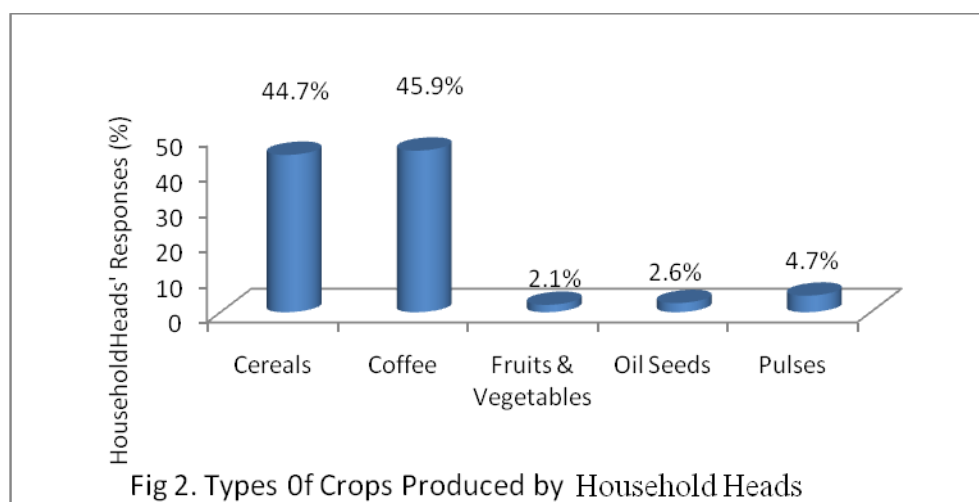
Land ownership system has its own impact on the way farmers implement land management practices. This supports the findings of Belay (2000), which sparks light on the vitality of private ownership of land to encourage farmers towards the implementation of efficient and lasting practices of land management.

So far as the tools of production is concerned, Table 1 clearly shows that a great majority of the sample households 92.8% utilized traditional assets of production such as plough, axe, hoe, sickle, shovel, yoke and the like. Only 7.2% utilized modern tools such as spray cans, plastic watering tubes in addition to the traditional tools. Responses of key informant interview indicated that total dependence on traditional, simple and inefficient tools for land management practices tends to be more laborious and less effective than in the case of modern tools.

Concerning the types of crops produced in the study area, Figure 2 depicts that coffee ranks first 45.9% followed by cereals 44.7%. Pulses, oilseeds, vegetables and fruits were less significant. Similarly, a study conducted by Belay (2000) indicated that farmers choose which crops to grow in according to how they adapt to the soil and the rainfall pattern as well as economic consideration such as the price of the crops to be chosen.

Participants of the focus group discussion (FGD) said that the study area is well known in coffee production as it is located in the southwest highlands of Ethiopia where the climate is suitable for the cultivation of this cash crop. Coffee Arabica is the dominant species produced in this area. In most cases coffee exists as part of the rain forests and therefore assists in stabilizing local climate. In the study area the livelihood as well as economy of most population relies on coffee production. Selling their coffee beans, members of the family more or less fulfill their demands such as food, clothing, house construction, materials of education, purchase of domestic animals. However, coffee producers tend to be less active in communal land conservation practices for their own land is once covered by coffee plantation.

On the other hand, currently, coffee productivity is declining due to variability in the season of rainfall and therefore, many coffee producers are at shortage of cash with which they should have fulfilled their demands. (GWARDO, 2009). Key informants disclosed that extreme dependence on coffee production is a double disadvantage in that the moment their coffee is affected by climate variability they are exposed to destitution and shift towards deforestation to produce charcoal and firewood to feed themselves and their family. Doing this they contribute to land degradation which affects the wider community.



Source: Field Survey, 2013

Cereal crops such as maize, sorghum, barley and teff are cultivated at subsistence level, i.e., they are cultivated on smaller plots of land due to rugged topography which is affected by soil degradation. Participants of focus group discussion forwarded that due to the existence of large coffee plants mixed with forests, wild animals which inhabit

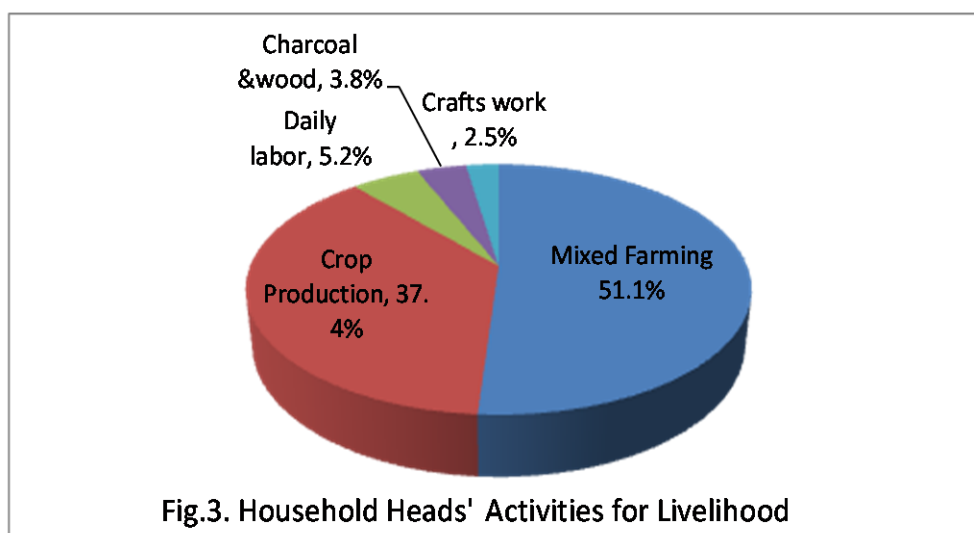
there in large number such as apes, monkeys, pigs, porcupines and various types of birds destroyed the cereal crops during the day and night. This condition shifted family labor from land management practices and even from school towards keeping of the crops from the beasts.

The production of fruits and vegetables tend to become low 2.1% in the study area as shown in Figure 2. Key informants explained that even though the study area is endowed with perennial streams and rivers, low number of farmers cultivated garden vegetables and fruits through irrigation. The majority of land users depend on rain fed agriculture partly due to low experience regarding the significance of irrigation which could have supported the family life.

The low level of production of oilseeds 2.6% as observed from Figure 2 is most likely attributed to agro-climatic barrier. These crops demand tropical (kola) type of climate; while the study area is more of sub-tropical (woina dega). Focus group discussion explained that the cultivation of nigger seed helps improve soil productivity as the decomposition of its leaves and stems add fertility to soil. However, a few farmers are observed producing nigger seed as land management practices.

The production of pulses accounted for about 4.7% as it could be observed from Figure 2. Pulses are types of leguminous crops which include beans, peas, and chick peas. Results of field observation indicated that peas and beans are cultivated in small plots of land on the highlands of Melka Gasi and Lelisa Eyesus kebeles. In focus group discussions, participants said that peas and beans are very important in improving soil fertility. Nonetheless, peas are highly subjected to pest infestation; and therefore, farmers tend to become reluctant to cultivate pulses which mean avoidance of one vital land management practice. According to the report of the study conducted by Belay, (2000) such practice may ultimately lead to sever soil fertility depletion and productivity loss since very little nitrogen can be fixed in the absence of leguminous crops.

Farmers in the study area were engaged in different activities for their livelihood. As it is portrayed in Figure 3, regarding household activities for their livelihood, fairly more than half 51.1% were engaged in mixed farming whereby farmers practice both crop production and animal husbandry on the same plot of land. About 37.4% went to crop production. The remaining smaller proportions were engaged in daily labor 5.2%, charcoal and firewood production 3.8%, and crafts work 2.5%. Results of key informant interview indicated that mixed farming assisted land management practices in different ways. In one way, mixed farming availed animal manure, which is very important to improve soil fertility. Besides, it provided oxen which function as sources of labor for cultivation of land and for making furrows, contours and run off diversion. Results of FGD showed that people who were engaged in daily labor were those who had a few or no land to practice agriculture. They had not been encouraged to participate in land management practices because they had to get income on daily basis by working on others' farm to support themselves and their family.



Crafts work, especially, wood carving, pottery, carpentry, weaving, blacksmithing, were practiced in Lelisa Eyesus kebele. Participation in off-farm employment which included all the activities outside of one's own farm, working

on another farmer's farm, petty trading, weaving carpentry, blacksmithing and pottery has its own impact on land management practices, as reported by Woldeamlak (2003). Key informants exposed that those people who were engaged in crafts work tend to become less encouraged to participate in land management practices because they focus only on the activity which supports their livelihood. Results of focus group discussion and field observation also uphold what were forwarded by key informants. However, the number of the craft workers was not that much significant, 2.5%.

It was identified in field observation that charcoal and fuel wood producers were daily commuting between Gimbi town and their residences fetching wood and charcoal. Such activities had multi faceted problems to land management practices. On one hand, labor forces were missing, and on the other hand, it could exacerbate land degradation by removing vegetation. Daily laborers became reluctant to participate in land management as they stick to immediate income generating activities. This is consistent with the findings of Reardon et al., (2001) and Hagos, (2003). According to these findings, decisions by rural households concerning, involvement in nonfarm activities depend on two major factors: incentives offered and household capacity. Some poor rural households will make a positive choice to take advantage of opportunities in the rural nonfarm economy, taking into consideration the wage difference between the two sectors and the riskiness of each type of employment. Rising incomes and opportunities off-farm, however, reduce the supply of on-farm labor. Other households are pushed into the nonfarm sector by a lack of on-farm opportunities, for example, resulting from small size of land holdings.

Further studies have been conducted on the factors that affect the decision to participate in nonfarm activities and the choice of activity, as well as the extent of rural household participation. For example, Bezu et al. (2009) looked at the activity choice in rural nonfarm employment. They found education, gender, and land holding to be the most important determinants of activity choice. In line to these findings, FGD participants did not hide that scarcity of land and oxen as well as capital had shifted farmers from land conservation practices towards other activities that could generate income on daily basis.

### **Summary And Conclusion:-**

The major findings of the study were thoroughly assessed on the basis of the analyzed and interpreted data. The majority of farmers in the study area had no education or cannot read and write and therefore, suffered from difficulty of receiving and implementing information regarding new land management technologies.

Farmers' small land holding size as well as fragmentation which might have arisen from population pressure might have led to over cultivation of the limited land and then to land degradation. Land users utilized simple, traditional and inefficient tools of production which were more laborious and less effective in implementing land management practices in the study area.

Thus scarcity of land might have led farmers to off-farm activities by neglecting land conservation practices. Fragmentation of land was thought to have negatively affected the implementation of land management practices in such a way that farmers waste time and energy moving from one plot of land to the other. Besides, the utilization of simple and traditional farm tools brought about inefficient implementation of land management practices. Due to shortage of capital or technical support and sticking to the age old traditional conservation of resources, low level of integration of modern and indigenous land management measures had led to prolonged problem of land degradation and food insecurity.

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