

A Review on Coffee Farming, Production Potential and Constraints in Gedeo Zone, Southern Ethiopia

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Abstract

Coffee based Agriculture is the cornerstone of Gedeo people's economy. The authors review how was the coffee farming, production potential and its constraints in the study area. Coffee production potential covers around 49.74% of total cultivated arable land, and is grown mainly by smallholder farmers on plots of less/greater than one hectare. Gedeo (Yirgacheffe) produces high-quality specialty or fully washed coffee, which is intercropped with different agro-forestry practices indigenously due to land scarcity to enable farmers to achieve a better combination of food and cash crops. Coffee production in the area was organic with no inorganic fertilizer, due to this the coffees produced have unique flavor and taste which is accepted in world market as Yirgacheffe brand. Some of the Coffee productivity packages practiced in the area could be Mulching, Pruning, Composting all needed to boost yields. These practices will also help to improve the soils' chemical and physical properties and control moisture loss during dry season, but farmers faces a lots of problem in coffee production, mainly lack of proper coffee extension, occurrences of disease and pests, lack of inputs for productivity package and undermined coffee prices . Based on the finding of the study farmers should be supported by government, nongovernmental organization and any concerned body for sustainable coffee production.

Keywords: coffee productivity packages coffee farming, organic coffee

1. Introduction

Coffee is the world's most widely traded tropical product, produced in over 50 developing countries. Even though many species of coffee exist, for commercial production, *Coffea arabica* and *Coffea canephora* took the principal share and more than 60% of global coffee production is based on *C. Arabica* (CAB International, 2006). Coffee makes an important contribution to socio-economic development and poverty alleviation and it has exceptional importance to exporting countries, some of which rely on coffee for over half of their export earnings. About 25 million smallholder farmers and their families produce 80% of world coffee production, that is an important source of cash income and responsible for significant employment (ICO, 2010).

C. Arabica is believed to be originated from Ethiopia and hence, the country has enormous potential to sustainably supply quality coffee with diverse type to the world market. The coffee types of Ethiopia that are distinguished for their very fine quality, with unique aroma and flavor characteristics include Harar, Sidamo and Yirgacheffe types (Workafes and Kassu, 2000).

Ethiopia is the leading *C.Arabica* producer in Africa, ranking the fifth largest Arabica coffee producer and tenth in coffee export worldwide (ICO, 2014). The area of production was increased by 2.49% from 2011/12 to 2012/13 cropping season while its total harvest was decreased (CSA, 2013).

The importance of coffee in Southern region is highly significant crop than other because it is one of the most valuable primary products in country trade and most coffee producing area fetches premium prices in the world market.

The Gedeo zone have highly conducive agro-ecology and potential land to produce coffee, for Gedeo's people coffee is not only income source crop but also "cultural crop", the Zone include six woreda out of this five woreda became specializing coffee while one woreda diversify it, with 115523 coffee producing farmers (Gedeo Zone Agriculture and Natural Resources Department, 2008). The coffee productivity potential of the Zone covers around 67,164 ha of land out of which 51698.35ha land became productive annually. The Zone was endowed with enormous genetic diversity and different coffee types with unique taste and flavor mainly called Yirgacheffe brand. Nowadays average productivity of coffee in the area was 6.73Qu/ha (CSA, 2008) which is below the national average (Anteneh T, 2011), but the productivity was vary from field to field some farmers obtain around 24Qu/ha on the basis of full coffee productivity package they use, while the other getting below 6Qu/ha. Therefore, reviewing Coffee farming, Production potential and constraints was used to develop appropriate technology for productivity improvement and inform policy makers to identify gap. Hence, this study was intended to review Coffee farming, Production potential and constraints in Gedeo Zone, Southern Ethiopia.

2. Methodology

2.1 Description of the Study Areas

The study was conducted at Gedeo Zone, Southern Nation Nationalities Peoples Region. It is located in the southern part of Hawassa, 117 kilometers from the regions. All the area is located at a range of a longitude of 6°

18° 06" N and latitude of 38° 24' 31" E at an elevation between 1500- 3000 m.a.s.l (Google Earth, 2016). It comprises 134 rural *kebeles* out of which 116 *Kebeles* were *Coffee specializing kebele*. Mean annual rainfall of the all *woredas* were ranged 1,401-1,800 mm, with temperature ranging from 12.6 °C to 20 °C(SNNPR State, 2011). With regards to land use, 85% (21,890 ha) of the land is used for growing annual and perennial crops.

2.2 Sample and sampling method

The population for this study comprise of all coffee producing households in the high coffee producing kebele in Gedeo zone. This study employed multi-stage sampling procedures. In the first stage, the districts were selected purposively based on coffee production potential from the all *woreda*. To get representative information, respondents from the 40 kebele (peasant associations) were selected by systematic sampling technique:

2.3 Data Sources and Collection Methods

A structured questionnaire was used to interview the farmers in the selected kebele under study. The purpose of this interview was to find the number of coffee producer, their potential and constraints to produce coffee. Although farmers tend to adopt many coffee productivity enhancing packages. Based on the data collected, the study was able to identify the farmers who practicing full coffee productivity packages. After identifying, detailed information recorded for coffee farm economic activities through short-term participant observation and rotational visits. A trained enumerators and extension agent was involved in this study to assist in identifying parameters for coffee production potential and constraints. The production costs and the benefit of farmers obtained from coffee production was calculated to compare the productivity difference from farmer to farmer. Both the production cost and output value (in Ethiopian Birr) was standardized by calculating, the net annual farm profit (NAFP). Primary sources of data were collected through household survey with structured questionnaires while secondary data were collected both from published and unpublished source.

3. Result and Discussion

3.1 Overview of the coffee farms in the study area

Coffee crop production in the study area linked with the life of the people, almost 68% of cultivated land was covered by coffee. From 112 coffee specializing and diversifying kebele 115,523 households become coffee producer (Report of GZANR, 2008). Households in the study area use their land for all farming activities since the coffee farming system was Agro-forestry based which include; production of food crops and cash crops, house construction, rearing livestock and mixed tree planting. The size of agro-forestry coffee farm practices become the same from one farmer to another having unique tree strata (Tadesse. K., 2002). Most coffee production farms in the all *woreda* were very small when compared with other coffee producing country in which medium coffee farm area was 3.75 ha in Chene and Las Cienagas locations (Nunez and Cuevas (2004), in which from coffee producing household 64% had an area less than 5 ha while 20% of were between 2.1 and 5.0 ha, but the study area have minimum land coverage. The largest farms were found in Gedeb *woreda* with a mean area of 8.2 ha and the smallest were found in Dilla Zuria with a mean of 0.01 ha (Table 1).

Table 1. The mean coffee production potential in the study area

S/no	Woreda	Mean Coffee land holding by farmer(ha)	
		Max	Min
1	Bulle	2	0.17
2	Dilla Zuria	1.5	0.03
3	Wonago	5	0.25
4	Yiirgacheffe	7	0.01
5	Kochore	4.5	0.012
6	Gedeb	8.2	0.6

Sources: Woreda

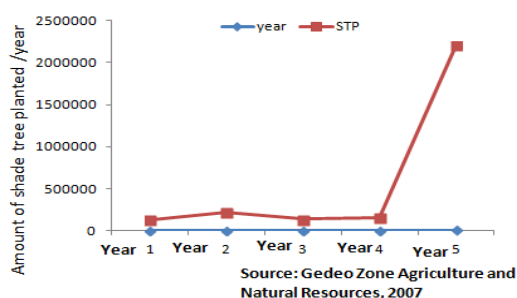
Most of the coffee farms were planted by dominant variety like Fiyate, Qoti, 744, 7487 while those 74112, 74110, 74140 and 74165 variety adopted from Bonga area. The highest percentage of farms had Fiyate and Qoti while smaller percentage covered by 744 varieties. The highest coffee parchment yields were reported in Gedeb *Woreda* (20Q ha⁻¹). There was yield reduction due to lack of proper use of productivity packages. Yields are slightly lower than the national average, a possible reason for the low yields is that farmers do not use full productivity packages adequately, there is no sustainable structured agronomic management program (including pest management, pruning, replanting), and reduction in international coffee prices, all of which discourage the farmers to use available technology (farmers interview). Farmers in Gedeb, Kochore, Wonago and Yirgacheffe nowadays practicing full coffee productivity package to enhance yields. This should be supported by extension system to sustainably improve the coffee yield.

3.2 Coffee production systems

The traditional coffee production system in the area was agro-forestry based system. Agro-forestry is one of the fundamental coffee forest systems in the Gedeo Zone. The unique characteristics of coffee production to other coffee forest areas was the Agro-forestry coffee system which is integrated with tree-crop production system (Zinabu. W, 2015). Hence, to increase coffee yield to economically feasible level, planting of shade trees and opening up canopy is inevitable. The plantation of coffee shade trees varies depending on new site plantation and old site plantation in the study area.

It is often assumed that a coffee tree shade system is beneficial ecologically as well as economically this finding is in agreement with the finding of (Tesfaye, K. 2006). However, a significant decrease in coffee yield has been reported in a high shade-tree density, but the farmers of the study area have their own operational calendar to pollard.

Figure 1. Shade tree plantation in coffee farm



During opening up phase, different agro-forestry trees was managed by farmers as much. There is preferential selection of trees mainly suitable for coffee production. Among the canopy trees, those species with big leaves, decomposable and dense canopy were targeted. This finding was in agreement with (Boffa *et al*, 2009): the AF species for coffee based on farmers indigenous knowledge reflected by the trees selected for various purposes such as soil enrichment or for fuelwood : *Albizia gummifera* , *Milletia ferruginea* and *Erythrina abyssinica* are used for their soil maintenance and restoration. Most of the trees are fast growers, easily propagated and tolerant of regular pruning ((Tadesse. K.,2002).

3.3 Diversity of cultivated coffee in the area

Coffee is grown mainly by smallholders, with farming systems characterized by land fragmentation and many small plots scattered on hillsides. Depending on the number of trees and *Enset* per plot, farmers generally produce coffee in very small fragmented lands. *Enset* interplanted with coffee has been reported to increase coffee yields, with significant yield differences between mono-cropped and coffee-*Enset* intercropping systems in which this result dis-agree with finding of (Van Asten *et al*, 2011) which says there is significant yield difference in mono-cropped and intercropped banana with coffee.

Surveys in main coffee growing woreda of the Zone showed that there is a high diversity of coffee variety. In Agro-forestry coffee systems and other cultivated coffee production systems, farmers choose the coffee types of their preferences and often mix more than one landrace within one field (Personal observation). Each has its own advantages. Some are high yielding, some have good aroma and flavor and some are resistant to diseases. A total of 8 dominant varieties known by all woreda in the zone.



Figure: coffee variety during flowering and fruiting stage

Gedeo farmers identify their traditional coffee variety by color of leaves, gross morphology of trees, weight

and shape of fruits and beans, presence or absence of aroma during flowering and roasting of beans, etc which is similar with study of (Gole et al. 2002), that they give names to the variety based on the different attributes of the variety.

In Gedeo, there is one unique coffee types recognized by their origin and quality, and used as trade names these are called Yirgacheffe brand, which have remarkable roasting color and taste.

3.4 The use of organic fertilizer for coffee production in the study area

In Ethiopia, application of chemical fertilizer for coffee production is almost non-existent. Alternative, organic fertilizers like manure, cover crops, nitrogen-fixing shade trees and coffee pulp are used. In forest and semi forest systems, however, coffee production entirely relies on natural soil fertility from nitrogen fixing trees, though there can be deficiencies in soil nutrients.

Soil fertility depends on many factors, among them the soil OM, because it contributes to an increase in soil CEC which can serve to retain and increase the reserve of soil cations, improves soil structure physics and soil water relations (Torres *et al*, 2006). Soils with higher OM content are associated with increased population and diversity of microorganisms (Brechelt, 2008). A practice that is beneficial to increase levels of soil OM is the management of shade trees by pruning which is very popular in the area. The application of compost and planting of vegetative cover are other alternatives to improve the supply of OM, therefore the practices of the farmer in the area was the same with concept of this. The Perez *et al* (2008) who is the researcher of Soil Science, highlights the difficulty of balancing a program based solely on organic amendments because the inability to match crop uptake to nutrient supply, this study was not in agreement with this study because farmer of the area practices compost application for the production of coffee which make the unique coffee type. Organic amendments have other positive soil functions such as improving nutrient use efficiency and in improving water availability Marques *et al* (2003).

Organic fertilizers are mainly used in coffee farming of the study area; organic fertilizers are usually prepared by mixing grasses, crop residues and/or animal manure in the compost. One of the distinctive characteristics of Gedeo (Yirgacheffe) Coffee was totally organic. The farmers applied 10kg of compost per coffee tree per year in split application form (March and September). Farmers of the area prepared compost on the basis of number of coffee tree they have per ha. Organic fertilizer requirement for coffee production depends on the yield level and natural soil fertility, nutrients are removed by harvested of fruits, and additional nutrients are also required for sustaining the vegetative growth. Therefore, the farmer of the study area apply sufficient amount of compost on the basis of fruit bearing capacity of coffee within production year.

3.4.1 Major Coffee productivity package practiced in the study area

3.4.1.1 Mulching

Mulching consists of covering the topsoil with organic residues to protect the soil from erosion caused by heavy rainfall, to retain moisture and to decrease surface soil temperature. This is particularly beneficial for agro forestry based coffee farm in the study area during dry periods due to high biomass obtained from the practices. Mulching enhances soil moisture status through improved infiltration, farmers of the area practices this by using the grasses which grown within coffee field they apply mulch at the beginning of a rainy season in order to aid infiltration, rather than at the end of the rains to reduce the rate of drying out during the following dry season this is in agreement with the study of (Pereira and Jones, 1954) showed mulching alternate rows before the rains gave better yields than mulching all rows after the rains.



Figure2. Coffee mulching in the study area

The use of mulch in coffee farms of the study area has been increasing from time to time especially during the first few years after planting, they practices shoveling three times annually and replaces the removed grasses as mulch . Through experience, farmers know the direct relationship between mulching and better yields, this practice was in agreement with (Pereira and Jones, 1954). One of the main beneficial effects of mulching is weed control or suppression. Mulching replaces nutrients removed by the coffee crop. Results from Tanzania show that

annual application of a mulch of dried banana leaves (at 25 t/ha) replaced the nutrients removed at harvest and even provided an additional nutrient (Robinson and Hogwood, 1965).

3.4.1.2 Pruning

Pruning is an essential management practice in coffee production. It helps to achieve the desired plant shape, and contribute to sustainable higher yields. However, pruning is not commonly practiced by Ethiopian coffee farmers. In the study area more than 20% of coffee plantation became aged, due to this farmer practices pruning annually. Complete stumping is recommended at about 8-12 years interval. There were a challenge for the farmer to totally prune aged coffee from their farm this may be due to lack of input needed for pruning and the time gap to attain yield, therefore for the future extension farmers should be supported with input to intercropped within pruned coffee farm like, mungbean.

Farmers of the study area adopt pruning practices because many coffee trees in the study area were aged, when the farmer prunes their coffee they obtain optimum yield within 2-3 years based on their management (Farmers witness in Wonago woreda).



Figure2. Pruning practices in the study area

Pruning is required to supply good healthy wood for the next season's crop; maintain the correct balance between leaf area and crop (Figure 2); prevent overbearing and dieback; reduce biennial bearing; maintain good tree shape. Farmers of the area practices Desuckering to maintain a single stem system and avoid competition from suckers. A regular rejuvenation pruning is needed (normally at six to seven years depending on tree vigor and yield pattern), to maintain a source of new fruiting wood. Unless trees are renewed, yield will decline over the following years.

3.4.1.3 Composting

The art of composting is purely based on scientific facts and a thorough knowledge of soil microbiology. Composting can be defined as a microbial process in which organic wastes are converted into humus by the activity of microorganisms.

Both organic and chemical fertilizers are used in coffee farming in most coffee producing country, but in case of Ethiopia not yet used inorganic fertilizer, Gedeo's farmers produce organic coffee mainly using organic fertilizers usually prepared by mixing grasses, crop residues and/or animal manure in compost. It has been proved beyond doubt that continuous use of inorganic fertilizer in coffee makes the soil sick and this can result in a significant fall in the production levels (Anand .T and Geeta. N, 2004) which agree with the farmer of the study area.



Figure3. Organic fertilizer (compost) preparation and application in study area

Every coffee producing farmer in the area was owner of a small herd of cattle, primarily for the purpose of preparing compost. Generally the cattle urine, dung, ash, soil and coffee husk are mixed thoroughly and lead into a pit which is mixed with greens and refuse straw from the cattle shed and made into heaps (Figure 3).

3.4.1.4. Weeding

Weeding is one of the regular annual management operations carried out by all farmers. Farmers in the study area can operate weeding operations 2-4 times per year, varying from farmer to farmer, which also depends on the proximity of the coffee farm to the home village of the owner. The two major weeding seasons are beginning of the rainy season and beginning of the harvesting season. Few weeks after onset of the main rainy season, most herbaceous vegetation, emerge and compete with coffee and should be cleared. During harvesting as well, weeding is must to create access to pick coffee cherries from the trees, and also to allow picking of early maturing coffee cherries dropped to the ground. Along with herbaceous vegetation, small seedlings of trees, climbers and shrubs are also cleared, but they have been reused as mulch.

3.5 Intercropping with coffee in the study area

Coffee is a major export crop in Gedeo Zone and an important source of foreign revenue for our country Ethiopia. Farmer in the study area practices agro-forestry system which include all tree-crop system, the distinctive characteristics of the study area was no open land since it is covered by perennial crop. Even though the area was deep green yet, there was the prevalence of seasonal food insecurity in coffee growing woreda's due to a lack of open land and yield reduction for smallholder coffee farmers to feed themselves and their families. Intercropping coffee with other tree crops is a means of reducing competition for land, while diversifying farmers' sources of income and reducing cash flow constraints in the period until latex production begins. This is particularly the case with coffee intercrops. Such cropping systems could generate real added value and prove more sustainable than mono-cropping (Senbeta., 2006.).



Across these coffee growing regions, it is common to observe different coffee production systems. On the basis of management level, vegetation, structural complexity, and agronomic practices it resemble with study area, coffee production systems in Ethiopia can be categorized into four; namely: forest coffee (FC), semi-managed forest coffee (SFC), garden coffee (GC) and plantation (Gole et al.; 2002; Gole 2003; Senbeta and Denich 2006). The first three production systems have been practiced for centuries by smallholder farmers of the area, and therefore, are considered as 'traditional' coffee production systems which are called integration of this all, Agro-forestry (Gole et al. 2001).

4. Coffee Production Constraints in the study area

In the study area Coffee was mainly grown as an Agro-forestry system with different trees and crops. The results of the survey revealed that farmers of the area grow different coffee variety which have variable yield and stay for a long time with farmer and some of them became poor in their resistance toward disease, pests and tolerant for drought shock. According to farmers the productivity of coffee decreased from time to time, due to lack of improved varieties and insufficient supply of input for coffee productivity package enhancement in the study area.

Challenges to the traditional coffee production systems were the lack of attention given to them is important in terms of technical assistance and extension. At the same time, disagreements exist on technical issues, such as on the number of trees that need to be thinned out, coffee plantation pattern and replacing of aged coffee trees by new plantation.

The Gedeo people have good understanding on this, but currently low yield and decline of market prices leads them to discourage to adopt all coffee productivity packages. In order to sustainably support this organic coffee farming systems, a paradigm shift is required from government, research and extension agents that continue to focus their attention on the production and export of large quantities of coffee, through intensive, highly productive systems.

4.1 Disease occurrences and management

In some Woreda, there were symptoms of different coffee diseases prevalence. The major once include Coffee Wilt Disease (CWD), Coffee Berry Disease (CBD), Coffee Leaf Rust (CLR) and Coffee insect/pest. The farmers

were trained in coffee diseases management by the experts of agricultural and rural development offices, they exercising the management practice accordingly, but serious attention should be given since it is very dynamic coffee disease. From total coffee production farm those coffee affected by CWD, CRD and BBC was 48ha, 52ha and 2ha respectively (Report of GZANRD, 2009), especially with coffee wilt disease, it is practical, since farmers are expected to disinfect machetes after cutting every diseased coffee tree, dig out all parts of disease coffee tree and burn it at the spot. Unlike other diseases, CWD kills the whole plant, and can also be disseminated by water movement as well as people during different management operation. This disease is the greatest threat to coffee genetic resources as well.

4.2 Current coffee marketing chains

The marketing chain tends to be long which made farmer to fade up on coffee market. Hence, the existing coffee marketing channel involves a number of intermediaries. The farmers wet and dried coffee cherries are sold to local collectors small collectors in villages, and coming from town who buy coffee from farmers and supply to bigger collectors this reduce coffee price on the need of bigger collector. The collectors operate the secondary processing facilities. After depulping the dried coffee cherries, the supplier supply coffee to the central market in Addis Ababa. Major exporters buy coffee from the central market, though auction. Such long market chain contributed to unfair/ unproportional benefit farmers get from their coffee, which also plays its own role in affecting the quality of coffee through its effect on farmers' capacity to invest in processing facilities.

Smallholder coffee farmers in the study area have limited access to market information, physical infrastructure (road, storage facility and transport facilities) and frequent and time bounded training opportunity concerning coffee production and management. For instance, farmers in Gedeb, Yirgacheffe and Kochore woreda of the responds that they didn't have access to market information on specialty coffee and access to road facility to sell their product on market. According to farmers the other problem to all producers in 2007-2009 was access of market for specialty coffee, since no determined price for such unique coffee.

4.3 Climatic variation

In recent years, world coffee production faced the impact of higher temperatures and rain levels, that influenced coffee yield and quality, as well as an increase in pests and diseases in many producing countries, especially in those of Central America.

In the study area the perspectives of farmers indicates that farmers of Yirgacheffe, Gedeb and some part of Wonago Woreda lost coffee in 2016, due to excess frost occurrence and lack of rain. Most considered the frequency of these events has increased, but little can be done a part from shade management in some cases. According to this study, approximately 115,523 coffee producer in the study area were small land holder farmers and, are more exposed to problems caused by climatic changes, since they have less capital to invest in technologies that would allow them to maintain the yield and competitiveness to face the challenges.

5. Opportunities of Coffee Production in study area

Coffee production is the major income generating cash crop to feed households in the study area. High quality of organic Yirgacheffe brand coffee was playing a remarkable role in world market. Wet and dry Coffee processing industry planted became source of income, entrepreneur, rural road access, availability of network in rural area, etc. Good indigenous knowledge of coffee production, introduction of improved variety of coffee by some organization, hopeful practices of coffee productivity package recently in the study area were an opportunity for coffee production. Farmers in the area were interested in using improved coffee production system and incorporating their indigenous knowledge of coffee tree interaction with improved practice because they were supposed that with existed potential indigenous knowledge on coffee production, it will improve their production and productivity.

5.1 Specialty coffee production

Specialty Coffee Association of Europe (SCAE) defined specialty coffee as a way of market presentation to charm consumers, which entails certain principal concepts derived from the origin of cultivation, genotypes, processing levels, and cropping systems (organic, shade, mountain). The quality of coffee can also be affected by attributes of its locality like: location, elevation, temperature, insulation, rainfall, soil conditions, nutrients, shade and fertilization. In area, there are coffees of unique qualities resulting from locality and varieties differences, like Yirgacheffe.

5.2 Enhancement of plantation farm

The garden coffee production system is another major production system in the region, accounting for almost half of the coffee production was from Sidama and Gedeo. Management is intensive in garden coffee farms. Weeding 2-3 times per year, pruning, re-planting, fertilizing with farmyard manure and crop residue and hoeing are

commonly practiced. This practice guides the farmer to enhance coffee farm from year to year to replace the young coffee.

To increase coffee farm coverage in the study area farmers expected to plant 250-500, 500-750 and 1000-1500 coffee seedlings/ha/yr on those area having low, medium and high coffee farm respectively. According to GTP-1 performance achievement new coffee farm plantation increase from 546 to 1200ha (Report of Gedeo Zone Agriculture and Natural Resources, 2008), this is one of the promising potential for coffee productivity.

5.3 Coffee supply for market

There is a convincing business case for private and public market actors and the government to co-invest in coffee in order to improve the competitiveness of the sector and to avoid the exit of coffee farmers. Coffee supply from study area for both local and ECX become increasing from time to time, currently there are 142 wet and 62 dry coffee pulping Industries in the area. Coffee supply for central market increase from time to time, in the past five years coffee supplied for central market was in 2005, 2006, 2007, 2008 and 2009 E.C, 14309.8 tone, 20375 tone, 23162.9 tone, 22278.3 tone and 23406.2 tone respectively. There was an opportunity to supply ample amount of coffee per annum.

5.4 Coffee culture in the area

Coffee for Gedeo People (Yirgacheffe) was not ordinal crop rather it is cultural crop, drinking brewed coffee is deep-rooted and widespread, known almost among all social groups in the area. It is a social drink, and is normally shared with neighbors this implies the sustainability of coffee production in the area will not be in question.

The coffee ceremony is considered to be the most important social occasion in the area and it is a sign of respect and friendship to be invited to a coffee ceremony. Guests at a ceremony of first weeding request accepted by Coffee culture (Dararo) was considered as respected and blessed ceremony. Coffee was highly linked with marriage, in the first week of marriage the women wakeup early to prepare the coffee for her husband's family which indicates the begging of their marriage and the respect she have for his family. Today, the Ethiopian coffee ceremony has become one of the tourist attractions and being served in most tourist destination hotels and restaurants.

6. Conclusion and Recommendation

The finding of the study showed that the coffee production potential and its opportunity was one of the promising factors for the sustainability of Yirgacheffe brand coffee in the area. The study also proved that coffee were the major cash crop not competing with any other crop and also farmers in the study area have strong indigenous knowledge on coffee production. Even though coffee is major cash crop produced in the study area, its production and productivity were hampered by different constraints such as poor extensions services, poor access to market information, lack of physical infrastructure, lack of improved coffee variety, diseases and Pest. However, high quality and demand of Yirgacheffe coffee on world market, coffee culture of the society, diversification of coffee processing industry, availability of network in rural area, good indigenous knowledge indicated as future factor for coffee production potential in the area.

Based on the results of the finding, the following recommendations were forwarded by the author to improve coffee production and productivity in the study area. Coffee farming system was permanent, coffee production potential was promising and almost all coffee variety grown by farmers in the study area were stay with farmer for long time, they are low yield and susceptible to different disease. Therefore;

- ❖ Research institutions, government and nongovernmental organization have to give special emphasis to support farmer to keep coffee production sustainability in the study area.
- ❖ Coffee growers in the study area grow organic coffee for many years with their own indigenous technical knowledge by only applying compost, therefore farmers should be supported by short period composting technology (Earth worm composting).
- ❖ Government should provide special extension services for growers to improve their skill and knowledge on coffee production aspect and improve livelihoods of households in the study area.

7. References

- Anteneh T (2011). Farm Productivity and Value Chain Analysis of Coffee in Darolabu Woreda, West Hararghe Zone of Oromia Regional State. Msc Thesis Haramaya University.
- Boffa, J.M., Turyomurugyendo, L., Barnekow-Lilleso, J.P., and Kindt, R. (2009), 'Enhancing farm tree diversity as a means of conserving landscape-based biodiversity', Mountain Research and Development, Vol 25, pp 212-217.
- Cousin, Tracey L (June 1997). "Ethiopia Coffee and Trade". American University. Retrieved May 10, 2010
- CSA, 2008: Cenral Stastical Agency, 2008.
- De Souza, H.N., De Goede, R.G.M., Brussaard, L., Cardoso, I.M., Duarte, E.M.G., Fernandes, R.B.A., Gomes,

- L.C., and Pulleman, M.M. (2012), 'Protective shade, tree diversity and soil properties in coffee agroforestry systems in the Atlantic rainforest biome', *griculture, Ecosystems and Environment*, Vol 146, pp 179–196.
- Gole, T.W, Denich, M, Teketay, D. and Vlek, P.L.G. 2002. Human Impacts on the *Coffea arabica* Genepool in Ethiopia and the Need for its in situ Conservation In: *Managing Plant Genetic Diversity*, by J.M.M. Engels, V.R. Rao, A.H.D. Brown and M. Jackson, Oxon, UK, CABI Publishing, 2002, pp 237-47.
- ICO. 2008. Coffee statistics. International Coffee Organization, London (www.ico.org).
- Keyzer, Merbis & Overbosch 2000, p. 33, Belda 2006, p. 77 "Major coffee producers". National Geographic Society. Retrieved 2010-05-07.
- McLella, C.W. 1972. Reaction to Ethiopians Expansionism. The case of the Gedeo . Thesis Microfilm Xerography . Michigan State University. 323 Pp.
- Pereira, B.C. and P.A. Jones. 1984. Field responses by Kenya coffee to fertilizers, manures and mulches. *J. Exp. Agric.* 22: 23-36.
- Pereira, B.C. and P.A. Jones. 1984. Field responses by Kenya coffee to fertilizers, manures and mulches. *J. Exp. Agric.* 22: 23-36.
- Regassa Feyissa, Genene Gezu, Bayush Tsegaye and Kassahun Tesfaye,. "Food and agricultural commodities production". Food and Agriculture Organization. Retrieved 14 July 2010.
- Senbeta, F. 2006. Biodiversity and Ecology of Afromontane Rainforests with wild *Coffea Arabica* Populations in Ethiopia. *Ecology and Development Series* 38
- Tadesse Kippie, 2002. Five Thousand Years of Sustainability? A Case study on Gedeo Land Use (Southern Ethiopia). Treemail publishers, Heelsum, The Netherlands, ISBN: 90-804443-6-7. www.treemail.nl/books.
- Tadesse Kippie. 2003. Historical Premises and Social Value of Gedeo Agroforestry System. Report organized by Lem Ethiopia in collaboration with Gedeo Zone Administration.
- Tesfaye, K. 2006. Genetic Diversity of wild *Coffea arabica* Populations in Ethiopia as a Contribution to Conservation and Use Planning *Ecology and Development Series* 44.
- Van Asten PJA, Wairegi LWI, Mukasa D, Uringi NO. 2011. Agronomic and economic benefits of coffee–banana intercropping in Uganda’s smallholder farming systems. *Agricultural Systems* 104:326–334
- Zinabu Wolde., 2015. *The Role of Agro forestry in Soil and Water conservation*. LAP LAMBERT Academic Publishing, Saarbrucken, Deutschland/Germany. ISBN: 978-3-659-71882-3.