

Assessment of Constraints and Opportunities of Tea Out-Growers in South West Ethiopia

Beza Erko Erge¹, Melaku Addisu Bifa¹, Megdelawit Temesgen¹, Efrem Asfaw¹, Rehima Musema²

¹Jimma Agricultural Research Center, Ethiopian Institute of Agricultural Research (EIAR), Jimma, Ethiopia

²Agricultural Economics Research Directorate, Ethiopian Institute of Agricultural Research (EIAR), Addis Ababa, Ethiopia

Email address:

beza.erko@yahoo.com (B. E. Erge), hawitim@yahoo.com (M. A. Bifa), megdu313@gmail.com (M. Temesgen),
efremasfaw4@gmail.com (E. Asfaw), rehimamusema@gmail.com (R. Musema)

To cite this article:

Beza Erko Erge, Melaku Addisu Bifa, Megdelawit Temesgen, Efrem Asfaw, Rehima Musema. Assessment of Constraints and Opportunities of Tea Out-Growers in South West Ethiopia. *International Journal of Agricultural Economics*. Vol. 6, No. 4, 2021, pp. 151-161.

doi: 10.11648/j.ijae.20210604.12

Received: June 26, 2021; Accepted: July 20, 2021; Published: July 27, 2021

Abstract: Tea, in Ethiopia, is grown in south west parts of the country. It is produced by estates namely Ethio Agri Ceft, East Africa PLC and other newly established tea plantations. They tried to cover the capacity of their processing factory by out growers surrounding tea plantations. Problems the out growers faced and opportunities they have not yet studied in detail. Therefore, this research attempted to generate useful information on tea out growers' constraints and opportunities in tea production and marketing, which helps governmental institutions to assess their activities and redesign their operations. The research was done by interviewing tea out growers surrounding the two major tea plantations namely WushWush and Gumero in south west Ethiopia. Data was analyzed using descriptive statistics and constraints were analyzed using Relative Severity Index techniques. The data was collected from 120 randomly selected households surrounding the two major tea plantations. The result showed that out growers on average has experience of five years and allocated 1.37 ha of land to produce tea. Tea is among the most fertilizer and labor intensive crop of all the plantation crops. They plucked on average 295 kg/ha export standard or 731 kg/ha lowquality standard green tea leaves in one harvest in the main season. Relative Severity index analysis revealed that out growers' major constraints of tea production were high price and not timely availability of inputs, shortage of inputs, high cost of production, need intensive plot management, lack of capital, no government extension service and lack of training. However, they have good opportunities in obtaining frequent income almost throughout the year, high cash income, low risk of animal damage and theft. This study concluded that out growers allocated 33% of total land owned to grow tea. Plucking was the main cost in tea production which took 30% of income from green tea leaves. On average, out growers obtained 2600 kg/ha/year green leaves which was much below the two tea plantations 3500 kg/ha/year. One of the main constraints of tea growing was high cost of production. However, they were benefited more from getting year round cash income, low risk of theft and animal damage.

Keywords: Tea out Growers, Gumero, WushWush, Relative Severity Index, Constraints

1. Introduction

Ethiopia's overall economic and social development is highly dependent on the growth and development of the agriculture sector which contributes almost half of the GDP, employs about 85% of the labor force, accounts for about 75% of the foreign exchange earnings, and provides livelihood for over 80% of the population living mainly in rural areas [1]. After decades of stagnation, the sector has shown remarkable growth at an average rate of 11% per annum since 2005 [2].

Since Ethiopian Government made agriculture its primary priority in 1991, the country has developed and implemented its Agricultural Development Led-Industrialization (ADLI) strategy. The key concept underlying ADLI is an export-led development strategy aimed at promoting economic growth in Ethiopia while coordinating agricultural and industrial development. As export diversification and import substitution program in the country, tea is one of the strategic crops with significant importance in the national economy, which has been given due emphasis by the government to intensify its

production and productivity by subsistent farmers and large scale farming.

Tea (*Camellia sinensis* L.) is one of the most important cash crops of many countries, including Ethiopia. Currently, tea is the most widely consumed stimulant beverage worldwide followed by coffee, and accounts for about 46% of the world's beverage market. It is served as morning drink for nearly two-third of the world population. For use as stimulant, the young shoots (leaves, leaf buds, and internodes) of the tea plant are harvested and processed using various methods. It is consumed in several forms depending on the type of processing technique involved. Of the different tea types; white, yellow, green, oolong and black tea are the major ones prepared and marketed in the world [3].

In Ethiopia, tea is grown in the highland areas that can offer ideal climatic conditions and soil types for production and processing of good quality tea for export and domestic consumption. Currently, tea is largely produced by three estates namely Ethio-Agri-Ceft PLC (*WushWush* and *Gumero Tea Development*) and East Africa PLC (*Chewaka Tea Development*) in south west Ethiopia. To date, total of 2660 ha of land has been devoted to estate tea plantations. Moreover, a total of 581 out-growers are growing tea on 439 ha of land in the vicinities of the three large scale tea plantations under the region [4]. The small scale farmers have been organized in associations to produce and supply green leaves to the companies.

In the last GTP-I period, a total of 4570.78 ton of tea has been supplied for export market and 34,126.1 tons supplied to local markets. The tea development has provided employment and income opportunities to the 581 out-growers, 7139 temporary and 1157 permanent workers at the tea estates in southwestern Ethiopia, although the current out-grower schemes call for legal modalities to support maximized benefits from the tea industry as compared to other producing countries.

Despite the favourable environmental conditions for the production of quality tea in Ethiopia, its production and productivity has not been improved. Direct adoption of all tea production packages from abroad is mainly due to the weak and infant stage of tea research in the country. In the present day where the expansion of small scale farmers/out-growers is considerably undertaking, there should be an urgent measure to develop effective extension service and build-up of a strong tea research program benefiting the rapidly growing up tea out growers in particulars and the sector at large. Hence, assessing constraints and opportunities of tea production and marketing contributes to identify gaps and basis for further research towards the adaptation, generation and adoption of technologies suiting to Ethiopian conditions. Therefore, this study was undertaken to address the following objectives.

Objectives of the Study

- a) To assess production and marketing constraints of tea that limit smallholder farmers in improving tea production, productivity and supply;
- b) To identify opportunities that contribute to the benefit of small scale out growers in the production and

marketing of tea, and

- c) To suggest feasible and practicable research intervention options that are believed to address tea out-growers major constraints.

2. Methodology

2.1. Study Areas

The study was conducted in Alle and Gimbo districts in Southwest parts of Ethiopia. They are the most important tea growing region in the country. In the areas, there were few smallholder tea growers supplying green tea leaves to WushWush and Gumero Tea Processing factories. The WushWush Tea Plantation is located at latitude 7.3098 North and longitude 36.0999 East. And Gumero Tea Plantation is located at latitude 8.1669 North and longitude 35.4924 East.

2.2. Data Collection Method

Data was collected from primary and secondary sources. The Primary (field) data was collected by interviewing smallholder tea growers (out-growers) using questionnaire developed for quantitative information and qualitative information was collected through Focal Group Discussion (FGD). The FGD is useful in the condition when data cannot be captured by questionnaire. Secondary data was collected from tea plantation, academic literature and comparative studies from other countries were also reviewed.

2.3. Data Collection Techniques and Approaches

Blends of tools and techniques were adopted to collect the required information and dataset that address the objectives of the study. Three standard data collection techniques and approaches were employed. These were desk review, qualitative assessments and quantitative survey techniques. The first stage focuses on generating secondary information while the second and third stages target in collecting primary information from target respondents. The second stage intends to generate information using a checklist while the third stage deals with generating quantitative information using a structured questionnaire.

2.4. Sampling Frame and Sample Selection

The sampling frame of the study for quantitative survey is the population of smallholder tea growers in the location under consideration. The sampling frame could be stratified into homogenous components where sample respondents drawn from. Accordingly, the sampling frame was stratified into out growers surrounding WushWush and Gumero Tea plantation that are located in Gimbo and Alle districts in south West Ethiopia, respectively.

Even though the size of the sample can be determined using the rule of thumb approach, such as selecting either 5% or 10% of the population, there is no hard and fast rule to determine the size of the sample proposing as 5% or 10%. This is because; the mere size alone does not ensure

representativeness. Sample size for this study should neither be too small nor too large, but it should be optimum. The optimum sample size is the one that fulfils the requirements of efficiency, representativeness, reliability and flexibility.

In general, consideration of the above factors made reasonable decision in determining the fair size of the sample in the study. In addition to this, the study employed the following sample size determination formula [5]:

$$n = \frac{N}{1 + N(e)^2}$$

Where “n” is the sample size, “N” is the population size, and “e” is the level of precision. In this study, the level of precision desired was 92.5% and therefore, “e” was set at 0.075.

The study was conducted by purposively selecting two districts and six kebeles (3 per district). Smallholder tea growers were selected randomly from each kebele. Accordingly, a total of 120 tea growing household heads were selected for the study. In addition, WushWush and Gumero Tea Plantations were interviewed.

2.5. Data Analysis

The data collected based on the developed questionnaire was coded and directly entered into a computer on SPSS spreadsheet. The data was analyzed using descriptive statistics to compute frequency, percentage, mean, standard deviation, minimum and maximum values. Moreover, simple tests such as t-test and chi square were computed to compare categorical variables between groups and to compare means between the two groups.

Relative Severity Index (RSI) [6] was used to determine the relative importance of constraints out growers faced and opportunities they have. Two point scale: issue was important or not important based on perception of smallholder farmers. Important scale has a weight of 5 and not important has weight of 1. This scale and weight was transformed to

Relative Severity index for each constraint and opportunity using the following equation.

$$RSI = \frac{\sum_{i=1}^N W_i}{H * N}$$

Where

RSI- Relative Severity Index

W_i– is the weight given to each constraints or opportunities which in this case scaled as 5 and 1. It is computed as frequency of each constraint/opportunity multiplied by scale assigned.

H-is the highest scale/weight in this case 5.

N-is the total number of respondents (frequency of respondents).

3. Results and Discussion

The two main Tea Development Farms in Ethiopia, WushWush and Gumero, have made contract farming with out-growers in their surrounding *kebeles*. The WushWushtea farm started the contract farming with tea out growers in 2005 in Michity *kebele* with five out growers on 2.5 ha of land. Currently, the number of outgrowers has expanded to six *kebeles* namely Michity, Yebeto, Bitachega, Woka Araba, Tega and Chereba. On the other hand, Gumerotea farm started contract farming with out-growers in 2011 in Jato Werakakebele with seven out growers. Currently, the number of outgrowers has expanded to seven *kebeles*, namely Gibe, Jeto Weraka, Mora, Onga, Gumero Abo, Agalo and Hobe.

The present study was thus conducted considering the tea out-growers found in *kebeles* around the two main Tea Development farms in southwest Ethiopia. Data was collected from 120 tea out growers from six *kebeles* surrounding the two major big Tea farms. The distribution of samplings considered for the study purpose is as indicated in table 1.

Table 1. Population and sample size of out-growers in the study areas.

Region	Zone	District	Total out-growers in the District (No)	Area covered by out-growers (ha)	Sample Kebele	Sample size n
Oromia	Iluababor	Alle	118	143	Agalo	19
					Gumero Abo	20
					Jto Werekka	19
SNNP	Kefa	Gimbo	287	395	Bitachega	19
					Michity	23
					Yebeto	20
Total			405	538	Total	120

Table 2. Demographic characteristics of out-growers in study areas.

Variables	Variable category	Alle district (Gumero)		Gimbo district (WushWush)		Total		Chi ²	Pr.
		n	%	n	%	n	%		
Primary occupation of out growers	Farming	53	91	59	95	112	94	2.858	0.414
	Gov. employment	4	7	2	3	6	5		
	Others	1	2	1	2	1	1		
Education level of household heads	Illiterate	4	3	10	8	14	12	5.106	0.164
	Primary school (Grade 1-4)	17	14	12	10	29	24		
	Secondary school (Grade 7-12)	32	27	38	32	70	58		
	Higher education (Above grade 12)	5	4	2	2	7	6		

In the study areas, demographic characteristics of out-growers result showed that 94% of household heads were male. Most of the out-growers' primary occupation were farming and about 6% of them were either government employers or self employed in other business. The result showed that 58% of household heads of out growers were educated having an education level of grade 7 to grade 12. This could be assumed as one of the factors among others which might have leaded the out-growers to early adoption of tea production practices/technologies in the region (Table 2).

Socio-economic characteristics result showed that out growers on average have age of 42 years old and have a family size of six persons. Very few out growers started growing tea 15 years ago. Currently out growers in the study area on average have five years experience and owned 4.3 ha of total land of which they allocated 1.4 ha to produce tea. There was statistically significant difference between the two districts in age of household age, family size and land covered by perennial crop at 5% significance levels. Details of socio-economic variables described in table 3 below.

Table 3. Socio-economic characteristics of out-growers in study areas.

Variables	Alledistrict (Gumero)		Gimbo district (WushWush)		Total		t	Sign.
	mean	St. dv	mean	St. dv	mean	St. dv		
Age of HH head	39.48	13.199	43.97	14.687	41.80	14.110	-1.755	0.041**
Family size	5.64	2.79	6.7	2.891	6.19	2.888	-2.034	0.022**
Total land owned (ha)	4.75	4.308	3.99	2.324	4.35	3.437	1.090	0.139
Tea land currently owned (ha)	1.38	1.85	1.36	1.239	1.37	1.557	0.043	0.433
Experience in tea production (years)	5.22	2.302	4.74	2.78	4.97	2.563	1.024	0.154

South west of Ethiopia is a forest area. However, 96% of out-growers used open farm land (i.e. neither forest nor semi-forest land) to grow tea. It was assumed that tea was replacing coffee and out growers used forest land to produce tea. However, they used annual crop land mainly maize plots to grow tea (Table 4).

Table 4. Land used to grow tea in the study areas.

Variables	Variable category	Alledistrict (Gumero)		Gimbo district (WushWush)		Total		Chi ²	Pr.
		n	%	n	%	n	%		
Tea plot size trend	Expanded	32	55	43	70	75	63	2.994	0.094*
	More or less the same	26	45	18	30	44	37		
Land used for tea growing	Open farm land	56	97	58	94	114	96	3.904	0.272
	Semi forest	0	0	3	5	3	3		
	Forest	1	2	0	0	1	1		

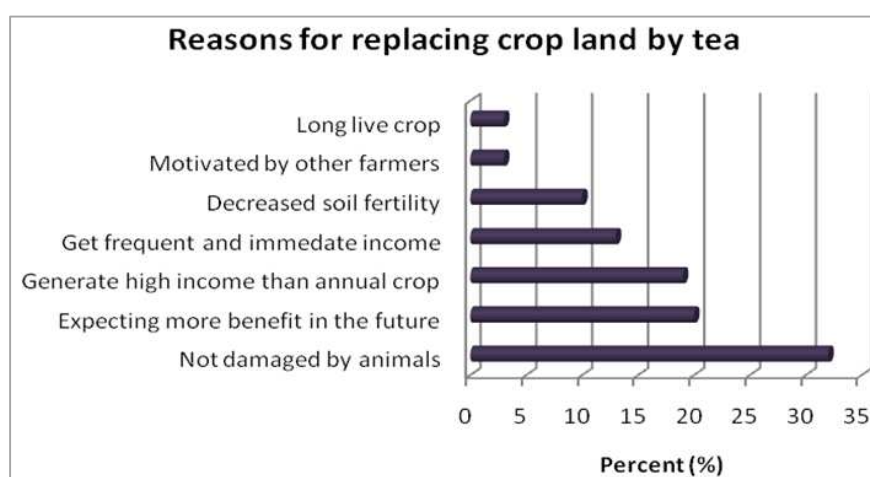


Figure 1. Reasons for replacing annual crop land to tea.

Only 1% of them replaced coffee land to grow tea. The main reasons for replacing annual crop farm land to tea plot were as the areas are forest, to grow annual crop hardly possible. However, tea is not damaged by wild animals and stolen by theft. Moreover, as tea is a perennial crop, it has high future prospect; it generates high and frequent income than annual crops (Figure 1).

Out-growers in the study areas started growing tea on allocated average land area of 0.59 ha and currently this figure increased to 1.37 ha of land. About 63% of them expanded their tea plot size. The most important reasons for expanding tea land area were that the tea farm generated high income and provided more economic benefit than other crops production (figure 2).

Out growers used improved tea production technologies such as varieties called clones, inorganic fertilizer, weeding, harvesting, etc. The technologies such as clones and improved agronomic practices were introduced from abroad and supplied to out growers by the two tea estates such as Wushwush and Gumero tea plantations. The type of clones grown by out-growers were 11/56, SR, 11/4,

BB35 and 6/8. Majority of them planted two types of clones. Around WushWush Tea plantation prefer tea clones; 11/56 and SR while out growers surrounding GumeroTea plantation prefer 11/4 and BB/35 clones. The main reasons for these clones preference were high yield, fast regeneration recovery from pruning and drought tolerance (Figures 3 and 4).

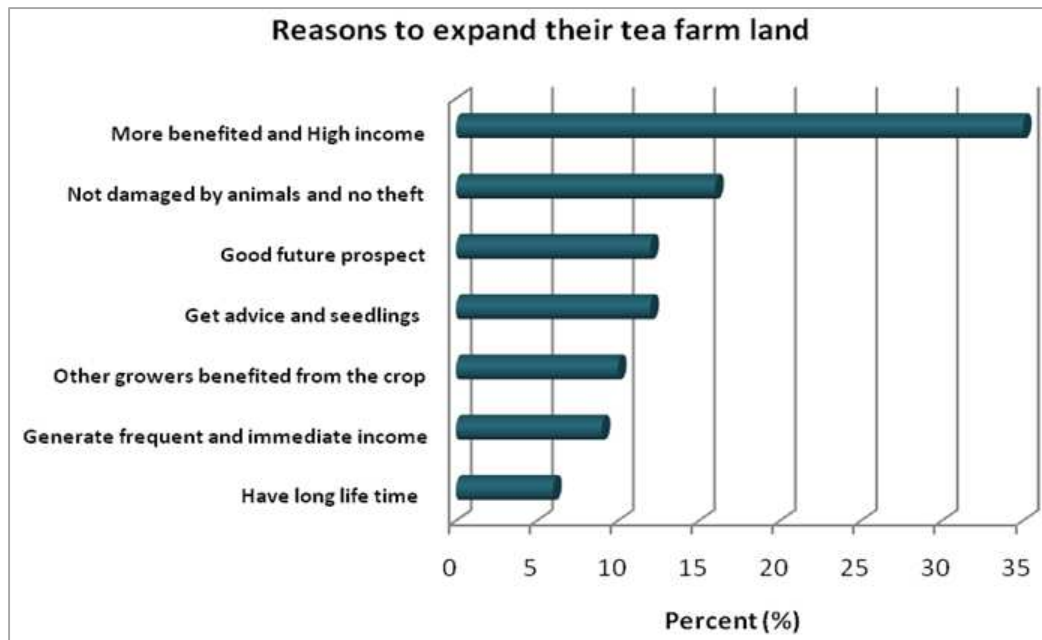


Figure 2. Reasons of out growers to expand tea farm land.

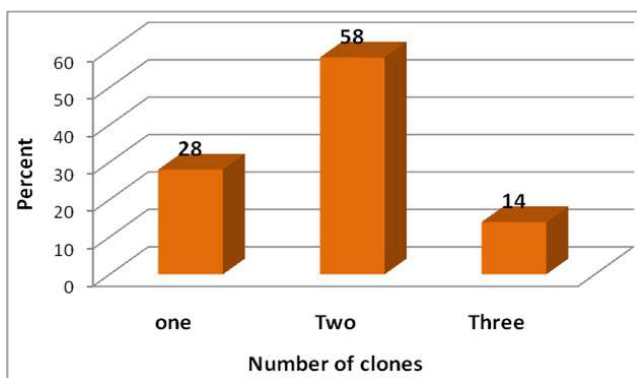


Figure 3. Number of tea clones planted by out growers.

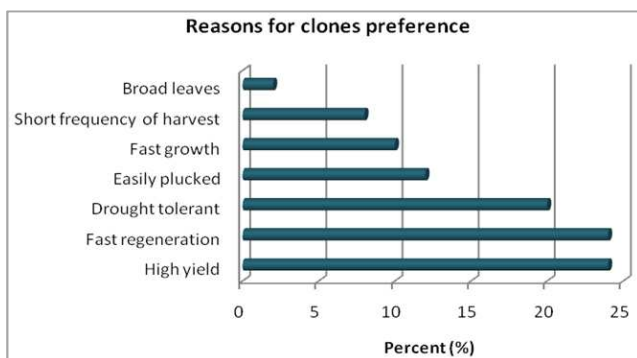


Figure 4. Reason for tea clone preference.

Labor and fertilizers are the significant inputs in tea production. It requires intensive fertilizers and labor for land preparation, weeding, pruning and plucking [7]. The result showed that only 3% of out growers used organic fertilizer (compost or manure). The two Tea development farms supplied farm inputs such as seedlings, fertilizer, pesticide and farm implements. Except tea seedlings, other inputs were supplied with payments. The term of payment for fertilizer was a type of loan to be deducted from some proportion of their income received from green leaves supply. The price of NPK fertilizer was 1792 ETB/qr where they were found to deliver 176 kg of export quality standard green leaves to payback 50 kg of NPK fertilizer. The recommended rate of fertilizer application was 300 kg/ha. However, out growers applied on average 234 kg of fertilizer (NPS/NPK + UREA) per year and 88% of them applied this amount two times in split applications. Weed management is one of the labor demanding activities in tea production. Most out-growers (92%) practiced both hand weeding and chemical (pesticide) to control weed. About 65% of them applied chemicals twice a year. The recommended rate of this chemical was 2 liter/ha and supplied by the estates with a price of 86 ETB/ha.

Almost all field operations such as land preparation, planting, weeding and pruning require hired labor in addition to family labor. The result showed that out growers used high hired labor relative to other crops in all farm operation. In the

study areas, 30% - 38% of out growers used only hired labor for land preparation, planting and weeding. This proportion is very high for plucking in which 75% of out growers not used family labor for harvesting. They used only hired labor. There is statistically high significant difference between the two areas in using the sources of labor for land preparation and planting. For example, out growers in Alle district used both family and hired labor more than the out-growers in Gimbo district.

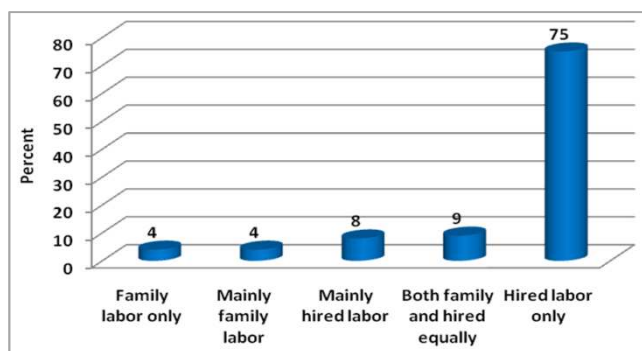


Figure 5. Out growers use of labor for plucking tea leaves.

Tea plucking is typically one of the most labor intensive and hence expensive farm operation. The ideal tea plucking style differ depends on availability of labor and price offered for different standards of plucking [8]. Plucking of green leaf mostly handled by hired labor so as to keep good regeneration, timely supply to the factory and keep quality of the tea. As shown in figure 5, the contribution of family labor in plucking leaves was very low. The result showed that price of hired labor to pluck a kg of green tea leaves was ETB 1.50 and ETB 1.0 for export (high) and low quality standards, respectively.

Tea yield was not the same round the year. There is a wide variation in the monthly yield [9]. The two main seasons such as main (rainy) season and off-season (dry season) affect quantity and quality standard of tea production. In main season, high yield per unit area, short frequency of plucking and plucked mainly export quality standard. In other hand, in dry season out growers get very low yield, long frequency of harvesting and harvested low quality standard. As shown in figure 6 below, more out-growers plucked export quality standard green leaves in main season

and harvested twice per month. In other hand, very low frequency and low quality standard was plucked in dry season.

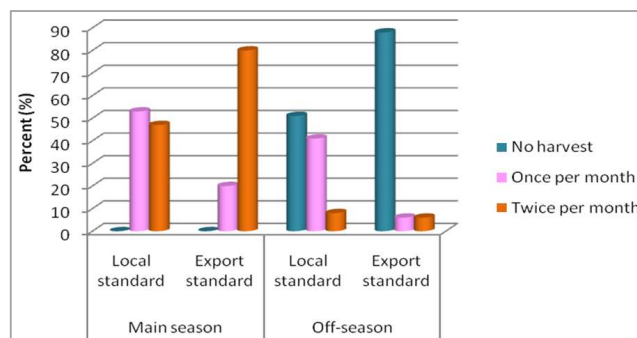


Figure 6. Seasons and standards of tea plucking.

The quality of tea depends on types of plucking and transporting from farm gate to tea processing factory. Tea is perishable crop and if not reach on appropriate time, it loses its moisture which result in reducing quality of tea. Export quality standard is when the top two leaves and a bud (succulent youngest leave) is plucked from tea bush. If it is plucked more than this leaves standard, it is considered as low quality which processed and supplied to domestic market. In the study areas, out growers plucked tea leaves for nine months per year. They plucked on average for nearly six months in main/rainy season and three months in dry season. There was significant difference in number of months plucked between out growers surrounding WushWush and Gumero tea plantations. They plucked export standard 1.8 times per month and low quality standard plucked 1.5 times per month. In one harvest, out growers plucked on average 295 kg/ha export quality standard and 731 kg/ha low quality standard in the main season. This quantity dropped to 206 kg/ha and 387 kg/ha in dry season for export and low quality standards, respectively. Farm gate price of green leaves was the same throughout the year. It was 5 ETB/kg for export quality standard and 3.5 ETB/kg for low quality standard. Price is determined based on standard of plucking and timely delivering of tea leaves to the factory. Almost all out growers not satisfied with the price set as the cost of tea production is very high (Table 5).

Table 5. Quantity and quality standards of tea plucked in main and dry seasons.

Season	Variables	Alle district (Gumero)		Gimbo district (WushWush)		Total		t	Sign.
		mean	St. dv	mean	St. dv	mean	St. dv		
Main season	Number of months plucked	6.12	1.32	5.42	1.09	5.76	1.24	3.228	0.002***
	Frequency of plucking per month for export standard	1.71	0.47	2	0.00	1.8	0.41	-1.751	0.093*
	Frequency of plucking per month for local standard	1.57	0.48	1.42	0.50	1.5	0.49	1.616	0.109
	Green leaf plucked in one harvest for export standard (kg/ha)	303	337	281	168	295	284	0.328	0.744
	Green leaf plucked in one harvest for Local standard (kg/ha)	661	437	817	469	731	461	-1.765	0.080*
Dry season	Number of months plucked	2.69	0.82	3.2	1.38	2.94	1.15	-1.779	0.080*
	Frequency of plucking per month for export standard	1.42	0.52	2	0.00	1.5	0.52	-1.549	0.583
	Frequency of plucking per month for local standard	1.17	0.37	1.17	0.38	1.17	0.38	-0.058	0.954
	Green leaf plucked in one harvest for export standard (kg/ha)	177	110	255	155	206	131	-1.527	0.139
	Green leaf plucked in one harvest for Local standard (kg/ha)	384	380	399	206	387	300	-0.191	0.849

The growing of tea seems to be an attractive venture for out-growers as it provides work and income throughout the year. Farmers diversify their income using different sources. In the study areas, tea is one of the main sources of income next to coffee. About 57% of out-growers main source of income was coffee. Tea provides long term return and lower risk crop. However, many out growers showed no sign of livelihood improvement in tea growing. Out-growers spent income generated from tea more on household consumption and inputs such as fertilizer, labor, etc (Figure 7 and Figure 8).

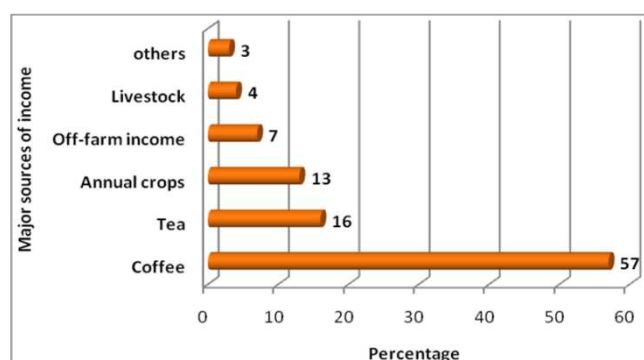


Figure 7. Out-growers major sources of income.

Tea out-growers in the study areas arranged with the nucleus estate or out-growers model where a firm enters a production node through an estate or plantation but also contracts with independent producers for greater volumes [10]. Farmers in the surrounding areas of tea plantations involved in contractual agreements through their

cooperatives. The tea plantations provided seedlings (free of charge), inputs, transportation of product from farm gate and technical supports. The contract agreement made in advance for terms of sale of output, price level, specific quality, date of delivery, production and marketing risk, termination of contracts, etc. In the study areas as the agreement made between out growers' cooperatives and estates, sometimes they fail to include some basic details in contracts and out growers are not fully informed about the nature of the agreement they are entering into. The result showed that they were fully aware on agreements made on input supply and product transporting service. However, they have different perception on duration and season of agreement made, price agreement, agreements on production and marketing risk, etc. According to out-growers perception, 51% of them made agreement during harvesting time and 68% of them perceived that agreement on production and marketing risk management was not made (Table 6).

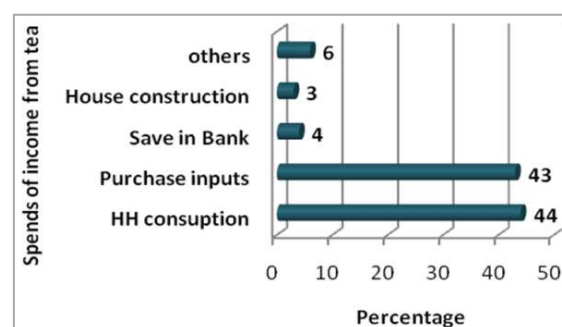


Figure 8. Spent of income from tea.

Table 6. Out growers perceptions on the agreements made between cooperatives and estates.

Variables	Category	Alledistrict (Gumero)		Gimbo district (WushWush)		Total		Chi 2	Sign.
		n	%	n	%	n	%		
Season of agreement	Before planting	17	14	24	20	41	35	10.897	0.004**
	At planting time	2	2	12	10	14	12		
	At harvesting time	38	32	25	21	63	53		
Is pre-determined Price agreement made	Yes	44	37	46	39	90	76	0.003	0.954
	No	14	12	15	13	29	24		
Agreement made on risk management	Yes	16	13	23	19	39	32	1.236	0.266
	No	42	35	39	33	81	69		

3.1. Constraints of Tea Growing in the Study Areas

Constraint is a specification that should be met; otherwise certain definable negative consequences will follow. Main constraints of small scale farmers are access to resource and market. They have limited resources and with the rise of living they unable to get the optimum level of output for the input provided. As a result they are hindered to improve production and supply good quality of product. The cost of tea growing from planting to maturity is huge and needs more investment than other crops [11]. Most out growers faced common problems such as non availability of workers in peak plucking season, lower price of green tea leaves and high cost of inputs [12]. Out-growers in the study areas have

many constraints that hindered improved production and supply of good quality of leaves growing tea. These constraints are categorized as in relation to inputs, production, technology use and extension.

3.1.1. Constraints Related to Inputs

Inputs such as seedlings, fertilizer and chemicals were supplied by the tea estates. Tea seedlings were supplied free of charge. Fertilizer supplied in the form of credit in which deduct from out growers income received from green leaves sales. However, out growers did not know the price of fertilizer and no transparency in computing deduction. High price of fertilizer and labor were one of the major constraints of out growers. Tea seedlings production requires skill and

none of them produce seedlings. To expand their tea farms, they faced shortage of seedlings. Moreover, timely availability of inputs, road accessibility to transport inputs was the major constraints in the study areas.

Constraints related to inputs were ranked based on the Relative Severity Index (RSI) values and rankings were assigned to each problem to identify the severity of each problem which is presented in Table 8 below. The higher the

value of RSI, the problem was considered as high or it is a serious issue and vice versa. Accordingly, the most three constraints related to inputs were high price of inputs, timely availability of inputs and shortage of input supply. High price of fertilizer and labor increased the cost of production which discourage out growers and result in frequently claim on the price of green leaves supplied.

Table 7. Major constraints related to Inputs in the study areas.

Variables	Scale				Total weighted scale	Relative Severity Index (RSI)	Rank
	Constraint (weight=5)		Not constraint (weight=1)				
	Freq	Weighted scale	Freq	Weighted scale			
price of fertilizer not known	20	100	100	100	200	0.32	4
High price of input	51	255	69	69	324	0.54	1
Timely availability of inputs	24	120	96	96	216	0.36	2
Shortage of inputs	20	100	100	100	200	0.33	3
Road access to transport inputs	7	35	113	113	148	0.25	5

3.1.2. Constraints Relater to Production and Marketing

Out growers have limited resources and with the rise of living they are unable to get the optimum level of output for the inputs provided. They faced several challenges to improve production of tea leaves. The highest cost of tea production is attributed to labor and inorganic fertilizer [13]. According to

Ondruet *al* [14], labor accounts for 58-71% of the total cost of tea production. In the study areas, the major production and marketing constraints were high cost of production, lack of capital, drought, weed and intensive management. Constraints such as weed, erosion and termite were major problems of out-growers surrounding Gumero Tea Development farms.

Table 8. Major constraints related to tea production in the study areas.

Variables	Scale				Total weighted scale	Relative Severity Index (RSI)	Rank
	Constraint (weight=5)		Not constraint (weight=1)				
	Freq	Weighted scale	Freq	Weighted scale			
High cost of production	30	150	90	90	240	0.40	2
Drought	23	115	97	97	212	0.35	4
Lack of capital	25	125	95	95	220	0.37	3
Need intensive management	32	160	88	88	248	0.41	1
Weed	11	55	109	109	164	0.27	5
Erosion	7	35	113	113	148	0.25	6
Termite	7	35	113	113	148	0.25	6

The most three constraints in tea growing were intensive farm management, high cost of production and lack of capital. The activities such as planting hole digging, planting, pruning and plucking is done manually. Moreover, it is plucked almost year round and needs timely management. Lack of adequate family labor, inability to hire labor and lack of capital were the major problems out growers faced to manage tea fields and improve tea productivity. Therefore, intensive tea field management and lack of capital were the most severe problems in producing tea. They may lack labor to pluck tea which makes tea plucking price to increase. Moreover, the cost of weeding, pruning, and plucking were very high. For example, a worker received 1.5 ETB when plucked one kilogram of export quality standard green tea leaves. However, out growers sell one kilogram export standard green tea leaves with 5 ETB. This implies that, workers that plucked green tea leaves take 30% of out growers selling price. Another major constraint was climate change such as drought. Out growers depends on rain fed agriculture and prolonged dry season drop

production by large amount. Even though the two study areas are in different regions, there is no difference on most constraints they have faced (Table 8).

3.1.3. Constraints Related to Extension Services

Extension services such as training, demonstration, field days, contact with farmers and visiting farmers' fields address gaps in information, knowledge and technology use. Contact with extension workers make farmers access to information on recommendation, gives advice on inputs and management of technologies. Farmers with access to extension services achieve higher yields over farmers without access to extension [15]. Most of tea farming practice is knowledge intensive activities and extension services through assistance, training and engaging farmers in tea technology demonstration make out growers to increase green leaf production. In the study areas, extension service provided only by the two tea development farms which was insufficient. Moreover, the role of government in coordinating tea sector is largely missing.

There were almost no extension services provided and interventions made by the government extension agents to assist tea out growers. Out growers in Alle district surrounding Gumero Tea Development farm have more problem of accessing extension services than out growers surrounding WushWushTea development.

The top three constraints related to extension services were

no government extension services, lack of training and no government intervention. Lack of training was the second major constraint. For example, tea seedling production requires skills as a result; none of the out growers can produce seedlings by themselves. The result showed that, the government provided little focus to tea sector (Table 9).

Table 9. Major constraints related to extension services in the study areas.

Variables	Scale				Total weighted scale	Relative Severity Index (RSI)	Rank
	Constraint (weight=5)		Not constraint (weight=1)				
	Freq	Weighted scale	Freq	Weighted scale			
Lack of training	50	250	70	70	320	0.53	2
Lack oftechnical support	23	115	97	97	212	0.35	4
Lack of extension services	19	95	101	101	196	0.33	5
No government extension service	51	255	69	69	324	0.54	1
No government intervention	37	185	83	83	268	0.45	3

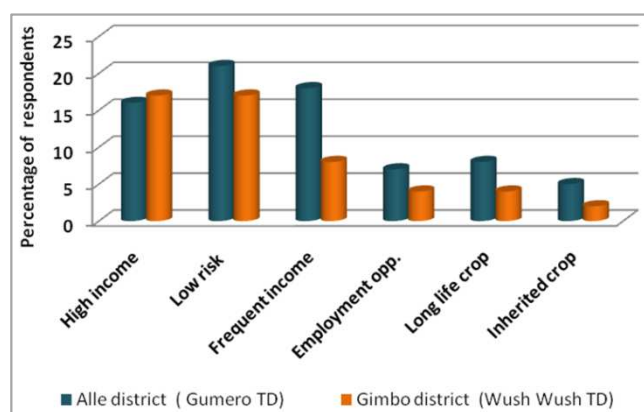


Figure 9. Major opportunities of growing tea in the study areas.

3.2. Opportunities of Tea Growing in the Study Areas

Tea is an important crop in terms of job creation and income generation. As it is a labor intensive commodity, it provides employment opportunity particularly for rural community. It is also important for export earning and rural infrastructure development. In the study areas, the three most important opportunities in tea growing were generate high income compared to other annual crops, free from risk of theft and wild animals. As it is a natural forest area, producing annual crop particularly maize is difficult due to wild animals. Moreover, tea plucked every two or three weeks which provides year round income. Most of the time, farmers faced money or food shortage in summer (when crops are on the field and no grain in store). During this period, tea out-growers not faced such problem as they generate continuous year round cash income. Tea also creates employment opportunities for many people in rural areas and being a long life crop it can be inherited to next generation. In Alle district, continuous year round income and minimum risk of producing tea were considered as the most important opportunities in the area (Figure 9).

The study areas are one of the most natural forest coverage areas in the country. There are many wild animals in the forest

that damage annual crops on the field. This is a serious problem in the areas that is why out growers considered tea growing as the most important opportunity to minimize risk of wild animals and free from theft. The crop is important in generating high income related to other annual crops.

4. Conclusions and Recommendations

4.1. Conclusions

The study tried to assess constraints and opportunities of tea out growers in south west Ethiopia. Tea is an important crop of out growers as most of them allocated large part (33%) of their total farm land holding to tea. Moreover, tea is the second most important sources of income next to coffee in the study areas. The crop requires intensive inputs mainly fertilizer and labor which have significant impact on tea production. Plucking was the main cost of out growers which requires high hired labor during harvesting. The cost of plucking was 30% of the selling price of export quality standard green leaves. Regarding fertilizer application, they applied 236 kg/ha/year fertilizer which were less by 21% from the recommended rate of 300 kg/ha/year. Production of the crop showed on average 2600 kg/ha/year green leaves which were below potential and below the two Tea Development farms which were 3500 kg/ha/year. The decrease in production may be due to not used recommended rate of fertilizer application and practiced improved agronomic practices.

The contract agreement made in advance for terms of sale of output, price level, specific quality, date of delivery, production and marketing risk, termination of contracts, were not fully informed to out growers. They were fully aware on agreements made on input supply and product transporting service. However, they have less knowledge on price agreement, agreements on production and marketing risk which made out-growers not satisfied on the price of green leaves.

Constraints of out-growers in tea production, productivity

and quality were prioritized using Relative Severity Index (RSI) approach. Accordingly, the major constraints were high price of fertilizer and labor especially for plucking as well as inputs were not timely supplied to out growers. These in turn result in high cost of production to produce tea. As the crop need intensive management, out-growers unable to supply the required inputs to produce optimal level of outputs and keep quality of green leaves supply. This was due to lack of capital and limited resources with the rise of living. Moreover, prolonged dry season or drought, high weed infestation and lack of government extension services were the main constraints in tea production.

Tea out growers have opportunities in generating continuous year round cash income, low risk of theft and wild animal damage and generate high cash income related to annual crops. Moreover, it created job opportunities for rural community which reduced migration of rural to urban to seek job. Out-growers considered the crop as insurance as they become older and as asset which can be inherited to family in next generation.

4.2. Recommendations

As tea seedling production requires skill, no out growers can produce by themselves. However, there is high demand for seedlings in which the supply can't meet the demand. Therefore, out growers should be trained and supported by research centers and CTDMA in self seedling production.

The high cost of tea production due to intensive use of fertilizer and hired labor reduced revenue from tea sales. Therefore, cost saving strategies should be highly addressed. These are technology use like simple hand harvesting machine and hired labor management to increase labor efficiency.

Tea production need intensive inputs such as fertilizer and labor particularly at harvesting. At this time, out growers may lack money to hire labor for plucking. They also lack capital to expand tea farm land. Therefore, it needs to strengthen out growers by facilitating credit access and debit management services.

Strengthen tea cooperative where out growers can share tea farming information and negotiate for better contractual terms with estates.

Government and privates should be well coordinated to develop a broader approach that can effectively address challenges facing tea out growers. It needs to encourage out-growers in tea farming activities by attracting them with farming related incentives such as subsidies and reasonable farm gate price.

Out growers highly claim low price of tea leaves sold. Revenue not covers their production cost. Therefore, it needs further research on profitability and efficiency of tea production by out- growers.

References

- [1] CSA, 2015. Agricultural Sample Survey. Report on Area and Production of Major Crops for Private Peasant Holdings, Meher Season. Addis Ababa.
- [2] MoFED, 2010. Growth and Transformation Plan I. Addis Ababa Ethiopia.
- [3] Sharma, V. K., A. Bhattacharya, A. Kumar and H. K. Sharma, 2007. Health benefits of tea consumption. *Trop. J. Pharm. Res.*, 6: 785-792.
- [4] EIAR 2017, National Tea commodity research strategy (2016-2030), January 2017, Addis Ababa.
- [5] Yamane, Taro, 1967. Statistics, An Introductory analysis, 2nd Ed., New York: Harper and Row.
- [6] Chandima W., Emmanuel F., Anoma J. M., Sanath J. K., 2017. Prospects and issues related to tea cultivation in mid country homegarden based tea smallholdings in a selected village in Sri Lanka. *Tropical Agricultural Research* · December 2017 DOI: 10.4038/tar.v28i4.8250.
- [7] SuranjanPriyanath, HumuwalaMalawarage and Premaratne, S. P. and Yoosuf, Amina and Maurice D. 2018. Technical efficiency for Tea smallholder farmers under UTZ certification system in Sri Lanka: A stochastic frontier approach. Munich personal RePEC archive (MPRA). SEISENSE.
- [8] Abhijit DAs and R. R. Mishara, 2019. Value chain analysis of Tea and constraints faced by the small tea growers in India with special reference to state Assam. *International Journal of current Microbiology and applied sciences*. ISSN. 2319-7706 volume 8 No. 12.
- [9] ReterPotem and GibijiNimasow, 2016. Status and constraints of tea cultivation in Lohit District of Arunachal Pradesh, India. *International Journal of CURRSCI* 2016, 19 (1): E 146-155.
- [10] Martin PROWSE, 2012. Contract Farming in Developing Countries - A review. A SAVOIR. Institute of Development policy and management, University of Antwerp.
- [11] Elias K., Sarah W. and Kagwathi S., 2012. Sustainable method of addressing challenges facing smallholder tea sector in Kenya. A supply chain management approach.
- [12] Issac Cowan-Gore and ThamThamSein, 2020. Myanmar Tea cultivation and processing guide. STRENGTHEN Publication series.
- [13] Nyaga Susan Wambeti, 2017. Challenges facing small scale Tea farmers in Kenya.
- [14] Onduru D. D. Dejager A., Hiller S. and Vanden, Bosch R., 2012. Sustainability of smallholder Tea production in developing countries: Learning experiences from farmers field school in Kenya. *International journal of development and sustainability*, Vol 1 No. 3, pp 714-742.
- [15] Lighten Dube and EmmanuelGueya, 2014. Productivity analysis of smallholder out grower Tea (*Camellia Sinensis*) farming in Chipinge District of Zimbabwe.