# THE SOCIO-ECONOMIC FACTORS INFLUENCING PRODUCTIVITY OF THE SMALLHOLDER SUBSECTOR OF THE KENYAN TEA INDUSTRY: A SURVEY OF OTHAYA SUB COUNTY, NYERI

**BY**

**Juliet Gachihi Kinyua**

The dissertation is submitted in partial fulfilment of the requirement for the award of a Master of Development Studies (MDS) from St. Paul's University

**March 2016**

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Supervisors: **Dr. Antony Wando Odek / Dr. Nason Vundi**

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## DECLARATION

The Dissertation is a product of my own work and is not the result of anything done in collaboration. It has not been previously presented to any other institution. I agree that this proposal may be available for and photocopying at the discretion of the university.

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I/We confirm that the work that was reported in this proposal has been done by the student under my /our supervision.

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**MAY GOD BLESS AND KEEP YOU ALL: AMEN**

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## ABSTRACT

For a period spanning over 5000 years of cultivation, tea plant has occupied a very important place among cash crops of the World. In Kenya, the smallholder tea sub-sector is viewed not only as the largest but also the most thriving smallholder schemes internationally. However, the sector continues to show sub-optimal decline of crop yield when compared to that of the estates. This study aims at understanding the Socio-economic factors influencing productivity of the smallholder sub-sector of the Kenyan tea Industry, with special reference to Othaya, in Nyeri County. Specific objectives are: To find out the influence of availability of labour on the productivity of the smallholder sub-sector of the Kenyan Tea Industry, to examine how cultural practices affect the productivity of the smallholder sub-sector of the Kenyan Tea Industry and, to assess the effect(s) of tea market prices on the productivity of the smallholder sub-sector of the Kenyan Tea Industry. This study was descriptive in nature and focused mainly on smallholder producers of tea in Othaya Sub-County, particularly farm households. In total, 240 households were selected in the study. The study established that most households use both hired and family-based sources of labour particularly during harvesting season which required much more labour compared to other activities. The study also demonstrates that cultural issues do not l impacts negatively on the tea productivity. In relation to the different roles/activities associated with tea production, the study found that females had more roles in tea production than their male counterparts who mostly undertook seasonal roles like tea planting and pruning. In addition, the study reveals that market price affects tea production in the area. The study recommends that Tea owners/farmers and managers should provide proper working environment to the human resources so as to obtain and maintain appropriate skilled labour force that will work competently in their relevant fields including efficient use of the physical resources such as modern machineries and equipment. The study also calls for deliberate efforts to sensitize all the relevant stakeholders on the need to equitably share the benefits from tea production. Lastly, the study highlights the need for the government and stakeholders of the tea industry to pay attention to the market factors such as market price to ensure they are favourable to the tea owners/farmers.


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## LIST OF ABBREVIATIONS/ACRONYMS

| | |
|---|---|
| AAAE | African Association of Agricultural Economists |
| ATPS | African Technology Policy Studies Network |
| CPDA | Christian Partners Development Agency |
| EU | European Union |
| FARA | Forum for Agricultural Research in Africa |
| FGD | Focus Group Discussion |
| FHT | Farm Household Theory |
| GDP | Gross Domestic Product |
| KNBS | Kenya National Bureau of Statistics |
| KTDA | Kenya Tea Development Authority |
| MGNREGS | Mahatma Gandhi National Rural Employment Guarantee Scheme |
| MNC | Multi-National Companies |
| PFP | Partial Factor Productivity |
| SPSS | Statistical Package for Social Science |
| SSA | Sub-Saharan Africa |
| TBK | Tea Board of Kenya |
| TFP | Total Factor Productivity |

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# CHAPTER ONE

# INTRODUCTION

## *1..1* Background to the Study

Agriculture is one of the main building blocks in the realization of the Millennium Development Goals (MDGs) across the world. According to the statistics released in 2011, it was projected that investments in agricultural production need to increase by about 70 percent by 2050 to be able to meet the world's food needs. Unfortunately changes in climatic conditions, high rates of population growth and urbanization are putting pressure on existing arable land (IFC, 2011). In Sub-Saharan Africa (SSA), the agricultural sector is still the economic foundation for the poor majority and its role in sustainable development cannot be overestimated. It is estimated that more than 90% of people in SSA rely on agriculture for their livelihoods (Bishu, 2014). According to EU (2007), agriculture is responsible for about a third of Africa's Gross Domestic Product (GDP) and provides between 60 and 90% of job opportunities in many countries.

Like the rest of African nations, Kenya largely depends on agriculture for her economic development and poverty reduction. The sector is the main-stay of the country's economy, providing many employment opportunities and one of the largest sources of foreign exchange income. The sector is directly and indirectly responsible for about 26% and 60% of the GDP respectively. The sector's indirect contribution towards GDP is through links with manufacturing and distribution sectors as well as service led industries (Koskei, Langat, Koskei and Oyugi, 2013).

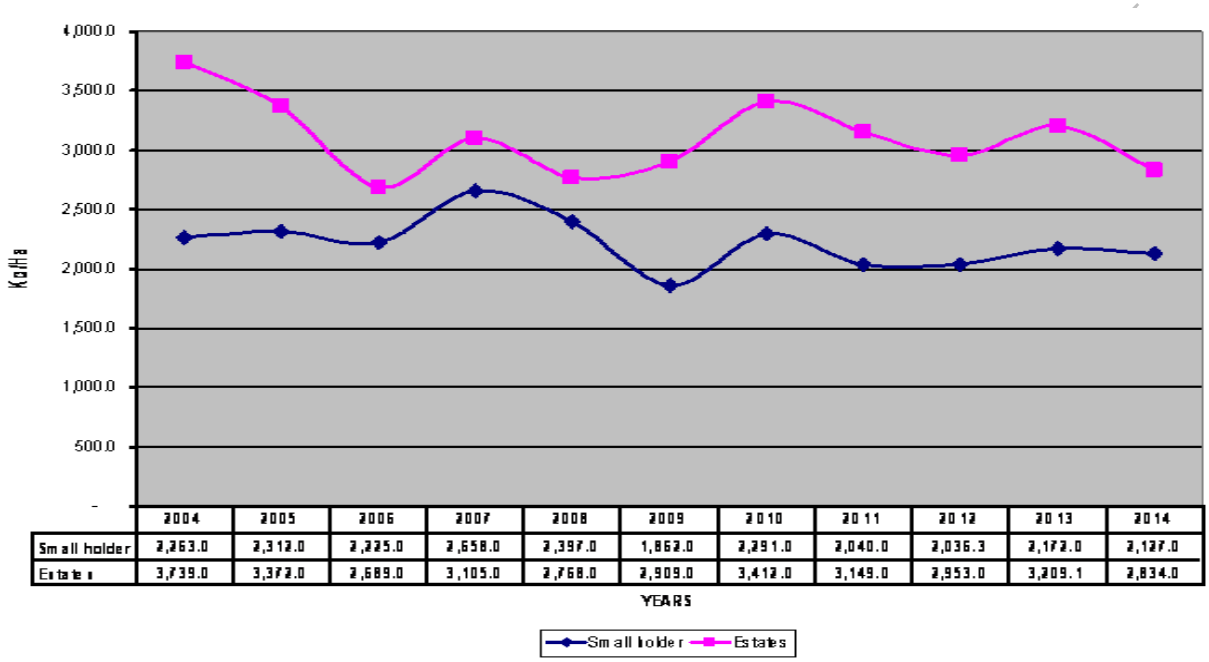
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Tea (camellia sinensis), which is one of the most popular-consumed beverage in the world, is currently one of the Kenya's leading player in the agricultural sector and foreign exchange earner (Tea Board of Kenya, 2012). In fact, Kenya is number three in annual tea production in the global arena, after China and India (Tea Research Foundation Kenya, 2011). Kenya's tea accounts for about 10% of production globally and about 22% of country's exports. The sector is second largest source of foreign revenue after horticulture constituting about 26% of the total revenues from exports and 4% of the GDP. In 2010, the sector shipped a record 412,000 tonnes of tea and generated 97 billion as revenue (TBK, 2012).

The main Tea producers in the world are estate and smallholders. Globally, about 85% of agricultural lands are hardly more than two hectares (United Nations, 2013). This implies that smallholders are the chief producers of crops in the whole world, including tea. Like other tea producing countries, Kenyan tea production is mainly practiced by both smallholders and large farms owned by big companies/multinationals which in the context of this study is referred as estates. The smallholder farmers are currently the largest producers with more than a half a million smallholder tea farmers (Muthamia and Muturi, 2015). According to Tea Board of Kenya Annual report (2010), tea estate companies account for 40% of Kenya's tea production while the remaining percentage, 64% comes from small scale tea farmers who are approximately 560,000 smallholders. The overall manager of these factories including Iriani is Kenya Tea Development Agency (KTDA) who provides both the technical and marketing services. (Tea Board of Kenya Annual report, 2009/2010). KTDA was established in the 1960s as a state owned parastatal with the objective of constructing and operating tea factories as part of plans to develop the small

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scale tea sector and increase income in the rural areas. Despite the larger proportion of smallholder tea farmers in many tea producing countries, their production levels seem lower than the estates.




| | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Small holder | 2,263.0 | 2,312.0 | 2,225.0 | 2,658.0 | 2,397.0 | 1,862.0 | 2,291.0 | 2,040.0 | 2,036.3 | 2,172.0 | 2,127.0 |
| Estates | 3,739.0 | 3,372.0 | 2,689.0 | 3,105.0 | 2,768.0 | 2,909.0 | 3,412.0 | 3,149.0 | 2,953.0 | 3,209.1 | 2,834.0 |

**Source:** Economic Survey, 2015

**Figure 1.1: Kenya-Average Yield by Sector**

In Kenya, it approximated that smallholder tea farmers harvest 40% less than the estates (Muthamia and Muturi, 2015). This simply implies that there are some key issues which need to be addressed. It is undeniable fact that in order to improve the overall agricultural productivity, there is need to boost the small-scale farmer's production (IFAD, 2011). Information is thus required to understand the various factors explaining the current trend of production among smallholder tea farmers. It is against this backdrop that the study is proposed.

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## *1..2* Statement of the Study Problem

The smallholder tea sub-sector in Kenya is viewed not only as the largest but also the most thriving smallholder schemes internationally. It contributes between 60% and 70% of the total production in Kenya. However, small-holder tea production continues to show sub-optimal decline of crop yield (Owuor, 2005) when compared to that of the estates (TRFK, 2011). Large scale tea estates used only 33,762 hectares of land compared to 84,266 hectares that was used by the small scale tea farmers in 1998 for production of tea. The estates produced 118.5 metric tonnes of tea which reflects to a yield level of 2,075 kilogram of tea per hectare, unlike the small scale tea farmers who produced 175.6 metric tonnes of tea translating to 3,954 kilograms of tea per hectare. (Anon 1999). In 2010, tea produced by the small-scale farmers was 2000 kg per ha compared to 2600 kg per hectare from estate producers (Kosgei et al., 2013). It is not surprising that recently, some small-scale farmers have decided to uproot their crops in order to plant alternative crops. There must be some underlying factors which account for the declining productivity.

Studies on socio-economic factors influencing tea production of smallholder sub-sector in Kenyan Tea Industry are few some with inconclusive results.

## *1..3* Objectives of the study

### 1.3.1. Overall objective

The overall objective of this study is to examine the Socio-economic factors influencing productivity of the smallholder sub-sector of the Kenyan tea Industry, with special reference to Othaya, Nyeri County.



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### 1.3.2. Specific Objectives

Specific objectives proposed can be summarized as below:

(i.) To find out the influence of availability of labour on the productivity of the smallholder sub-sector of the Kenyan Tea Industry.

(ii.) To examine the how cultural practices affect the productivity of the smallholder sub-sector of the Kenyan Tea Industry

(iii.) To assess the effect(s) of tea market prices on the productivity of the smallholder sub-sector of the Kenyan Tea Industry.

### *1..4* Research Questions

The above stated specific objectives would be met by finding answers to the following questions:

(i.) How does availability of labour influence the productivity of the smallholder subsector of the Kenyan Tea Industry?

(ii.) How does cultural practices affect the productivity of the smallholder subsector of the Kenyan Tea Industry

(iii.) What are the effects of tea market prices on the productivity of the smallholder subsector of the Kenyan Tea Industry?

### *1..5* Justification for the Study

The focus of the study is on tea production, since tea remains Kenya's largest agricultural foreign exchange earner. This research proposes to examine the main socio-economic factors which determine tea productivity by the smallholder farmers. Understanding these factors is important

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especially for organizations/institutions working with the smallholder farmers. In addition, the findings from this study could be useful in the achievement of the first and seventh MDGs of alleviating poverty and hunger respectively while ensuring sustainable use of the environment. The study results could assist government and non-governmental organizations (NGOs) in Kenya to improve the tea production. In addition, this will be useful in formulation of policies which aims at improved tea productivity.

Lastly, the findings of this study will add to the existing literature on tea production in Kenya and could form a basis of information for potential researchers who may be interested in carrying out further studies in the subject matter.

### *1..6* Scope and Limitation

Although there are various factors influencing crop productivity, this study will be restricted to the socio-economic factors with specific focus on tea production. It targets mainly smallholder tea farmers. It is restricted to availability of labour, continual subdivision of land, cultural practices and tea market prices. The study also relies on the theory of farm-household production. The research is confined to geographical jurisdiction of Othaya Sub-County.

However, the study may be affected by language barriers which may deter the process of data collection. To avoid this, research assistants will be mainly recruited from the study area. Suspicion and mistrust especially in regards to personal information (such as details of landholding) may get in the way of data collection and the study respondent may shy away from giving the needed information. Nonetheless, this will be taken care of by promising and



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assuring the respondent of utmost confidentiality and professionalism during the study. Another limitation is expected from uncooperative and non-respondents, but would be controlled by motivating the respondents and follow- up of the questionnaires respectively.

### *1..7* Operational definition of Terms

**(i). Harvesting labour**: This in this study means all activities related to tea picking

**(ii). Maintenance labour:** This comprise all activities related to manual and chemical weeding of pest and disease, putting manure and pruning.

**(iii). Smallholders**: These are defined in this study as tea farmers with a maximum arable landholding of 2 hectares irrespective of whether the land is entirely used for tea production or not.

(iv). **Tea productivity:** This means a ratio of tea output to the constraints inputs needed for its production. In other words, it is defined the tea output in metric tons per one unit of landholding in hectares.

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# CHAPTER TWO

# LITERATURE REVIEW

## 2..1 Introduction

This chapter is concerned with a review of the available literature on tea production pertinent to this research. The chapter begins with conceptualization of the key terms; productivity and smallholder sub-sector. This is immediately followed by a brief background of Tea Production in Kenya. Also in this chapter, a review of previous studies on the subject is briefly presented. The other areas presented in this chapter include: Availability of Labour under Smallholder Tea Production; The Number of Tea Bushes Used in Smallholder Tea Production, The Amount of Land under Smallholder Tea Production and Sources of Income Used in Small Holder Tea Production. This chapter then provides critical analysis of theory guiding the study followed by description of conceptual framework.

## 2..2 Conceptualization of the Key Terms

This section discusses in details the concepts; productivity and smallholder.

### 2.2.1. Productivity

Although there are different definitions of productivity, many scholars, practitioners and institutions all agree that productivity has to do with applications of inputs in order to realize some output for a given enterprise. It is a relative term and is associated with comparisons which are usually made either across some given time–frame or among various units of production units. For instance, if a given farm is able to achieve more yield/output using fixed input in time T1, then it is possible to conclude that productivity has improved. Another way of putting this is



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that, there is a higher production in the T2 compared to T1. A simple definition of productivity has been given by FARA (2006) where agricultural productivity refers to the value of output in relation to the quantity of inputs used in the whole process.

Another way of looking at productivity is by comparing it with specific number of factors. In this case, it can be classified as either partial or total productivity. Kabwe (2006) explains that Partial Factor Productivity (PFP) is the mean productivity based on a single factor, multiplied by the total output then divided by the quantity of a factor used. On the other hand, Total Factor Productivity (TFP) is achieved when all factors are considered when establishing a given productivity.

### 2.2.2. Smallholder Sub-sector

This is one of the two sub-sectors which make tea production. The Smallholder sub-sector has been conceived in a various ways. For instance, Conway (2011), in his study about smallholder farming, applied the term as those farmers with a maximum of two hectares of farms. Conway further illustrates that about 33 million people or 80% of all African farms are smallholders. In his definition, Conway explains that the smallness is a relative term and depends on the available resources including landholding, skills, technology, available labour, and financial capital.

According to Inter-Governmental Group (IGG), the term smallholder tea farmer in the context of Kenya refers to a farmer who engages in tea production but does not have processing factory of his or her own (IGG, 2012). Therefore, all tea farmers who supply KTDA managed fall in this

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category. However, for the World Bank, smallholders designate those with low asset base and depend on less than two hectares for their production (World Bank, 2003). This is similar to the definition given by Dixon, Taniguchi and Wattenbach (2003) where smallholders are viewed as having limited resources compared to other farmers in the agricultural industry. It can be concluded that the common element in all these definitions is the issue of limited resources. The current study adopts the definition of smallholders made by the Inter-Governmental Group in 2012.

### 2..3 The Kenya's Tea Sector

Tea production which is the second biggest source of foreign revenue operates under the auspices of the Ministry of Agriculture for technical and policy guidance (Koskei et al., 2013). The Tea Board of Kenya is the highest regulatory body in the tea industry, followed by Tea Research Foundation of Kenya. The entire organ trickles down to the farmers who are the producers, tea factories, traders and blenders down to those that package the commodity. The history of the Kenyan tea sector can be traced back to 1903 when tea was introduced by European traders/settlers who planted the first tea seedlings (Camellia sinensis) in Limuru, Kiambu County. Initially, the early settlers and the colonial government restricted tea cultivation only to large-scale farmers and multi-national companies (MNC) (Kosgei et al., 2013). However, the situation changed when the country gained its independence and the passing of several Land Reform Bills that have had lasting effects on agriculture (CPDA, 2008).

The tea sector in Kenya is currently practised by both Estate and Smallholder farmers. Estate cultivation of tea began in 1924 though planting was cut back in 1933 as a result of a depressed



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market only to be reversed later (Kimanthi and Muriuki, 2012). Smallholder tea cultivation can be traced back in the 1950's. The first small-holder tea production was established in 1957 in Ragati, Nyeri County. It is estimated that by 1964, there were about 20,000 smallholder farmers, growing a total of about 4,000 hectares of tea, but with a production level of hardly more than 10,000 kilograms of made tea. By 1989 the number of smallholder farmers had increased dramatically to over 214,000. With the increased number of smallholder tea farmers, KTDA was forced to give in to the pressure for an expanded manufacturing capacity by building new factories and acquiring old ones from international firms. The increased number of smallholder farmers and tea production challenged the dominance of the estate sub-sector as the main producer of Kenyan tea (Kimanthi and Muriuki, 2012).

Today, smallholder tea farmers are believed to be more than half a million distributed across the country and who supply KTDA processing factories (Muthamia and Muturi, 2015). The country is one of the leading black tea producers in the world. The main tea growing zones in Kenya are found in highlands including both sides of the Great Rift Valley. Some of the tea growing areas include the Kenya highlands especially areas around Kisii, Nandi and Kericho as well as Cherangani Hills. It also includes parts of central Kenya. Kenya's tea is responsible for 4% of GDP. A total earning of Kshs.103 billion were contributed by the sector of which Kshs. 97 billion came from exports and from the local market Kshs. 6 billion was earned. The small scale tea sector is a source of employment to more than five million Kenyans. The sector contributed Kshs.103 billion of which Kshs 97 billion came from exports and earnings from the local market (Kalunda, 2013).

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### 2.3.1. Tea and the Economy

Tea being the second leading foreign exchange earner, contributes about 26% of the total foreign exchange earnings. More than 3 million people depend either directly or indirectly on the tea sector for their livelihood. Tea growing and manufacture are carried out in the rural areas thereby contributing significantly to development of rural infrastructure as well as enhancing the economic well-being of rural communities. Substantial investment opportunities are provided by the Tea sector in areas of Tea growing, manufacturing, value adding and exporting. Tea and Human Health Tea has been proven to be a health-enhancing beverage. Tea, a natural drink, is cholesterol-free when taken without milk or sugar, contains no additives, preservatives or artificial colouring. Tea contains polyphenols or flavonoids that have powerful antioxidant properties which, as shown by research findings, could reduce the risk of developing certain diseases including cancers, heart and dental ailments.

### 2.3.2. The Tea Board of Kenya (TBK)

The tea industry is regulated by the Tea Board of Kenya which is the top organ of the industry, with the mandate to oversee, and promote the tea industry as per the Tea Act (Cap. 343) of the Laws of Kenya. The Board is guided by the Ministry of Agriculture and has a Board comprising of eleven directors who are elected by the small scale tea growers and the estates who are the main stakeholders of the tea industry. It also facilitates research in manufacture, pest and disease control sets policies, licences and registers trade development related to the tea industry. The Board, while licensing a new factory, makes sure that there is enough leaf to cover processing

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capacity, without creating over-capacity in any given zone. Licensed factories are required to maintain a register of growers falling under them, on behalf of the Board. If the terms and conditions of the license are violated, the Board may vary, cancel or suspend any license issued to a company. Adherence to all aspects of tea regulation and control of cultivation and manufacture of tea are monitored by the Board. There are 62 licensed small scale tea factories which are managed by Kenya Tea Development Agency Limited and 39 factories that are managed by private large scale tea growers (estates). A factory must have 250 hectares of mature tea bushes to run the factory before it is licensed. It has so far developed and released over 49 well-adapted Tea varieties to growers.

### 2.3.3. Key Tea Industry Institutions in Kenya

Several institutions have been established for the smooth running of the Tea sector in the country. First, there is the Tea Research Foundation of Kenya (TRFK). TRFK is responsible to carrying out research on Tea and advising growers on the control of pests and diseases, improvement of planting material, general husbandry, yields and quality. It has so far developed and released over 49 well-adapted Tea varieties to growers.

Another key institution is the Kenya Tea Development Agency Limited (KTDA). This is the management agency of the smallholder Tea growers. It is responsible for the management of smallholder Tea sub-sector by providing extension services, production inputs, green leaf collection, processing and marketing of processed tea for the smallholders.

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In the year 1957, the first small-holder tea factory was constructed in Ragati, in Nyeri, and was run through a management agreement with multinational tea companies. Three years later (1960), the Special Crops Development Authority (SCDA) was established under the Ministry of Agriculture with the aim of overseeing this important sector. In 1964, the Kenya Tea Development Authority (KTDA) was established under the Agriculture Act (Cap 318) Section 91. (Legal Notice No.42), taking the place of the Special Crops Development Authority. The authority took over small-holder management from multinational tea companies.

KTDA among other key parastatals were listed by the Parastatal Reform Strategy Paper for privatization in 1991. In 1999, the KTDA Order was revoked through Legal Notice No.44 and in the following year, on 30th June, KTDA (Authority) was converted into a private company, the KTDA (Agency) Ltd and registered under the Companies Act as Kenya Tea Development Agency Limited. At the time of privatization, there were 45 small-holder factories. Currently KTDA manages 62 Tea factories in the smallholder sub-sector serving over 500,000 growers.

Kenya Tea Growers Association (KTGA) is yet another important organization in play in the Tea sector. It was established to promote the common interests of the members who are large-scale Tea producers. The plantation/estate sub-sector maintains 39 tea factories.

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## 2..4 Trends in Tea Production between Estate and Small-holders

The Tea Industry in Kenya is unique by the fact that it is composed of two distinct sectors. These are the large tea estates and small scale tea farmers who own the tea estates and small tea factories for the small holders sector. More than half a million tea growers, located across tea growing areas in the country, are registered with the small scale tea sector in all tea growing and are managed by Kenya Tea Development Agency Limited (KTDA).

Table 2.1: **Production, Area and Average Yield of Tea (2010-2014)**

| YEAR ( CALENDAR YEAR) | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| AREA ('000 Ha.) | | | | | |
| Smallholder..... | 115.0 | 123.3 | 124.9 | 127.3 | 128.6 |
| Estates..... | 56.9 | 64.5 | 65.7 | 71.3 | 74.4 |
| TOTAL | 171.9 | 187.8 | 190.6 | 198.6 | 203.0 |
| PRODUCTION ('000 Tonnes) | | | | | |
| Smallholder..... | 225.0 | 216.6 | 216.5 | 249.8 | 262.4 |
| Estates..... | 174.0 | 159.3 | 150.9 | 182.6 | 182.7 |
| TOTAL | 399.0 | 377.9 | 369.4 | 432.4 | 445.1 |
| AVERAGE YIELD (Kg/Ha)*** | | | | | |
| Smallholder..... | 2,291.0 | 2,040.0 | 2,036.3 | 2,172.0 | 2,127.0 |
| Estates..... | 3,412.0 | 3,149.0 | 2,953.0 | 3,209.1 | 2,834.0 |

**Source:** Economic Survey, 2015
Area under tea increased by 2.2%
The small-holder production contribution increased by 2.9 % from previous year

Table 2.1 shows the trend in the tea sector comparing smallholder and estates in terms of area, production and average yield per hectare for the period between the year 2010 and 2014. The area under tea has continually increased in those five years. However, the production slumped in 2011 from highest in 2010. In 2013, the sector reversed the trend and saw a rise in productivity.

### 2.4.1. Small Holder Tea Production Economics in Kenya

The small holders under KTDA contribute to the economy in the following ways: It earns the country foreign exchange, employment creation, infrastructure development, Source of government revenue through taxes, promotes exports and rural industrialization. Economic growth of the country through foreign Exchange has been brought about by tea as the largest foreign exchange earner in the country. In 2012/13 financial year, tea from Kenya earned over Kshs.110 billion in foreign exchange, out of which the small holders contributed about 60% (i.e. Kshs.69 billion). In terms of Gross Domestic Product, the tea industry injected 4% to the economy, with small holders contributing more than half of this. Employment creation has also been brought about by the small scale tea sub-sector and has created job opportunities to approximately 10,000 Kenyans across all its operations. At the farm level, the Group supports more than 560, 000 small scale tea farmers who supply green leaf to KTDA- managed factories. The sub-sector has also provided employment opportunity for tea pluckers. Today, the tea industry in Kenya supports about four million people who are directly or indirectly employed in the small scale tea industry.

Infrastructure development and Rural industrialization has improved since the small holder factories maintain feeder roads around the tea catchment areas by fixing potholes, laying out culverts and digging trenches. This makes the roads passable even by other general road users. The factories also generate electricity. The small holders have established 66 tea factories in rural Kenya and this has encouraged expansion of rural centres and reduced rural-urban migration. Green leaf collected from the farms is delivered to the factories where processing

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takes place. The small holders sub-sector is a source of revenue to the government, as it remits taxes and levies. These numerous taxes, including the Ad Valorem levy, are burdensome to the small-scale tea farmers. Socially, KTDA helps communities in a number of ways. Through the KTDA Foundation, KTDA has contributed significantly in the following areas like Education, programme for needy children, Environmental sustainability, Health to growers and Capacity Enhancement for Economic Empowerment.

The KTDA Foundation runs the National Tea Scholarship programme that supports the needy but bright students pursue education in secondary school. Currently, KTDA Foundation supports 141 students in various schools across the country. In alleviating the effects of climate change KTDA has taken an active role by encouraging farmers to embrace more sustainable farming techniques that have positive influence on the natural ecosystem. In the financial year 2012 – 2013, the Foundation planted a total of 396, 700 indigenous tree seedlings countrywide. The small holder factories have purchased a total of 17,546 acres of land for tree planting. Chinga, Gitugi and Iriani Tea Factories are part of the projects. Through the KTDA Foundation, other initiatives on health and economic empowerment have been rolled out in tea growing areas.

As earlier mentioned, smallholders are the chief producers of crops in the whole world, including tea. When farming is done by smallholders for the purposes of earning income, return on their investment also becomes a major concern as they are expected to meet their social obligations while at the same time continuously improve their standards of living. On the other hand, consumers have expressed themselves pointing out their readiness to buy ethically produced tea

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assured by third party bodies, adding to the need for sustainable tea production (Divney, 2007; Sanne van der Wal, 2008).

Table 2.2 illustrates more on the economics of smallholder tea production.

Table 2.2: **Smallholder Tea Farm Economics (One Acre)-2014/15**

| INCOME | HIGHEST PAID | AVERAGE PAID | LOWEST PAID | Per Kg GL |
|---|---|---|---|---|
| Production (@3,500Kg GL p.a.) | 3,500 | 3,500 | 3,500 | |
| 1st Payment Rate (Kshs per Kg GL) | 14.00 | 14.00 | 14.00 | |
| 2nd Payment Rate (Kshs per Kg GL) | 38.50 | 27.61 | 17.30 | |
| **Total Payment Rate (Kshs per Kg GL)** | **52.50** | **41.61** | **31.30** | |
| **TOTAL INCOME** | **183,750.00** | **145,635.00** | **109,550.00** | |
| EXPENDITURE | KSH | KSH | KSH | |
| PLUCKING 3,500 KG X KSH 8.00 | 28,000.00 | 28,000.00 | 28,000.00 | 8.00 |
| PRUNNING (1/3) 1,167X KSH 3.00 | 3,500.00 | 3,500.00 | 3,500.00 | 1.00 |
| TIPPING(1/3) 5 Md X KSHS 250 | 1,250.00 | 1,250.00 | 1,250.00 | 0.36 |
| WEEDING 5 Md X KSH 250 | 1,250.00 | 1,250.00 | 1,250.00 | 0.36 |
| FERTILIZER (Govt. Subsidized) 5 BAGS X KSH 2,000 | 10,000.00 | 10,000.00 | 10,000.00 | 2.86 |
| TEA CESS 1 % | 1,837.50 | 1,456.35 | 1,095.50 | 0.42 |
| OVERHEAD COST 7.5% | 3,437.81 | 3,409.23 | 3,382.16 | 0.97 |
| **TOTAL EXPENDITURE** | **49,275.31** | **48,865.58** | **48,477.66** | 13.96 |
| **NET INCOME PER YEAR (KSHS)** | **134,474.69** | **96,769.42** | **61,072.34** | |
| **NET INCOME/KG. GL/P.A.(KSHS)** | **38.42** | **27.65** | **17.45** | |
| **AVERAGE FARM COST (KSHS/KG GL)** | **14.08** | **13.96** | **13.85** | |

**Source** : Economic Survey, 2015

## 2..5 Previous Research/Studies

There have been studies carried out on factors influencing crop production with some of them coming with contradictory conclusions. Below is a review of some of the previous studies. Rymbai, Singh, Feroze and Debbarma (2012) relied on survey data and secondary sources of data to study challenges facing tea growers in relation to supply of labour. The authors have quite interesting observations, particularly the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), like government policy which adversely impacted on the

available labour for tea production. Other factors which affect labour include rural-urban migrations, self-employment and shifting of farming to other crops. Rymbai et al., (2012) conclude that because of this, yield has been greatly affected. Although the study offers useful insights, it is restricted to India which raises the question on whether the study's interpretations and conclusion are relevant in the Kenyan context. Kabwe's (2012) study was carried out in Zambia with an aim of the efficiency of cotton farmers within the study area. The study also sought to determine socio-economic and farm specific variables influencing cotton production. The author found a negative relationship between farm size and productivity. This, the author attributes to the fact that that large cultivated lands tend to experience many challenges in applying various forms of farm inputs including farm- labour to complete some inevitable operations within the right time hence inefficient way of using the needed farm inputs . The study recommends that cotton farmers should come up with appropriate strategies for improved accessibility to factors of production. This study provides a good insight except that it focuses on cotton which is quite different from tea.

Kibere1, Kimani and Lodiaga (2013) were motivated by the current discrimination against women to study gender dynamics in the access and hence control of benefits accumulated from tea farming in Kiganjo Division, Gatundu Sub-county. To accomplish this, the study made use of simple random sampling to select two sub-locations. Furthermore, random sampling was employed to recruit 73 tea-farming households. In their study, the respondents were primarily the heads of the households and two officials from Theta Tea Factory. The findings showed that within the households headed by men, women were discriminated against accessing and

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controlling tea benefits. The study identified that the Kenya Tea Development Authority (KTDA), culture, widowhood and the level of education were the barriers that fostered gender discrimination. It thus recommends for the necessity to sensitize the stakeholders to promote and practice equitable sharing of the tea benefits. Kiprono's (2013) research was aimed at investigating economic efficiency of tea cultivation and identifies the socio-economic factors of economic efficiency of small-scale tea producers in major tea growing areas, Kiambu and Kericho Counties of Kenya. The study relied on exploratory approach. Findings revealed that land under tea and plucking labour significantly influenced economic efficiency. Plucking labour positively determined economic efficiency of production while the size of tea farm inversely affected economic efficiency of tea farmers. The study recommends that tea producers with bigger lands should practice optimization of available resources for use and compliment the limited labour by mechanization of farm operations.

A study by Mwangi (2014) was performed to establish the socio-cultural factors affecting tea productivity. Mwangi concentrated on the management skill of farmers and how this affected tea productivity, how land ownership influenced tea productivity and also how demographic factors also affected the tea productivity. The study followed descriptive survey method and sampled out a total of 302 respondents. The author observed that tea productivity of farms owned by the young and old farmers was lower compared to those owned by the others age categories. Managerial skills were seen as key factor affecting tea production in the area.

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Even though the study provides good background information and important contribution, it was limited to mainly social cultural factors affecting tea productivity. The current study on the other hand went ahead and looked into other possible factors which may have influenced tea productivity.

### 2..6 Labour under Smallholder Tea Production

Farm labour is one of the important inputs in agriculture. Labour can be defined as a farm resource with which financial inputs and managerial skill are used in order to have some form of output from a given arable land. It can also be viewed as one of the productive resources offered by man through exerting some physical effort and skills (Akanni and Dada, 2012). Labour is not a homogeneous input and therefore varies from one person to another. Agricultural labour can be divided into threefold group namely: i) communal labour ii) hired labour and, iii) family-based labour.

For most smallholder tea growers, casual (family) is the main source of labour. This is partly attributed to the fact that major activities for tea production/ harvesting is usually on seasonal basis hence amount of work needed varies with specific months or year. Casual sources of labour are also preferred because they are affordable compared to the more permanent ones. In most cases, casual labourers are employed as a response to seasonal work peak common during planting and harvesting seasons.

Hence, any delay in labour may negatively affect yield or output since they are vital for various tasks which must be completed within a given time period. Bravo-Ortega and Lederman (2005)



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note that agricultural labour particularly manual labour has a considerable impact on the mean income of the first income quintile and that this relationship is uniform across various regions. However, they also show that agricultural productivity has a lesser effect on the incomes of the poorest as compared to non-agricultural labor productivity. This means that labour impacts agricultural productivity including that of tea either positively or negatively depending on the existing circumstance or the degree of its availability.

In a study carried out in India to identify challenges facing tea growers in respect to labour supply, Rymbai, Singh, Feroze and Debbarma (2012) observe that limited supply of farm labour leads to low productivity. The study recommends for an appropriate work calendar to be followed in order to ensure constant supply of labour. The study also advocates that planting should be done during the lean season to manage labour shortage for farm-based operations. While this study gives important direction, the authors do not make any distinctions on the types of labour required in the farm. As a result of this, it is not possible to draw clear conclusion as to which specific activity or labour requirement has more effect on tea production.

In this study, distinction between harvesting and maintenance labour requirement will be made. Harvesting labour encompasses activities such as tea picking whereas maintenance labour in this study relates to all the manual weeding or application of herbicides to control pest and disease. It also includes pruning and application of manure on the farm.

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## 2..7 Factors which determines the Number of Tea Bushes used in Smallholder Tea Production

Studies illustrate that the number of tea bushes is directly proportional to tea production. In other words, a farmer with more number of tea bushes in his or her farm is more likely to have higher tea production compared to one with less tea bushes. Kiprono, Sudoi, Kaburu and Mwaura (2011) in their study observe a positive and significant correlation between yield/production levels and number of tea bushes of the smallholder farmer. They explain that a farmer with more tea bushes has higher chances of concentrating on the tea production by spending more time in the farm, investing more in form of fertilizer applications and other inputs aimed at improving the overall productivity. On the other hand, few tea bushes are associated with fewer commitments in terms of time spent in the farm consequently leading to low output. Although Kiprono et al (2011) gives important insight, little has been done to show the factors influencing the number of tea bushes. The scholars have only focused on the importance of size of bushes or number of tea trees. The proposed study will focus on the factors which influence the number of tea bushes considered by small-scale tea farmers.

Land size has also been cited as relevant to tea production. In any agricultural production, 1and size has a considerable impact (negative or positive) on the production of crops. A lot of studies have been conducted to ascertain the relationship between the farm size and productivity but with mixed findings. Some (Esenu, 2005; Haile, Alema and Kudhlande, 2005) support the proposition that farm size is directly proportion to productivity. On the other hand, some scholars (Kabwe, 2012; Mazumdar as cited in Teryomenko, 2008, p.6) have shown a negative relationship between farm size and production and have attributed this to intensive farming and

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use of family labour. These groups of scholars argue that big farms require more inputs and manpower hence leading to more operational costs in form of time commitments, resources and the general investments.

Other researchers such as Teryomenko (2008) explain that there is a non-linear relationship between farm size and productivity. Mazumdar (cited in Teryomenko, 2008, p.6) is one of the first pioneers who established that there exists an inverse relationship between size of farms and levels of crop production. Using data from two major tea growing district in India for a period between 1955 and 1956, Mazumdar explains that the inverse relationship between farm size and productivity is attributed to the fact that family labour is used for cropping on small farms while that of hired labour is used on big lands. This simply means that incentives for more productive work is higher for family members rather than for hired workers. In addition, it may be correct to assume that families with small farms tend to use other factors of production more intensively to realize more output.

Kabwe (2012) in his study about smallholder cotton producers of Zambia also favours the superiority of smaller farms in terms of their production after observing an inverse relationship between the farm size and productivity. The author suggests that large firms tend to have more challenges related to inputs needed such as application of fertilizers and labour when they are needed hence leading to less efficient way of using farm inputs. Taking the case of cotton, the author observed that cotton farmers with smaller farms were able to combine their resources for efficient use leading to improved yield. A more recent work of Kiprono (2013) also support that

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notion that an increase in farm size tend to lower production and therefore recommends that tea producers with bigger farm holding should consider maximization of available resources use and if possible compliment the inadequate labour supply by mechanizing farm operations.

The works of Rios and Shively (2005), Esenu (2005), Haile, Alema and Kudhlande (2005) works have shown that the larger the size of the farm the higher the productivity. This conclusion tends to come from countries with more developed agricultural practices characterized by high technological and mechanized practices. In this context, Rios and Shively (2005) studied the influence of farm size on productivity using the data on coffee farms in Vietnam and was able to reject the earlier proposition that there exist an inverse relationship between the two variables, size of land and productivity. The author argues that other factors such as mechanization, and household's level of education came in handy towards improvement of crop productivity. The author also argues that other factors which could have contributed to improved yield were access to credit and investment. Haile, Alema and Kudhlande (2005) also found that farm size was positively and significantly related to the probability of a given household being food secure in Ethiopia. Specifically, this increments was based on a 6% probability for every additional hectare of farm size. A more interesting finding is that of Teryomenko (2008) who while studying Farm Size and other factors of Agricultural Productivity in Ukraine, noted that the kind of relationship which exists between farm-holding size and productivity is nonlinear. In other words, he observes that productivity tend to rises at first to a certain level then drops.

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All these studies tend to lay more emphasis on the factors promoting productivity. However, the issues of factors influencing the number of tea bushes used in Small holder tea production have not been comprehensively explored hence the need for proposed study.

### 2..8 Cultural Issues associated with Smallholder Tea Production

Crop production especially cash crops (such as tea) is affected by various cultural issues. The effect of cultural issues is well documented (Pender & Gebremedhin, 2007). They point out that cultural taboos against women have forced female-headed households in Tigray, Ethiopia to use less labour and draft power compared to their male counterparts. Similar observations are quite prevalent in many parts of East Africa including Kenya whereby some activities like ox-ploughing are only done by men. Lower agricultural productivity levels among households headed by a woman have also been reported in Ecuador probably due to cultural prejudices (Larson & Leo´n, 2006). It was more interesting to find out if this was the case for tea production in Othaya.

Discrimination against women has made them experience multiple deprivations because of the interaction of economic and social processes (World Bank, 2000). Overholt (2008) pointed out that there are various deep-rooted socio-economic factors that motivate crop production and farming in general. According to a report by UNDP (2001), access to and control of productive resources is linked with membership in social groups while the kinds of relations among members influence trends of production and land ownership including sharing of proceeds. It is within this perspective that the current study endeavoured to establish whether there are some cultural issues linked to tea production in the study area.



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In Malawi, Parameswaran (2012) illustrates the dynamics of gender in agriculture. The author explains that in Malawi, the farmland was traditionally passed down matrilineally, because farming was seen traditionally as a "female" occupation. Here, males marry into families and move to their wives' land. The author adds that in this type of community, women were culturally and economically tied to their lands. This left the men to go out and find floating employment to give additional support to the household. The authors further asserts that with the introduction of commercialized agriculture, particularly through the greater emphasis on cash crop (tobacco) production, there was additional stress on gender relations where the independence of the female farmers are compromised with men seen as assuming the responsibility to trade their household's produce on the open market.

This research by Parameswaran seems to focus largely on how cash crop production has affected gender relations. While it offers very good insight into cultural issues, it does not enrich or open up new horizons in the scholarship of the subject (in Kenya). This is where the current study will do better. It will go beyond gender and explore other cultural issues which affect tea production in Othaya, Nyeri County.

The study by Kibere et al. (2013), similar to Parameswaran's study, also demonstrate the dynamics of gender discriminations based on the Kenyan context where women in the households headed by men are discriminated in the area of access to and control over tea benefits. KTDA, existing culture, the level of education and widowhood are the main culprits

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and drawbacks that foster gender discrimination and recommends for the need to sensitize the stakeholders to promote and practice equitable sharing of the tea benefits.

### 2..9 The link between the Tea Market Price and Tea Production

Agricultural marketing can be conceived as the entire gamut of activities that control the flow of goods and services from the farmer to the ultimate consumer. As indicated by a report by World Bank (2007) agricultural productivity/marketing determines food prices, which then influences wage costs and other inputs needed in addition to competitiveness of tradable goods leading to a convergence of effects that in general determine the real income effects of increased output for farming households.

Irz et al. (2001) showed that increased agricultural output can modify the relative prices of agricultural outputs consistent with the substitute or complimentary products, in addition to the costs of inputs to be produced. The study continued to note that if by any means the increased output leads to declined product prices or the production costs rise due to increased demand, then it may mean that an increase in an agricultural output may not sufficiently translate into higher real farm income. However, the World Bank (2007) reported that growth of output may not increase incomes of farm households if the price effects offset the production gain. The report added that, in spite of this, crop price effects depend mainly on the tradability of the crop.

Market price and crop production tends to be inversely proportional. In other words, an increase in market price may lower production and verse-versa (Sanne, 2008). Low prices are impacting the sustainability of the agricultural sector, with working conditions and the livelihoods of both



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plantation workers and small-scale farmers in cash crop producing countries being under pressure (Sanne, 2008). However, according to González (2007) one needs to consider the price volatility and the importance of price risk for producers' welfare in order to understand better how market prices affect producers or farmers. Extensive empirical research including that of Bünücü et al., (2003) reveal that farmers are overwhelmingly risk averse, and it is therefore natural to assume that they would benefit from the price hedging instruments. However, as revealed by González (2007), implementation of these instruments has been slow.

Price evolution and volatility at important auction markets around the world are believed to be portrayed by Tea market price dynamics. The tea market is almost free of intervention with only country specific trade barriers set; these mainly being import tariffs that are well below World Trade Organization (WTO) committed maximum rates. Regional bodies such as Common Market for East and Southern African Association (COMESA) for the African tea markets too do affect Tea market prices. Though being a key destination for Kenya tea, COMESA is rather small compared to Kenya's total shipments to Asia and the European Union.

Zheng et al. (2009) studied the impact of recent rise in prices of grain because of ethanol production and its effect on cost of feed and farm prices. The autoregressive distributed lag model (ARDL) was used to study it's relationship. Results show that 1% rise in prices of corn caused 0.134% and 0.263% rise in prices of feed in the short and long-run respectively. Additionally, 1% rise in feed prices caused the catfish farm prices to rise by 0.106% and by 0.211% in the short-run and in the long-run respectively.

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Using autoregressive distributed lag approach, Baek and Koo (2009) studied the short and long-run impact of macroeconomic factors such as prices of agricultural commodity, interest prices and exchange rates on the U.S. farm income. Results show that prices of commodities and interest rates have been important factors in influencing U.S. farm income in both the short and long term. Also, it was shown that exchange rates play a key role in influencing long-run behaviour, but have little effect in the short term. Although the study is not directly concerned with tea production, its significance is that the authors show the effect of price on the farmer. The current study builds on this.

Baffes and Gardner (2003) also utilize the error-correction model to approximate the responsiveness of domestic prices to changes in the global markets. The authors analyze price transmission for 10 products on a country-by-country basis for the period between mid 1970s to mid 1990s. Moreover, the estimation of price adjustment indicates that changes in the world prices represents for only a small share of the change in domestic prices. The two researchers, additionally, investigate whether or not policy reforms under the structural adjustment programs (SAPs) improved price transmission. The findings show that in most countries particularly in the developing world, the reforms had very limited impact on price transmission.

In their study, Tanui et al., (2014) explain that the ability to vary output in the short run is a significant facet of tea production with respect to tea market price and productivity, which is unique and differentiates it from other crops. Tanui and his colleagues postulate that when market prices get to their lowest, output may be limited by resorting to finer plucking. On the

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contrary, coarser plucking is fostered by high market prices. Basically, this relatively high short-run price elasticity means that producers are able respond faster to cases of overproduction and over abundances in stocks. It is through this instrument, the study explains, that the efforts at price control have to operate. Consumption can be increased by proper marketing on the demand side. The study recommends that sharing of information and opinions between producers and consumers as well as private and public sectors could be a good way of encouraging better market transparency. Even though this study provides valuable information on the market price of tea, it was mainly aided by econometric procedures. It lacks empirical evidence too.

The current study focused exclusively on the tea sub- sector and analysed the effect of market prices on tea production. One of the reasons is insufficient interest from producers. To better understand how market price affects tea production, One question is of relevance. Is the small-scale tea growers risk averse, as the empirical and experimental literature involving other smallholder farmers indicates?

**2..10 Theoretical and Conceptual Framework**

The role of theoretical framework in any study cannot be overestimated. In this section, theory which will be useful in analysis of socio-economic factors influencing smallholder tea production is presented. This offers the foundation upon which the empirical assessment and other methods used to find answers to the set research questions are developed.

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### 2.10.1. Theory of the Farm-Households

The main proponent of Farm-Household Theory (FHT) is Chayanov. Dating back in 1925, this theory assumes that farm households simultaneously operate as producers and consumers and are forced to make various decisions or balance between maximizing utility and farm productivity. According to Chayanov (1925), every household must strike a balance between satisfying the household needs and the level of drudgery of labor. To illustrate this, Chayanov (1925) explains that each and every household desire a yearly output which is enough for the family's basic needs. However, this evokes some drudgery, and the household does not use its labour beyond the point where the anticipated improvement in yield is overwhelmed by the need for extra work. He illustrates that most small-scale farmers can afford to work long hours or more intensively and sometime even both. This he called an exploitation of family labor. The author also argues that most households would only invest their labour if they are convinced that it would result in increased yields to either cater for household's needs or expand farm investment or sometimes both. In application, the FHT is based on the following tenets:

i.) Land accessible for production purposes by a given household is often fixed and dictated by the production cycle.

ii.) There is ready market for labour which can be exchanged for some wages during production cycle.

iii.) Families have the options of either to invest for their own consumption or sell their produce to acquire non-farm consumption-goods.

iv.) In Food surplus farms, households tend to hire in more labour relative to hiring out.

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FHT has faced criticisms especially on its inapplicability to heterogeneous smallholder economy. This notwithstanding, the model facilitates improved understanding of the dynamics of small-scale agricultural families and non-farm activities/investments. In addition, FHT is able to simplify family's simultaneous involvement in continuous decision making about production and household consumption needs into a more recursive form where decision about farm production can be taken as independent of the members' tastes/preferences.

### 2.10.2. Relevance of the Theory

This theory fits well with the current study as it can explain how smallholder tea producers exploit available labour for picking tea and improvement of production through consistent tea plucking and other maintenance inputs to achieve good tea that would attract better prices. The family unit must offset for the cost of labour used through incomes from their tea produce. This is expected to improve on the revenues accrued as a result of good quality leaf volumes.

### 2.10.3. Conceptual Framework

The Conceptual framework is an illustration of the relationships between the variables identified for the study. Figure 2.1 presents conceptual frame-work for the proposed study.

The conceptual framework presented clearly paints a visual picture of how various variables are inter-related. In this study, the productivity of small-scale tea producers in the study area is taken as the dependent variable while the independent variables are the factors that in one way or the other affect the productivity of these smallholder tea farmers in the sub county. This includes

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issues related to the number of tea bushes, available labour, cultural factors and market price. This framework also illustrates that the overall productivity is affected by intervening variables which in this case include age, levels of education and gender.

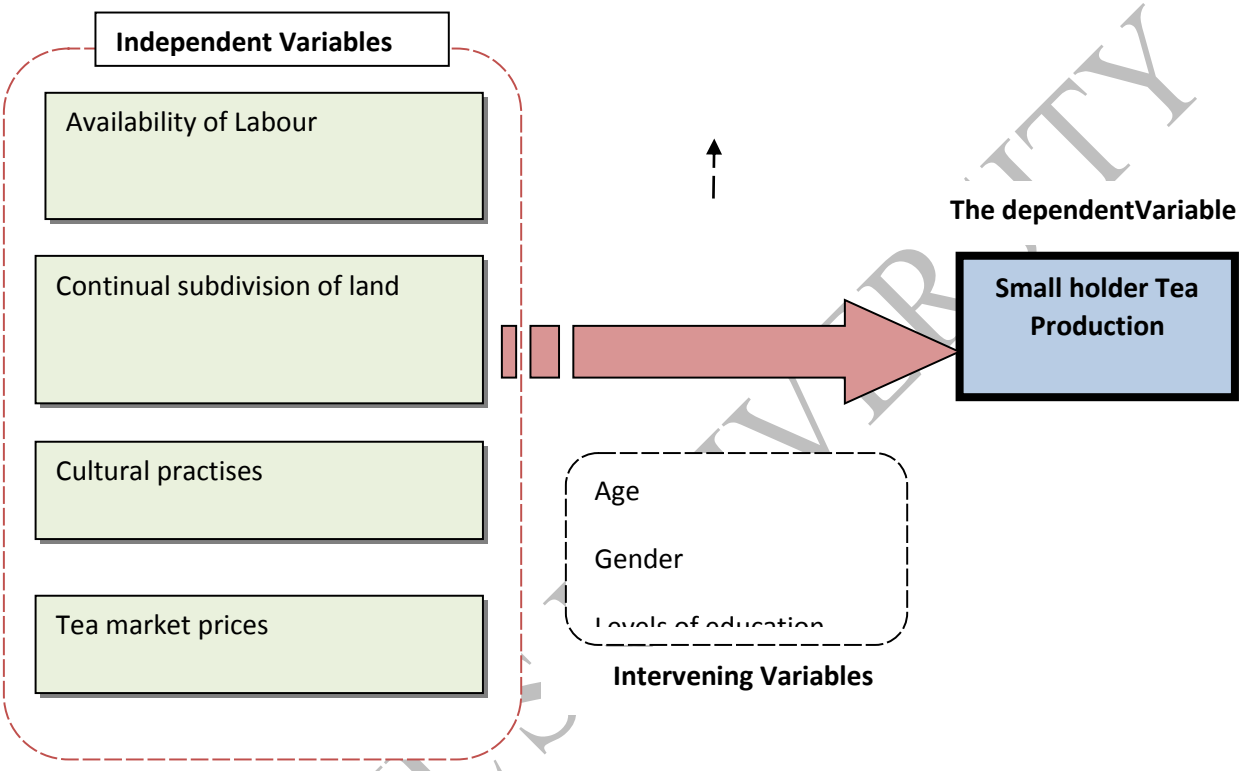



Figure 2.1: **Conceptual Framework**

## 2..11 Research Gap

The literature review sheds light on how productivity can be impacted by various factors. The tea productivity of smallholder farmers' in Othaya, Nyeri County is still below the potential. To fill the knowledge gap, hence, this study endeavoured to explore the degree to which each of the factors such as of availability of labour, continual land sub-division, cultural practices and tea market prices affected the productivity of the smallholder sub-sector of the Kenyan Tea Industry.

The current study also helps in bridging the current knowledge gap by reconsidering what is known elsewhere and what has been established in Othaya, Nyeri County.

## 2..12 Summary

This chapter is a review of relevant studies with respect to the topic of the study. The researcher has surveyed as much literature related to the topic/problem as possible, highlighting key themes and conclusions as well as recommendations by various authors/researchers. The main aim of this chapter has been to show how socio-economic factors interact with productivity of the smallholder sub-sector. This chapter has been presented by first conceptualizing important terms in order to bring them into the context of the current study of productivity and smallholder sub-sector. The chapter also drew attention to the background of Tea Production in Kenya. Key to this is the fact that Tea production in Kenya has come a long way. Previous studies on the issue, availability of labour, the amount of land, and the number of tea bushes and sources of income; all under smallholder tea production, are other important areas reviewed in this chapter. This chapter has also provided vital analysis of the theory guiding the study and description of conceptual framework. The next chapter now presents research methodology.

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# CHAPTER THREE

# RESEARCH METHODOLOGY

## 3.1. Introduction

This chapter concerns proposed research methodology for studying socio-economic factors influencing smallholder sub-sector tea production in Othaya Sub-county. The chapter has eight sections. The first section elaborates on the research design; the second section presents a brief description of study area, the third concerns target population, forth section is the presentation of sampling methods and sample size. Data collection and procedures are in section five while issues of validity and reliability are discussed in the sixth section. The seventh section describes data analysis and the last section highlights on ethical issues to be considered during the study process.

## 3.2. Research Design

Research design means different things to different people. However, in this study, the research adopt definition given by Creswell (2012) where it refers to the various steps which must be followed during data collection, analysis, data interpretation and reporting of research findings in a way that addresses specific research objectives or questions. This study adopted descriptive survey design since it answers the why, how and when of the phenomenon under investigation (Mugenda and Mugenda, 2003). This design is aimed at fact finding without any manipulation of the variables. Descriptive research design has several advantages. However, in this research the use is informed by the fact that it is possible to use various types of data while also

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incorporating experiences of human nature. The other reason is that it provides a larger overview which is not possible in other designs.

### 3.3. Description of the Study Area

The choice of study area is Othaya, Nyeri County. This area occupies 174.70 $Km^2$ and is one out of the six constituencies found in Nyeri County. The other constituencies are: Kieni, Tetu, Mukurwe-ini, Mathira, and Nyeri Town. Othaya occupies an area of 846 $km^2$ and is situated between 0° 34' 0" South and 36° 57' 0" East. Othaya is located about 1, 500m above sea level and is characterized by highlands equatorial climate where temperatures are relatively lower than those of equatorial zone. Typical Rainfall pattern is equatorial with long and short rains by virtue of being within the highland equatorial zone of Kenya. The long rains occur from March to May but the short rains begin from October to December. However, this pattern is occasionally disrupted by abrupt and adverse climatic changes. The yearly rainfall is 1,500 mm accompanied by temperatures which range from of an annual minimum of $12^oC$ to a mean of $27^0$ C (Republic of Kenya, 2008).

Othaya has a population of 87,374 and density of 176 (KNBS, 2010). Most of the inhabitants of Othaya are Agikuyu ethnic group. The main economic activity in this area is agriculture with Tea and coffee as the main cash crops mostly grown by small-scale farmers. The main food crops are maize, beans and Irish potatoes (Owuor et al., 2010). This is partly attributed to its well drained and good red soils. Besides, it has self-sufficient surface and sub-surface water resources. The existing land tenure system is also favourable to agricultural production. All the land is sub-

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divided and owners issued with title-deeds which can be used to secure loans. Most of the agricultural produce is from smallholder farms which produce both food and cash crops. This sector directly/indirectly employs about 90% of the population (Nyeri District Strategic plan, 2005-2010).

**Table 3.1: Locations of Othaya Constituency**

| Name | Population (2009 National Census) | Area ($Km^2$) | Description |
|---|---|---|---|
| Mahiga | 21,846 | 42.40 | Ugachiku, Kamoko, Gaturuturu, Munyange, Gikoe, Kihome, Gitugi, Rukira and Kagonye Sub–Locations of Nyeri County |
| Iria-Ini | 24,536 | 45.90 | Kiandemi, Kiahagu, Thunguri, Gitundu, Kairuthi and Ihuririo Sub–Locations of Nyeri County |
| Chinga | 21,899 | 53.20 | Kagongo, Gikigie, Gichiche, Mucharage, Karuthi, Kiaguthu, Mumbuini and Gathera Sub–Locations of Nyeri County |
| Karima | 19,093 | 33.20 | Gura, Witima, Itemeini, Kihugiru and Thuti Sub–Locations of Nyeri County |

**Source:** Independent Electoral and Boundaries Commission (IEBC)

There are three main tea factories in Othaya. Chinga Tea Factory constructed in 1953, Gitugi Tea, commissioned in 1984 and Iriaini Tea Factory built in 1981 (KTDA, 2011).

### 3.3.1. Iriaini Tea Factory

Iriaini Tea Factory was commissioned in 1981 with 2,000 shareholders. This has now increased to 7,137 smallholder tea farmers who supply green leaf to the factory. Iriaini is located in Othaya

Sub County, Nyeri District of Central Province, 50km north of Nairobi. The volcanic soil there supports tea, coffee and dairy farming along with food crops such as maize, beans and vegetable.

Members of Iriaini factory own 0.5 hectares on average and produced a total of 12.6 million kilos of green leaf in 2012. Members deliver their freshly plucked green leaf to local buying centres where it is weighed and then transported to the factory. Here it is processed into black tea using the CTC method and sold through Mombasa auction or by direct sales to exporters and local markets. Production totalled 3.2 million kilos in 2012.

### 3.3.2. Gitugi Tea Factory

Gitugi Tea Factory is located in Mumwe location, Othaya Division, Nyeri South District. It lies 37 degrees East and 2 degrees south of Equator and 150 km and 22 km from Nyeri town. The factory was built in 1983 and commissioned 1984. It serves 5,433 growers. Gitugi manufactures the following clones of tea: 31/8, 6/8, 303/377. Gitugi lies 3.5 kilometres to the east of Aberdare ranges and lies between river Mumwe A and B and 15 kilometres west of Karima hill. Gitugi Factory is ISO 9001 – 20000: certified.

### 3.3.3. Chinga Tea Factory

Tea was first grown in 1953/54. The intense tea production facilitated the construction of Chinga Tea Factory in 1953 to serve 4,684 growers and commissioned to manufacture Stump/Clonal types of tea. The factory is located 170 km north of Nairobi, and 12 km south of Othaya. The area is situated at Latitude 0.5 degrees South and Longitude 36.9 degrees East and its

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approximately 70km south of the equator and fed by Gikira, Chinga, Rutune, Rwarai rivers. Its location next to the Aberdare ranges has seen it supplied by volcanic red loam soils and the tropical climatic condition has seen sustainable for tea production in the region.

### 3.3.4. Othaya Tea Production

**Table 3.2: Othaya Tea Production-Farmers, Bushes and Acreage**

| Factory | No.Farmers | Tea Bushes | Acreage | Production |
|---|---|---|---|---|
| Chinga | 6964 | 13,281,233 | 1235 | |
| Iriaini | 6356 | 9,736,871 | 1349 | |
| Gitugi | 5723 | 7,906,312 | 1015 | |

**Table 3.3: Changes in Othaya Tea Production**

| Factory | No of bushes | June 2014/2015 | KGS/BUSH 2014/2015 | KGS/BUSH 2013/2014 | % Change |
|---|---|---|---|---|---|
| Chinga | 13,281,233 | 16,616,919.10 | 1.25 | 1.38 | -9.48 |
| Gitugi | 7,906,312 | 10,713,274.30 | 1.36 | 1.6 | -15.33 |
| Iriaini | 9,736,871 | 13,033,709.80 | 1.34 | 1.58 | -15.39 |

The selection of Othaya as the study area is based on two main reasons. First, smallholder tea production started in Nyeri County in 1953 and Othaya is one of the sub-counties of Nyeri. Based on experience, small-scale tea farmers in Othaya are best placed to offer information on factors affecting tea production in Kenya's smallholder-sub-sector. The other reason is that Othaya fairly represents both rural and peri-urban situations where information/data relevant for this research can be obtained.

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### 3.4. Target Population

Population can be defined as the entire or the whole group of people, objectives or events with some common identifiable features (Mugenda & Mugenda, 2003). The population of interest in this study will be that of smallholder producers of tea in Othaya Sub-County, while the sampling unit was the farm household. Other people will also be considered such as agricultural officers in the area, factory officials and other key respondents.

### 3.5. Sampling Techniques and Sample Size

About 30 percent of respondents will be selected using systematic random sampling from the list all tea supplies obtained from Chinga and Iriaini which are the main Tea Factories within the study area. The researcher will consider every $n^{th}$ person of the sample population until the desired sample size is achieved (Robson, 2011).The choice of 15% is consistent with Sekaran's (2006) suggestion that a sample size of any study based on descriptive research design should be composed of a third of the accessible study population.

### 3.6. Data Collection and Procedures

Primary data will be collected during fieldwork using various methods of data collection. In this study, both qualitative and quantitative data comprising of information on tea production and factors influencing it. This research will source secondary data from Tea Board of Kenya (TBK), Kenya National Bureau of Statistics (KNBS), and World Bank database. These institutions are deemed authoritative sources of information.

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### 3.7. Data Collection Instruments

The main tools for collecting primary data will be interviews and semi-structured questionnaires. Questionnaires are simply data collection tools which have some written questions presented before respondents and which need answers in written form. Cooper and Emory (2008) support the use of questionnaire for its affordability and convenience as respondents are able to respond to the questions at their free time. On the other hand, an interview schedule is defined as a tool for collecting data face- to –face oral questioning of participants either as a group of participants or an individual (Chaleunvong, 2009).

### 3.8. Data Collection Procedures

Data collection tools will be administered to the sampled respondents in an effort to achieve the research objectives. The researcher will make use of trained assistants to facilitate data. The training of research assistants will be tailored towards understanding the research study and what is expected of them including how to observe ethics. Permission will be sought from relevant bodies such as the local administration and the national council of science and technology. This is in a bid to make the research conform to the set standards of doing research. The physical location of the respondents will be established for ease of delivery of the questionnaire. For illiterate respondents, a guided interview will be done. With the help of the assistant researcher, all questionnaires will be edited and verified for analysis.

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### 3.9. Validity and Reliability

Validity is simply defined as the accuracy of inferences based on the research findings. According to Mugenda & Mugenda (2003) validity is the extent or degree at which study findings actually represented the subject under investigation. On the other hand, reliability is the accuracy or consistency of research instruments (Orodho, 2005).

In order to control data reliability and validity, measurement and sampling errors; a number of actions will be taken. First, there will be pretesting of the questionnaire using a random sample of 15 farmers to ensure that the right questions are posed to the respondents during the study. The outcome of the pre-test will used to adjust or improve in the data collection tools. Enumerators used for administration of questionnaires will be under close supervision. Key informant interviews (KIIs) will also be used to get data from those who have relevant information. They include tea factory managers and KTDA staff.

### 3.10. Data Analysis

Before embarking on data analysis, the returned questionnaire will be sorted out and checked for completeness. Mugenda and Mugenda (2003) argue that data collected from the field is usually in raw form thus it may not be easy to carry any interpretation unless it is cleaned, coded and analyzed. This study will use both quantitative and qualitative analysis. Qualitative analysis will involve categorizing into emerging themes, tabulating and recombining collected evidences to address the research questions. On the other hand, Qualitative data will be grouped into meaningful patterns to assist in the summarization of the data. Statistical Package for Social

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Sciences (SPSS) versions 21.0 will be used for data entry and analysis of quantitative data from the closed ended questions using statistical techniques like frequencies and percentages and the result presented in form of tables, pie-charts and graphs.

### 3.11. Ethical Consideration

Ethical consideration is an important requirement of social research. It integrates appropriate values into the research process on how respondents ought to be handled as explained by Bryman (2004). To ensure that rights of respondents are not compromised, the researcher will ask for permission to conduct research from relevant bodies or authorities such as the National Commission of Science Technology and Innovation. Rights, anonymity and confidentiality of the respondents will be respected throughout the research process. Participation will be on voluntary basis and the respondents will be given liberty to discontinue the interview/discussion at any stage if they so wish. To preserve anonymity, all findings will be presented without ascribing respondents' names.

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# CHAPTER FOUR

# PRESENTATION AND DISCUSSION OF THE FINDINGS

## *4.1.* Introduction

This chapter presents a detailed discussion of the research findings in an attempt to achieve the stated research objectives. Data analysis is carried out based on the objectives of the study. The study findings are organized according to the responses from study population. The presentation starts with the response rate followed immediately by socio-economic profiles of the respondents. The rest of the chapter is presented according to the study's specific objectives.

## *4.2.* Response Rate

The analysis of the study is presented in form of tables and figures showing frequencies and percentages. In total, 300 questionnaires were distributed as this was the actual number of respondent targeted in this study. However, only 240 questionnaires were successfully filled and analyzed giving a response rate of 80%. This was adequate and representative for statistical analysis to yield reliable results. This is an acceptable response rate for data analysis as Mugenda and Mugenda (2010) argue that for generalization, a response rate of 50% is adequate for analysis and reporting, 60% is good and a response rate of 70% and over is excellent. The response rate is summarized in Table 4.1 below

**Table 4.1: Response Rate**

| Response | Frequency | Percent |
|---|---|---|
| Responded | 240 | 80 |

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| | | |
|---|---|---|
| Did not Respond | 60 | 20 |
| **Total** | **300** | **100** |

Source: Field Data, 2015

### *4.3.* Socio-Economic Profiles

This section provides a summary of the household socio-economic characteristics namely; gender, age, educational background, marital status, number of people and dependence ratio of the sampled farmers' household were analyzed and discussed in relation to their influence on production and market participation. These aspects pose a key element since there is a high tendency for household's decisions to be influenced by socio-demographic characteristics (Nobeji, Fengying and Chen 2014).

#### 4.3.1. Gender

Both male and female formed the study population of this study. The findings are presented in Table 4.2 below.

**Table 4.2: Distribution of Respondents' according to their Gender**

| Gender | Frequency | Percent |
|---|---|---|
| Male | 172 | 71.7 |
| Female | 68 | 28.3 |
| **Total** | **240** | **100.0** |

Source: Field Data, 2015

Results presented in Table 4.2 indicate that 71.7 % of the respondents were males while the rest, 28.3 % were females. Kiprono et al., 2011 and Kabwe (2012) also found similar results where



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majority of their respondents were males. It has been observed that in a typical African setting, men tend to dominate the production of cash crops while women are primarily responsible for the supply of food to the family (Peterman, Behrman and Quisumbing, 2011), and this corroborates the findings for the current study. This is further supported by the findings of Duncan and Brant (2004) from Nigeria who assert that men overwhelmingly dominated decision-making processes in the region. They were perceived as natural leaders, on the other hand women were considered to be too weak and susceptible to be major decision-makers. These views undermined the key roles played by women, regularly placing them in the background in decision making and their potential in becoming successful major decision-makers.

### 4.3.2. Age

Participants' responses on their age yielded the following results, as indicated in Table 4.3 below.

Table 4.3: **Distribution of Respondents' according to Age**

| Age | Frequency | Percent |
|---|---|---|
| Less than 18 | 3 | 1.3 |
| 18-26 | 10 | 4.2 |
| 27-35 | 55 | 22.9 |
| More than 35 | 172 | 71.7 |
| Total | 240 | 100.0 |

Source: Field Data, 2015

According to the results contained in Table 4.3, the ages of the respondents sampled ranged from less than 18 years to more than 35 years. It is clear that respondents who above 35 years age group were the majority and formed 71.7%, those between the ages of 27 years and 35 years



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were 22.9% and those between 18 years and 26 years of age were 4.2%. The least number of respondents , constituting only 1.3 % were below 18 years, implying that majority of people involved in tea production have advanced age and this could influence productivity either negatively or positively again depending on other factors. This is partly due to the fact that age as a variable has influence on farming experience and ownership of factors of production such as land and implements which put together may have a bearing on the overall productivity of agricultural crop.

The current study findings are in agreement with Kosgei et al., (2013) who while studying determinants of Agricultural Information access by small holder tea farmers in BuretiDistrict observed that most of the respondents had a mean age of 43 years. In the current study, most of the respondents are more than 35 years.

### 4.3.3. Gender of Head of Households

This study also assessed the gender of household with results as presented in Figure 4.4

Table 4.4: **Gender of Household Head**

| | Are you the head of the household? | | |
|---|---|---|---|
| Gender | Yes | No | Total |
| Male | 158(65.8%) | 14(5.8%) | 172(71.7%) |
| Female | 58(24.2%) | 10(4.2%) | 68(28.3%) |
| Total | 216(90.0%) | 24(10.0%) | 240(100.0%) |

Source: Field Data, 2015

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According to the findings displayed in Table 4.4, about 90% of the respondents indicated they were household heads as opposed to only 10 %. Out of those who indicated they were household heads, a large proportion, 65.8 % were males while the rest, 24.2 % were females. The findings are similar to those of the Kenya Demographic and Health Survey of 2008-09 (KDHS, 2009).The current finding implies a typical African community especially in the rural parts of the country where men are predominantly heads and more advantaged as they are comparatively more resource endowed. According to Sigei et al, (2013), women in Sub Saharan Africa are disadvantaged because of unequal distribution of resources as well as cultural barriers.

### 4.3.4. Levels of Education

In order to get the distribution of education level attained by the respondents, the researcher grouped the various levels into five groups, namely; no school, primary, secondary, college and university level. The findings are summarized in Table 4.5.

**Table 4.5: Levels of Education according to Gender of Respondents**

| Levels of Education | Frequency | Percent |
|---|---|---|
| No school | 16 | 6.7 |
| Primary | 66 | 27.5 |
| Secondary | 111 | 46.3 |
| College | 34 | 14.2 |
| University | 13 | 5.4 |
| **Total** | **240** | **100.0** |

Source: Field Data, 2015

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As Table 4.5 indicates, about 27.5 % of all the respondents in the study area have attained primary level of education which is regarded to be a basic education in Kenya. Most of the respondents, 46.3 % have secondary education, about 14.2 % have college level of education while only 5.4 % have attained university education. The study further reveals that some of the respondents, 6.7 % have not attained any education. The level of education is very important in the agriculture productivity as it enhance farmers' access to information and modern technology adoption which are associated with higher output (Nyunza and Mwakaje, 2012).

The current findings imply that tea farming in the study area has not attracted highly educated Kenyans and that people with college and university education do not actively work on the farms, as they tend to be employed off-farm. This can be partly explained by the fact that education tends to increase people's off-farm employment opportunities. Again, the existing policies are not in favour of agricultural production and therefore most of the educated members of the household prefer looking for greener pastures in off-farm related activities.

### 4.3.5. Marital Status

Respondents' marital status was coded as married, single, divorced/separated and widowed. The marital status of the respondents is as presented in Figure 4.1 below, analyzed in order to establish the distribution or spread of the various marital status.

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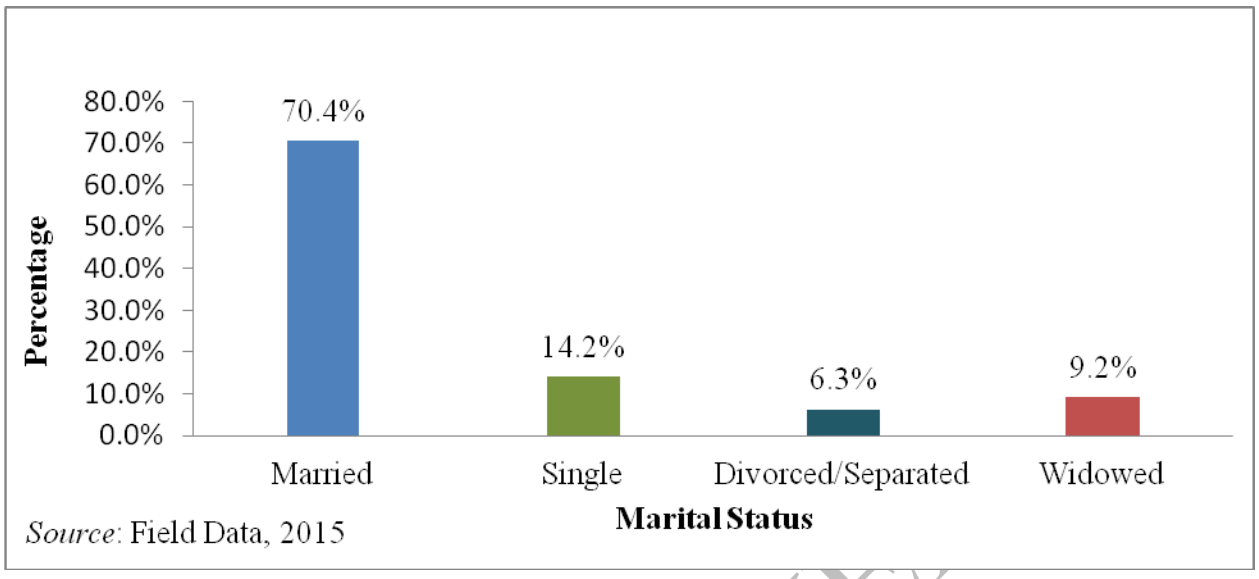



Figure 4.1: **Marital Status**

As shown in Figure 4.1, the study population was dominated by those who were married (70.4 %). About 14.2 % of the respondents were single while the rest of the respondents, 6.3 % and 9.2 % were divorced/separated and widowed respectively.

Marital status has been found to influence social organization and economic activities such as agriculture and resource management within a household (Nyunza and Mwakaje, 2012). In this study, marital status also implies reasonable number of members of family and dependants which in most cases is translated into increased family pressure on the limited resources among farmers.

This current finding is consistent with findings from a study by Koskei et al.,(2013) which found that in Bureti Sub-County, where most of the study respondents were married which probably

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meant that they have reasonably large family size. The current study also found that more than half of the respondents were married. This finding is also in line with other studies that have found a married people as the majority (Kiprono et al., 2011; Mwangi, 2014). Kiprono et al (2013) observed that most of their study population was composed of the married. Similarly, Mwangi (2014) established that his study was dominated by mainly married respondents.

### 4.3.6. Size of household, Acres of Land owned and Area under Tea Production

The study also assessed variables such as size of household, acres of land owned as well as size of land devoted for tea production. The findings are summarized in Table 4.6

Table 4.6: **Selected Household Characteristics**

| Characteristics | Units | Minimum | Maximum | Mean |
|---|---|---|---|---|
| Size of household | Number | 0 | 10 | 5.02 |
| Acres of land owned | Acres | 0 | 14 | 3.94 |
| Area under Tea | Acres | 1 | 6 | 2.32 |
| Annual Production | Kg/yr | 279 | 15000 | 3702.15 |

Source: Field Data, 2015

The study indicates that the average household size is 5 members (Table 4.6) which is in agreement with a study by Kenya National Bureau of Statistics (2010) that noted similar household sizes. This is expected to have a positive influence on family labour for tea production (Christian Partners Development Agency, 2008), but also could have a negative side of reducing per capita resources available.

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The study further reveals that the mean size of land owned is 4 acres, and that on average respondents devote 2 acres which is equivalent to 50% of land to the cultivation of tea. Koskei et al., (2013) also came up with similar findings in their study about determinants of Agricultural Information Access by Small Holder Tea Farmers in Bureti sub-county, Kericho County. Elsewhere, Nyangito (2001) also noted that small holder tea farmers in Kenya hold and manage less than eight acres of tea farms. The fact that most of the farmers interviewed allocated half of their land for tea production reflects the enterprise's importance as a cash crop, and one of the major sources of livelihood in the study area. The possible explanation is that tea cultivation provides work and income throughout the year with relatively little investment and given the minimal risk associated with crop.

In terms of production, the study noted that on average, most farmers get about 3702 Kg/yr. This is not surprising given the fact most of the farmers own 4acres and devote half of it to tea cultivation. The size of land cultivated by the household may have a significant effect on tea production implying that any increase of the size of land cultivated leads to an increase of tea produced in the study regions (Nobeji et al., 2014).

### 4.3.7. Forms of land acquisition

Land is highly valued in all African societies and has many rules and rituals governing its holding and use (Sarpong, 1974). In many rural areas of the developing world, land ownership can be a large determinant of whether or not someone lives in poverty (Adebayo, 2014; Nzioki, 2009; Kameri-Mboti, 2005). The study assessed the main sources of land by asking the



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respondents how they acquired the land. In Figure 4.2, the various sources by which respondents acquired their current land are represented.

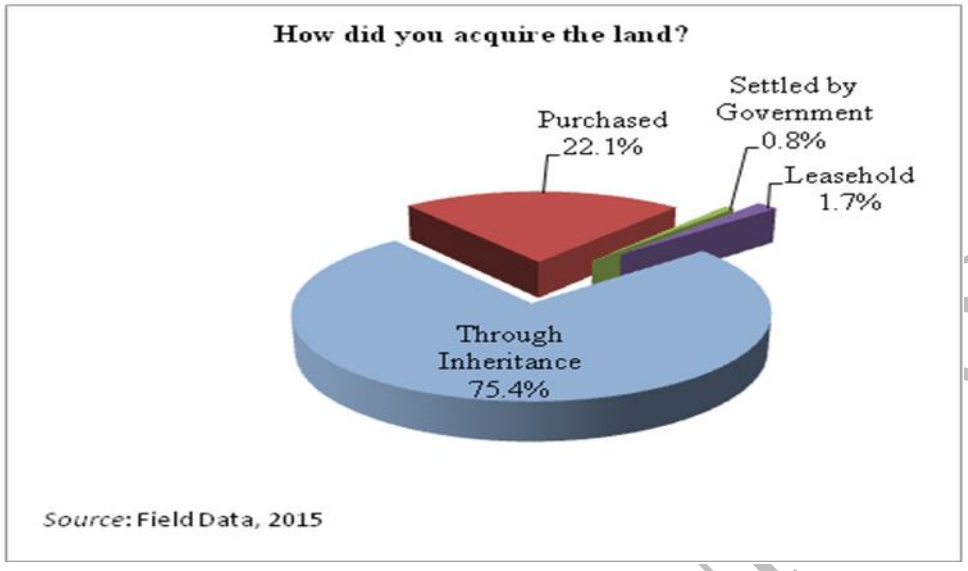



Figure 4.2: **Types of Land Acquisition**

From the survey, it is clear that the common and obvious source of land acquisition is through inheritance (from parents or spouse) as indicated by 75.4% of all the respondents. This is not a big surprise because the study having been conducted in rural areas where access to land is mostly through inheritance. A few people purchased their current land (22.1%), confirming the notion that land is currently a commoditized commodity. The study also reveals 0.8% of the respondents were settled by the government in their current land. However, 1.7% stated other sources of land acquisition including leasehold.

The findings are consistent with previous studies which have examined similar research questions (such as Kiprono et al., 2011; Koskei et al., 2013; and Nobeji et al., 2014). In their respective studies, all these researchers noted inheritance as the main sources of land acquisition.

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### *4.4.* The influence of availability of labour on the productivity of the smallholder sub-sector of the Kenyan Tea Industry

Tea production, including growing, maintenance and harvesting, is generally labour intensive, requiring regular work in order to get optimum yield. In order to assess how availability of labour affects the productivity of the small holder tea industry, the current study sought to find out the main sources of labour, seasons when mostly required and the number of hours in a farm for a given production cycle. This section presents the findings.

#### 4.4.1. Sources of Labour

There are various sources of labour needed in tea production. For this study, the sources were grouped into five major categories as shown in Figure 4.3

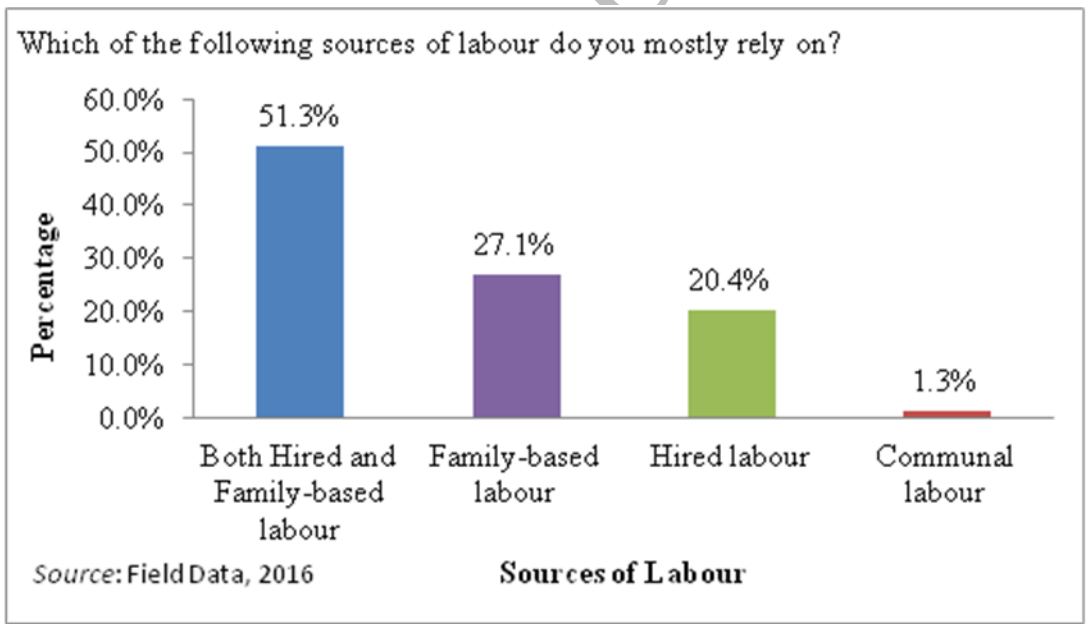



Figure 4.3: **Main sources of labour during tea production in the study area**

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It is clear that most of households (51.3%) employ the use of both hired and family-based sources of labour. About 27.1% use family-based labour while 20.4% hired labour. Only 1.3% relies on communal labour. The possible explanation why most respondents rely on family based and hired labour is that most of the main activities/operations required for tea production/ harvesting is usually on seasonal basis. This means that the amount of work needed varies with specific months or year. Hired labour is also mostly preferred because they are affordable compared to the more permanent ones. However, for most people hired labour is usually supplemented with family labour. This is why a bigger proportion of the respondents indicated they used both hired-and family based labour. In a typical cash crop production such as tea, the farmer controls the labour of the household members only to the extent that they also benefits from the production

### 4.4.2. Labour Requirement according Seasons

**Table 4.7: Labour requirement according to different seasons**

| Seasons/Activities | Frequency | Percent |
|---|---|---|
| Harvesting season | 137 | 57.1 |
| Planting seasons | 4 | 1.7 |
| During maintenance | 1 | .4 |
| Harvesting and Maintenance | 54 | 22.5 |
| All the three(Planting; harvesting and Maintenance) | 38 | 15.8 |
| Others | 6 | 2.5 |
| **Total** | **240** | **100.0** |

Source: Field Data, 2015



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Harvesting season seems to demand much more labour compared to other activities as indicated by 57.1% of all the respondents. This is followed by 22.5% of respondents who indicated both harvesting and maintenance, about 15.8% mentioned the three activities combined namely planting, harvesting and maintenance. However, one of the respondents was of the opinion that maintenance required more labour.

The current study seems to imply that harvesting needs more labour. Harvesting basically involves plucking or where the tender tea shoots are picked. Once the plucking of tea begins, the labour force must remain constant since each tea bush should be plucked at least once every week; and once plucked, the tea must arrive at the factory for processing within at least six hours, otherwise the harvest may go to waste. In another study with similar research question carried out in Shri-Lanka by Wijeratne (2012), harvesting was also considered to be the most labour intensive and costliest field operation. The author explains that harvesting needs more than 70% of the labour requirement in a given estate and hence, contributes to more than 35% of the total cost of production. In the current study, most of the respondents in the study cited harvesting as demanding more labour compared to other operations.

### 4.4.3. Labour time allocation in a given Production Cycle

The current study sought to find out the time allocated for working in the farm during a typical production cycle. Table 4.8 summarizes the labour time distribution in terms of hours.

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Table 4.8: **Distribution of Labour time allocation in a given Production Cycle**

| Time | Frequency | Percent |
|---|---|---|
| Less than3 hours in a day | 43 | 17.9 |
| 3-5 hours in a day | 63 | 26.3 |
| 6-8 hours | 87 | 36.3 |
| More than 8 hours in a day | 47 | 19.6 |
| **Total** | **240** | **100** |

Source: Field Data, 2015

The study reveals that most of the respondents (36.3%) work for 6-8 hours in a day. About 26.3% of the respondents spend 3-5 hours in a day while 19.6% more than 8 hours. The lowest number of respondents (17.9%) devoted less than 3 hours in a day of their time working. This observation though not expected is not surprising because of three main reasons. First, the study only considered farm labour time in tea enterprise only. If labour use in all the other enterprises were considered the pattern may have been different. Second, some of the households met the extra labour requirement through hiring labour.

## *4.5.* Cultural practices on the productivity of the smallholder sub-sector of the Kenyan Tea Industry

### 4.5.1. Myths about Men/Women in Relation to Tea Planting

To establish the role of cultural practices on tea production in the area, respondents were asked "Are there myths about women or men related to planting of tea in your community?" This information is shown in Figure 4.4.



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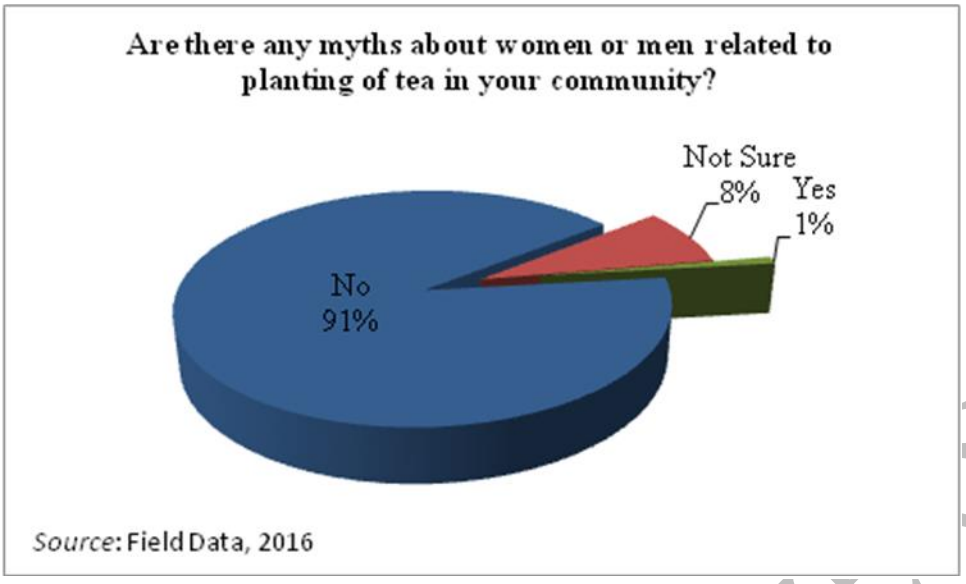



Figure 4.4: **Whether there are myths about women/men in relation to Tea cultivation**

From the study, most of the respondent (91%) said there were no myths about women or men in their community in relation to tea production. However, about 8% were not sure. Only 1% of the respondents indicated there were some myths in relation to planning of tea. In a follow up question, one of the respondents stated that:

> "In our community there is a popular belief that tea is for men"
> (Female Respondent, aged 39 years)

The above mentioned myth illuminates the existence of cultural issues affecting tea production. A myth such as mentioned above shapes the way in which society perceives the whole issue of crop production. As noted in chapter two, crop production such as tea may be directly or indirectly influenced by existing cultural issues, which in this study is manifested through myths about women or men. Although only one respondent disclosed that there were some cultural factors like myths in relation to tea planting, it is nevertheless an indication that cultural issues

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still exist in the study area. This observation is a reflection of what other studies have found. For instance, Pender and Gebremedhin (2007) in their study in Ethiopia observed that cultural taboos against women have forced female-headed households in Tigray, Ethiopia to use less labour and draft power compared to their male counterparts. Similar observations have been reported in Ecuador whereby some activities like ox-ploughing are only done by men (Larson & Leo´n, 2006). In the current study, one of the respondents disclosed the myths that tea plating was meant for men.

### 4.5.2. Gender Roles in Tea Production

The researcher assessed the various gender roles associated with tea production in the study area. Specific areas of focus were farm activities farm inputs and farm proceeds. When asked who were mostly responsible for various activities associated with tea production, the study established that females had more roles in tea production than their male counterparts. The women were assigned the roles that were tedious and took many hours like tea plucking and transportation while the men undertook seasonal roles like tea planting and pruning as shown Figure 4.5.

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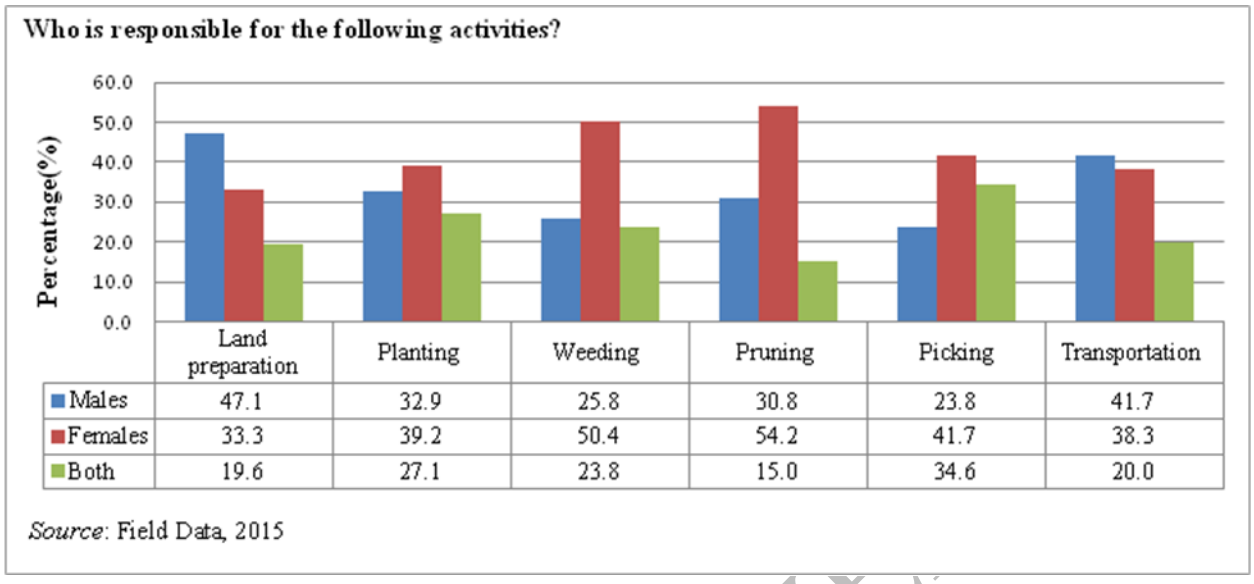



Figure 4.5: **Various gender roles in Tea Production**

The study also sought to find out who was responsible for buying farms inputs. The findings are as tabulated below.

Table 4.9: **Distribution of responses on who is responsible for buying Farm Inputs**

| Household Member | Frequency | Percent |
|---|---|---|
| Husband | 163 | 67.9 |
| Wife | 41 | 17.1 |
| Both husband and wife | 14 | 5.8 |
| Children | 2 | 0.8 |
| Others | 20 | 8.3 |
| Total | 240 | 100.0 |

Source: Field Data, 2015

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Table 4.9 above shows that husbands are mostly responsible for buying farms inputs (67.9%). However, in some cases wives may also be the ones responsible according to 17.1% of all the respondents who participated in this study. Those who said both husband and wife were responsible were 5.8% while only two respondents mentioned children as charged with the responsibility of buying farm inputs.

These findings are in line with that of Ongile (1996) who found that husbands took the decisions on how much land to apportion for different crops but also how buying of new land, buying of farm inputs, hiring of labour and marketing of food crops. Some male children also took part in farm decisions especially with regard to farm inputs, hiring labour and planting.

When asked who mostly get the proceeds from the farm, most of the respondents indicated that it was the husbands. The information is displayed in Figure 4.6 below.

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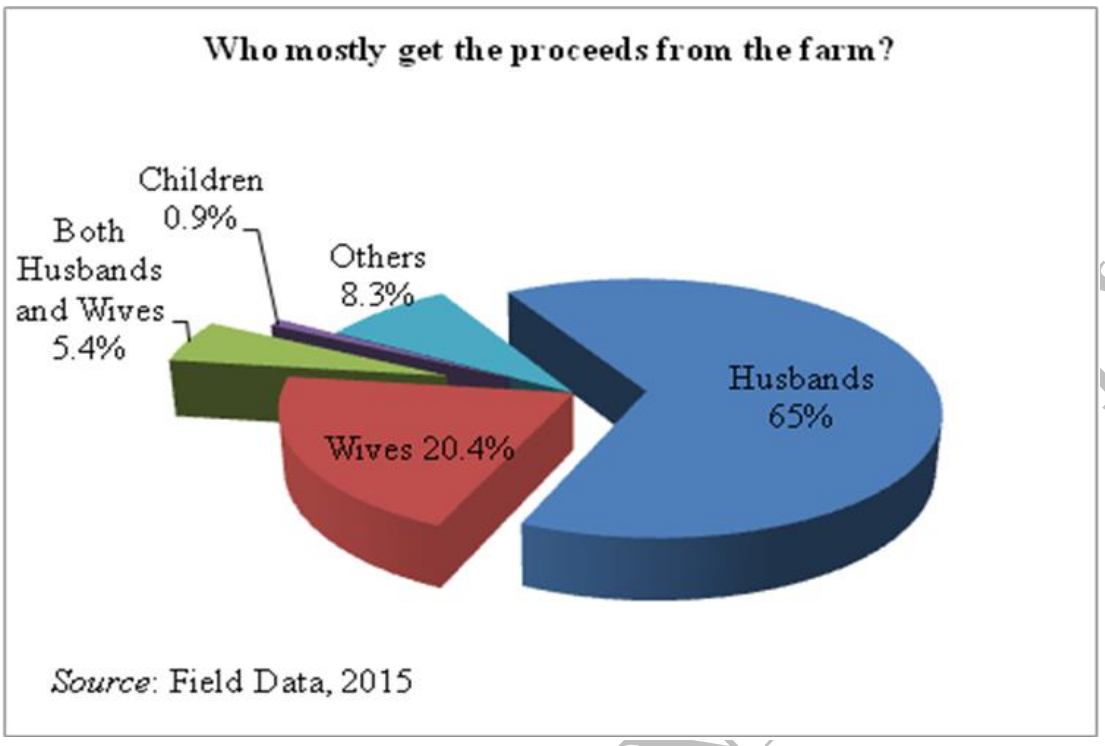



Figure 4.6: **Tea Proceeds access to and control over among family Members**

As it can be seen in the figure above, most of the respondents (65%) indicated that the husbands had access and controls over benefits accrued from tea farming within their households. A good number of the respondents (20.4%) said that the wives or women within male-headed households got the proceeds. The study also reveals that 5.4 % of the respondents were of the opinion that both the husband and the wife had access to and control over the proceeds accruing from tea production within their households. Only one respondent indicated that children have some control over the proceeds. However, 8.3% gave other options which ranged from self, relatives and cousins. These findings imply that women /wives were discriminated in the area of access to and control of tea benefits within their households.

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The current study findings are consistent with that of Kibere et al., (2013) who also noted gender issues especially in relation to tea proceeds and operations in their study about gender dynamics in the access and control of benefits accrued from tea farming in Kiganjo division, Gatundu District. In Kibere et al (2013) study, females and more particular wives within the male-headed household were discriminated in the area of access to and control over tea benefits. In another study by Oginde (1996), it was found that in many households, only husbands were responsible for all income from tea and decided on how the income should be used. In very few families or households, women or wives participated in decision making but they had no idea of the exact income from tea. In current study, only 5.4% indicated that both husband and wives controlled the profits from tea.

### *4.6.* The influence of tea market prices on the productivity of the smallholder sub-sector of the Kenyan Tea Industry

The research asked the respondents about their opinion on the current tea market price. The various opinions were coded as 1-high; 2-average; 3 reasonable; 4 others. These findings are as shown in Table 4.10.

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**Table 4.10: Respondent's Opinion on the market Price**

| Opinion | Frequency | Percent |
|---|---|---|
| It is high | 73 | 30.4 |
| Average | 108 | 45.0 |
| Reasonable | 55 | 22.9 |
| Others | 4 | 1.7 |
| **Total** | **240** | **100.0** |

Source: Field Data, 2015

From the results, 30.4 % of the respondents perceived the current market price as high while 45% said it is average. However, 22.9% of the study population was of the opinion that the market price is reasonable. Only 1.7% cited other options not in the responses including market price being low or very low.

The respondents were further asked on whether the current tea market price has affected their tea production in any way. The study revealed that majority of the respondents agreed that finances affected tea production. This information is shown in Figure 4.7.

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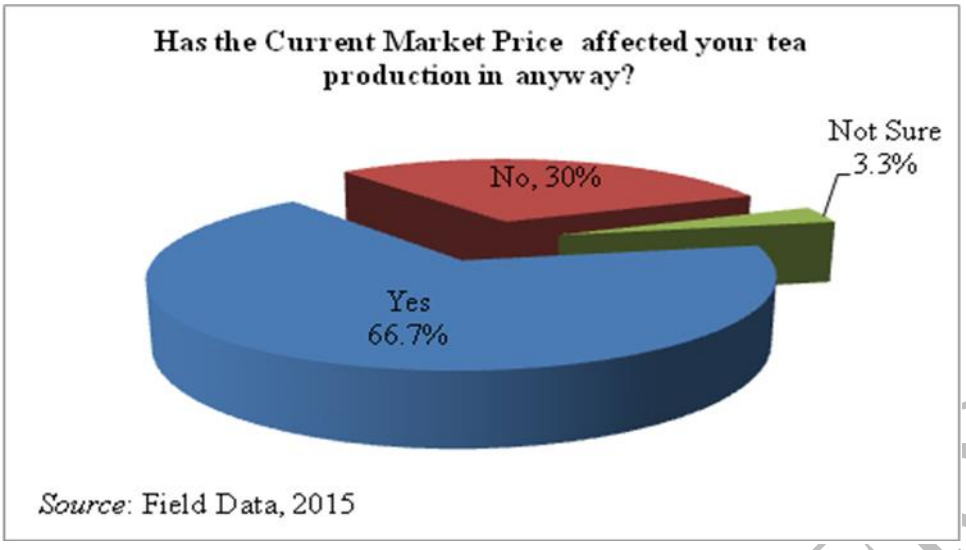



Figure 4.7: **Respondents' opinions on whether the current Market Price has affected them**

As shown in Figure 4.7, majority of the respondents (66.7%) indicated that tea market price has affected their production while 30% indicated that they have not been affected in any way. About 3.3% of the respondents were not sure.

In a follow up question, respondent were further probed to explain why their responses. The findings reveal mixed opinions or attitudes towards the current market price. As already seen, most of the respondents were of the opinion that the current market price are either average or reasonable and therefore appears to be positivistic as illustrated by the following quotes.

> "In my opinion, I can say the current market price has affected me positively because am now able to improve the shamba and hire more labourers" (Male Respondent, 33 years)
>
> "Improved as I have been able to buy more inputs for the farm" (Female Respondent, 42 years)

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"More income hence more inputs" (Male Respondent, 22 years)

"You can be able to take care of your farm" (Male Respondent, 43 years)

For respondents who were a bit pessimistic, the current market price was a call for the government's interventions. Others still felt that it was almost impossible to improve their farms. Some of the responses are as illustrated below:

> "Personally, I have been affected and I think it is a wake call for the government to offer loans, so that we are able to maintain modern ways of tea production including marketing"(Female respondent, 35 years)

> "With the Low price, it is almost impossible for the farmer like me to be able to satisfy all their needs through the payment" (Male Respondent, 33 years)

> "The current market price tends to reduce production thus one looks for alternative money earning activities" (Female Respondent, 55 years)

> "Personally, I have been affected because the current market price is inadequate for farm inputs" (Male Respondent, 43 years)

> "With the current market price, am able to buy more inputs.....It has also motivated me to work hard" (Male Respondent, 43 years)

The current findings illustrate that market price can affected tea productivity either positively or negatively depending on how one looks at it hence confirming the assertion made by Sanne, (2008) that market price and crop production tends to be inversely proportional. In other words, an increase in market price may lower production and verse-versa. In the current study, some respondents seem the happy lot and are somehow optimistic about market price. According to

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Bünücü et al., (2003),farmers are overwhelmingly risk takers. If this holds true, then it is natural to assume that they would benefit from it.

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# CHAPTER FIVE

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## 5.1. Introduction

A summary and synthesis of the study's findings are presented in this chapter. It also gives recommendations based on the study's conclusions which can therefore lead to appropriate interventions to improve or salvage identified challenges to improve tea production in the study area and Kenya at large. From the recommendations, areas of further research are drawn. The study sought to achieve the following research objectives, which were the basis of this research.

(i.) To find out the influence of availability of labour on the productivity of the smallholder sub-sector of the Kenyan Tea Industry.

(ii.) To examine the influence of cultural practices on the productivity of the smallholder sub-sector of the Kenyan Tea Industry

(iii.) To assess the influence of tea market prices on the productivity of the smallholder sub-sector of the Kenyan Tea Industry.

## 5.2. Summary of the Findings

The summary of findings is covered in the sub-section below covering the independent variables in relation to productivity of the smallholder sub-sector of the Kenyan tea industry as the dependent variable

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### 5.2.1. Demographic Data

A general description of the respondents reveals that that majority (71.7%) were males while only 28.3% were females (Table 4.2). Most of the respondents were more than 35 years (71.7%), about 22.9% between the ages of 27-35, 4.2 % between ages 18-26, and 1.3% indicating less than 18 years (Table 4.3). It was also observed that those who participated in the study were mainly those with secondary education (46.3%). Those with primary education were 27.5%, college (14.2%) and university (5.4%). About 6.7% were illiterate with no any education. (Table 4.5), 14.2% were single, 9.2% and 6.3% were widowed and divorced/separated respectively (Figure 4.1). Most of those who took part in this study (70.4%) were married, Supplementary results are addressed in terms of the four study objectives as presented in following sub-sections.

### 5.2.2. The influence of availability of labour on the productivity of the smallholder sub-sector of the Kenyan Tea Industry

In order to assess how availability of labour affects the productivity of the small holder tea industry, the current study sought to find out the main sources of labour, seasons when mostly required and the number of hours in a farm for a given production cycle. The study established that a high proportion of the households (51.3%) use of both hired and family-based sources of labour, 27.1% use family-based labour while 20.4% hired labour. Only one respondent disclosed using more of communal labour (Figure 4.3).

In terms of labour demands, harvesting season required much more labour compared to other activities (57.1% ) followed by 22.5% of respondents who indicated both harvesting and



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maintenance, about 15.8% indicated the three activities (planting, harvesting and maintenance) while only one respondent said that maintenance required more labour (Table 4.7).

In relation to labour time allocation, the study found that most of the respondents (36.3%) devoted 6-8 hours of their time in a day. About 26.3% of the respondents spend 3-5 hours in a day while 19.6% more than 8 hours. The lowest number of respondents (17.9%) devoted less than 3 hours in a day of their time working (Table 4.8).

### 5.2.3. Cultural practices on the productivity of the smallholder sub-sector of the Kenyan Tea Industry

In order to assess cultural practices on the productivity of the smallholder tea sub-sector, the researcher assessed if there were any existing myths in the study area which was associated with tea production. It also looked at the various roles assigned to different genders and their aces and control of farm inputs and profits. The study established that opinion was divided about myths on women or men in relation to planting of tea. According to the study, most of the respondents (91%) were unable to identify any myths. However, about 8% were not sure. Only 1% of the respondents indicated there were some myths in relation to planning of tea (Figure 4.4).

In relation to the different roles/ activities associated with tea production, the study found that females had more roles in tea production than their male counterparts. The women were assigned activities which tended to be more tedious and took many hours like tea plucking and

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transportation. On the other hand, men undertook seasonal roles like tea planting and pruning (Figure 4.5).

The study also established that when it comes to buying of farm inputs, the husbands are mostly responsible (67.9%). However, in some cases wives may also be the ones responsible according to 17.1% of all the respondents who participated in this study. Those who said both husband and wife were responsible were 5.8% while only two respondents mentioned children as charged with the responsibility of buying farm inputs (Table 4.7)

It was also established that husbands had access and controls over benefits accrued from tea farming within their households (65%). A good number of the respondents (20.4%) indicated that wives or women within male-headed households also got the proceeds. The study also found that 5.4 % of the respondents were of the opinion that both the husband and the wife had access to and control over the proceeds accruing from tea production within their households. Only one respondent indicated that children have some control over the proceeds. 8.3% gave other options which ranged from self, relatives and cousins (Figure 4.6).

## 5.3. Conclusion

It can be concluded that in its current state, sufficient supply and quality of tea is not guaranteed for the small-holder tea sub-sector. Socio-economic issues such as labour, market price, cultural issues combined with the uncontrolled or finite nature of natural resources lie at the root of this situation.

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Tea production significantly depends upon the availability of labour. The study demonstrates that labour is a vital input for the better production and return in tea garden. This is manifested right from the type of labour used, when required and time allocated. The production level may go down if labour needed is not adequately met in terms of the three levels. In this study, the increased labour demands were met through hiring as evidenced by less time labour allocation where most of the respondents work less than 8 hours a day.

The study demonstrates that cultural issues still impacts negatively on the tea productivity. Though not pronounced, there are some myths within the community which tend to given the males more power over the entire production. Gender discrimination is also quite rampant in the study area especially in tea operations where women tend to take most of the roles. However when it comes to access to and control over tea proceeds within the households, women are sidelined.

The issue of market price has also featured well as one of the factors affecting tea production in the area. Though opinion is divided on the current market price, it remains clear that it affects tea production either positively or negatively.

### 5.4. Recommendations

In light of the results obtained in this study and conclusions, the following recommendations can be drawn.

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1. Tea owners/farmers and managers should provide proper working environment to the human resources so as to obtain and maintain appropriate skilled labour force that will work competently in their relevant fields including efficient use of the physical resources such as modern machineries and equipments. Again, there is need for an efficient work calendar to enhance the labour supply. Perhaps, activities such as planting should be carried out during the lean season since this can help in managing any possible labour shortage for various farm operations. Furthermore, adequate efforts need to be undertaken in order to manage labour shortage for farm operations/activities especially when they are needed most such as during harvesting. This may be achieved by through government policy which sets minimum wage cautiously keeping in view its impact on agricultural activities. Or still, if need be, farmers may consider using small machineries used at different stages of activities to cater for any possible labour shortage.

2. Cultural issues also featured in this study and therefore provide policy implications. For instance, there is need for tea ownership to be reviewed by relevant bodies in order to give some authority to men (husbands) and women (wives) as tea owners. If this is done, women who are currently sidelines would be empowered and would be able to have access and control the tea benefits. Deliberate efforts should also be put in place to sensitize all the relevant stakeholders on the need to equitably share the benefits from tea production. There should be arrangements on payments so that wives also get some profits or income. This can be achieved if payments are made into joint accounts from which both couples can be able to access the money. Alternatively, some cash may be channelled to basic needs such as health or children's education.



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Interventions that encourage gender equity need to be considered. Regular workshops should be held to sensitize and educate farmers and the community at large on gender issues and concerns in regard to access, and control of tea profits. This could help demystify the gender stereotypes that men have about women and thus eliminate gender discrimination. There is also need for sensitization to discourage harmful cultural myths which may negative affect tea production in the area.

3. This study indicates that market price significantly affect tea production in the area. This observation reinforces the need for the government and stakeholders of the tea industry to pay attention to the market factors such as market price to ensure they are favourable to the tea owners. This includes liberalizing the marketing of tea to both small-scale and large-scale farmers to increase competition.

   There is also need for training of farmers to be provided by national or county government as well as through extension officers. This should be done with the aim of improving the current tea productivity. Focus should be put on research based and practical training on proper or suitable tea husbandry and farm management.

## 5.5. Recommended Areas for Future Research

There are various areas where Smallholder tea production is practiced in Kenya, though the researcher only focused on Othaya Sub County, of Nyeri. Therefore, the **researcher** encourages other researchers to consider other regions in Kenya such as Kisii, Kericho among others in their

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investigations. This will help them in observing whether similar results can be realized or observed.

The issue of existing myths affecting tea productivity did not come out clearly. Only one respondent indicated that there was some form of myths about men or women in relation to tea cultivation. The researcher proposes that further research is needed to establish the existence of myths and how this may affect tea productivity.

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## Appendix I : Questionnaire

My name is Juliet Kinyua, from St Paul's University. I am currently carrying out a survey to establish the socio-economic factors influencing productivity of the smallholder sub-sector of the Kenyan tea industry, using a case of Othaya in Nyeri County. Your participation in filling this questionnaire will be a resource to the information needed for this research. Kindly take your time to fill the questionnaire and please note that the information given will be treated with utmost confidentiality and only used for scholarly purpose.

**Part A: Respondent's Profiles**

Q.1. Gender of the Respondents

[ ].i. Male
[ ].ii. Female

Q.1. Age in years

**[ ].i.** Less than 18
**[ ].ii.** 18-26
**[ ].iii.** 27-35
**[ ].iv.** More than 35

Q.2. Are you the head of household?

[ ].i. Yes
[ ].ii. No

Q.3. What level of education have you attained?

[ ].i. no school
[ ].ii. primary
[ ].iii. secondary
[ ].iv. college

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[ ].v. university

Q.4. What is your marital status?

[ ].i. Married
[ ].ii. Single
[ ].iii. Divorces/Separated
[ ].iv. Widowed
[ ].v. Others

Q.5. Please state the number of people in your household?.....

Q.6. How many acres of land do you own?……

Q.7. How did you acquire the land?

[ ].i. Inherited
[ ].ii. Bought
[ ].iii. Settled by government
[ ].iv. Others

Q.8. Area under tea (Acres)……

Q.9. Production (Kg/yr)……..……..

Q.10. Is tea your main occupation?

[ ].i. No
[ ].ii. Yes

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Q.11. If no, give other forms of economic activities do you engage?

[ ].i. ……
[ ].ii. ……
[ ].iii. ……

**Section B: Type of Available Labour**

Q.12. Which of the following sources of labour do you mostly rely during tea productions operations in your farm?

[ ].i. Communal labour
[ ].ii. Hired labour
[ ].iii. Family-based labour
[ ].iv. Both hired and family-based labour
[ ].v. Others……

Q.13. When is labour mostly required in your farm?

[ ].i. harvesting season
[ ].ii. Planting seasons
[ ].iii. For maintenance
[ ].iv. Harvesting and Maintenance
[ ].v. All the three(Harvesting, Planting and Maintenance)
[ ].vi. Others ……

Q.14. For how long do you work in your farm in a given production cycle?

**[ ].i.** Less than 3 hours in a day
**[ ].ii.** 3-5 hours in a day
**[ ].iii.** 6-8
**[ ].iv.** More than 8 hours in a day

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**Section C: Factors influencing the number of Tea Bushes used**

Q.15. For how long have you been in the tea sector?

**[ ].i.** Less than 5 years
**[ ].ii.** 5-10 years
**[ ].iii.** 11-16 years
**[ ].iv.** More than 16 years

Q.16. How many tea bushes do you have?.....

Q.17. What are the main reasons why you decided to have the mentioned number of tea bushes?

**[ ].i.** ……
**[ ].ii.** ……
**[ ].iii.** ……
**[ ].iv.** ……

**Section D: Cultural Issues**

Q.18. Are there any myths about women or men related to planting of tea in your community?

[ ].i. Yes
[ ].ii. No
[ ].iii. Not Sure

Q.19. If yes, name them.

[ ].i. ……
[ ].ii. ……
[ ].iii. ……
[ ].iv. ……

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Q.20. Who are mostly responsible for the following activities associated with tea production?

(Tick where appropriate)

| Activities | Males | Females | Both |
|---|---|---|---|
| Land preparation | | | |
| Planting | | | |
| Weeding | | | |
| Pruning | | | |
| Picking | | | |
| Transportation | | | |

Q.21. Who is responsible for buying farm inputs such as fertilizers?

[ ].i. Husband
[ ].ii. Wife
[ ].iii. Both husband and wife
[ ].iv. Children
[ ].v. Others

Q.22. Who mostly get the proceeds from the farm?

[ ].i. Husband
[ ].ii. Wife
[ ].iii. Both husband and wife
[ ].iv. Children
[ ].v. Others

**Section E: Effects of Tea Market Price**

Q.23. What is your opinion on the current tea market price?

[ ].i. It is high
[ ].ii. Average
[ ].iii. Reasonable
[ ].iv. Others

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Q.24. Has this affected your tea production in any way?

[ ].i. Yes
[ ].ii. No
[ ].iii. Not Sure

Q.25. If yes, explain.

……
……
……
……

The End

Thank You for your participation!

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