

CHALLENGES AFFECTING THE TEA IN NYERI COUNTY, KENYA

ABSTRACT

Aim: To investigate the factors curtailing production of tea in Nyeri and come up with possible mitigating measures.

Study design: In-depth qualitative survey that involved the interviewing of 28 tea farmers and 4 key informants (Subcounty Agricultural Officers)

Place and Duration of Study: Othaya, Tetu and Mathira sub counties of Nyeri County: July 2014

Methodology: Twenty eight farmers and 4 Key informants were interviewed using 2 structured questionnaires. The interviewees were selected using systematic random sampling. Data was collected on the challenges that face the tea sector as well as the mitigating measures used to address them. Data was analyzed using descriptive statistics (percentages and means) using SPSS statistical program.

Results: Low prices, lack of technical know-how on tea production, adverse climatic conditions, lack of markets for purple tea were identified as major issues limiting tea sector in the county. Possible solutions have been discussed in this paper.

Conclusion:

Keywords: Tea, challenges, mitigating measures (Arial, inclined, 10 font, justified)

1. INTRODUCTION

Tea is the leading cash crop in Kenya with significant contribution to the economy. In 2009 tea contributed 4% of the GDP equivalent to KShs. 97.7 billion and 28% of the export earnings (TBK, 2010). It is the highest export earning single commodity and crop in Kenya. About 3 million (almost 10%) of the Kenyan population derive their livelihood from tea. It contributes significantly to infrastructure development and environmental conservation. The small holder sub sector contributes 60% of the total production of tea (TBK, 2010). The task of managing small scale farmers lies with the Kenya Tea Development Authority (KTDA, 2014). Nyeri County is one of the leading producers of tea in Kenya.

Tea is produced best in tropical red loam mixed with volcanic soils found in the higher altitudes of Kenya usually between 1800-2000m above sea level. Soils are required to be well drained within 2 meters depth and have a PH range between 4.5 and 6.5. Tea thrives with rainfall ranging from 1,200mm to 2,500mm annually, preferably with long and sunny intervals (Owuor, 2011).

Tea production is a function of a combination of several factors which include land, number of bushes planted and their age, labor availability and its utilization, plucking cycle, proximity to collection or buying centers, rainfall and soil conditions (fertility and level of PH) and general tea husbandry (TBK, 2014). Kenya tea is grown in prime lands capable of producing

over 6000 kg mt per hectare per year under good cropping and weather. However, smallholder teas yield on the average less than 2000 kg mt per hectare per year due to use of inappropriate agronomic and cultural practices resulting from low adaptation and adoption of developed and recommended research technologies (Anon, 2011). This study attempts to identify and address these and other challenges in the tea production of Nyeri County.

2. METHODOLOGY

A survey was conducted in July 2014 in Othaya, Tetu and Mathira sub counties of Nyeri County. Twenty eight farmers and 4 Key informants were interviewed using 2 structured questionnaires. The interviewees were selected using systematic random sampling. Data was collected on the challenges that face the tea sector as well as the mitigating measures used to address them. Data was analyzed using descriptive statistics (percentages and means) using SPSS statistical program.

3. RESULTS AND DISCUSSION

3.1 Socioeconomic data of the respondents

3.1.1 Age

Forty eight percent of the farmers were over 51 years old while 44% were between 36 to 50 years. Only 8% were in the age bracket of 18 to 35 years. This could be to the fact that tea farming is mainly done by the older generation. This reflects a widespread issue since in Kenya the average age of the farming fraternity is 58 years old (CBS, 2010). The youth tend to shun agriculture as a dirty job and are looking for 'whitecollar' jobs to sustain themselves. Key informant ages ranged from 36 -55 years still showing lack of involvement of youth in tea production.

3.1.2 Educational level

Forty one percent of the farmers had secondary school level of education while 37% had primary school level of education. Eleven percent of the farmers had high school or college level of education. This has implications for farmer education meaning that the materials should be simplified and audio visuals used to ensure all farmers understand whatever innovations that are being taught (Orey, 2010).

All key informants had college education and held various positions in KTDA i.e. Tea Extension, Production manager, Factory unit manager and Field services coordinator. All the informants had worked for over 10 years. The college education and work experience implies that they were well educated and able to pass technical information to farmers.

3.1.3 Gender

Ninety one percent of the farmers interviewed were male while 9% were women. This does not mean that women are not involved in tea production. Studies indicate that women provide most of the labor in tea production (Owuor, et al 2005). However, men tend to be involved in educational forums and surveys like the present one while women are unable to attend due to numerous agricultural and household chores. Tensions have also been recorded as a result of conflicts over the control of proceeds of tea sales as the men are likely to receive them while women may not benefit much. These negative gender relations affect tea production negatively and lead to low productivity and neglected tea fields (Sorensen and von Bulow 1990).

3.1.4 Size of the farm

The average size of the farms of the respondents was 2.2 acres. This indicates that most of the farmers are small scale and borne out by the fact that the farmers interviewed are serviced by KTDA whose mandate is to aid in production and marketing of tea produced by small scale farmers. Small land sizes have been reported to be constrain productivity in Nyeri County due to declining soil fertility (Owuor et al, 2010). The average size of land

85 under tea was 0.85 acres. Seventy eight percent of the farmers had one acre and below
86 under tea production.

87 **3.2 Farmers' knowledge of tea production practices**

88 Majority of the farmers were able to describe various tea production practices which included
89 land clearing (slashing of bushes, cutting and uprooting of trees that is done before the
90 rains), land preparation (digging), crop establishment (plant spacing, depth of planting,
91 transplanting). Findings from key informants also support this. Mean adoption percentage
92 for land preparation for land preparation, planting techniques, weeding plucking table
93 establishment were 87%, 90%, 94% and 90% respectively. There were somewhat lower
94 mean percentages the on use of manure, plucking frequency and pruning (60%, 79%, and
95 50% respectively). Low tea output has been attributed lack of diffusion of adequate
96 production technologies and inefficient use of fertilizers (Owuor, et al 2011).

97 **3.3. Tea factory/collecting Centers**

98 The respondents took their tea harvests to Chinga and Ragati, Gitugi, Iriani and Gahuthi
99 factories. Collecting centers were numerous. The mean distance between the farms and the
100 collecting centers was 0.8 Km. Majority of the farmers (96%) carried tea harvested on the
101 back to the collecting centers while only one farmer indicated that the lorry picked the
102 harvest from his farm. Most of the collecting centers in the County are at the recommended
103 distance of 1Km. Proximity to the factory/ collecting centers is important to reduce quality
104 deterioration and reduce leaf spillage (Owuor, et al, 1990).

105 **3.4 Quantity of tea harvested in rainy and dry seasons**

106 The mean quantity of tea harvested in the wet season was 96kg/acre. In the dry season the
107 mean quantity harvested was 52 kg/acre. Key informants indicated that tea productivity was
108 lower than the potential given Nyeri County climate and soils. Average revenue from the tea
109 was Kshs.102, 416 per year. However, the maximum amount of revenue obtained from tea
110 was Kshs. 300,000 per year while the minimum amount was Kshs. 10,000 per year.
111 Revenue levels are still low and dependent on a myriad of factors.

112 **3.5 Sources of information for the farmers**

113 Majority of the farmers (75%) obtained information on tea from KTDA. Only half of the
114 farmers indicated that they obtained information on tea from the public extension service.
115 Fifty four percent of the farmers indicated that they did not obtain information from fellow
116 farmers. These findings are in line with the fact that one of the roles of KTDA is training of
117 farmers and the role of public extension service in farmers' fields schools (KTDA, 2014).

118 **3.6 Role of KTDA in tea production**

119 Farmers indicated the roles of KTDA as transporting, processing and marketing of tea, road
120 maintenance, provision of bursaries to deserving students, provision of SACCO loans and
121 inputs. Interesting 7% of the farmers added that KTDA does not have transparency and
122 oppresses farmers. Key informants also indicated the above named roles. The roles
123 observed by the farmers are accurate as they are reflected in the services that KTDA
124 provides to farmers (KTDA, 2014).

125 **3.7 Purple Tea planting**

126 All the farmers interviewed did not grow purple tea. Thirty five percent of the farmers
127 indicated that they did not have any knowledge of purple tea. Nineteen percent indicated
128 they did not have enough land to diversify to purple tea production. Thirty four percent
129 indicated that purple tea seedlings are not easily available in the area. Seven percent of the
130 farmers said that the climate was not suitable for purple tea production. Four percent of the

farmers indicated they had not been advised to plant purple tea and that there was no market for purple tea as of now.

Most of the key informants indicated that their organizations grew purple tea. The one that did not grow the purple tea indicated the lack of market and equipment to process the tea as hindrances. Mean acreage under purple tea was 4.83 acres which quite minimal. Research studies also indicate the main constraints to purple tea production are low prices and low consumer uptake (Jiwaji, 2014).

3.8 KTDA farmer field Schools (FFSs)

Majority of the respondents (79%) have heard of the FFSs. Forty eight percent of the farmers were members of the KTDA of FFSs. Those that were members of the schools were asked to rate them. Forty six percent rated them as adequate while 38% rated them as highly adequate. Only 15% rated the schools as not adequate. Key informants indicated that the role of the FFSs was training of farmers in all aspects of tea production as well as other crops or animals that farmers choose, provide a link between public extension and tea farmers and mobilizing leaders among the farmers.

A study done on the impact of the field schools indicated that the farmers were very positive with the program however the income of participating group was lower than non-participating group. This was attributed to increased use of fertilizer and labor (Waarts, et al, 2012). KTDA has also indicated that that tea production has been boosted by 30% country wide (KTDA, 2004). This raises the question on who is benefitting from the adoption of sustainable agricultural practices and this could also explain the 15% who rate the schools as not adequate.

Environmental conservation is an important part of modern agriculture. KTDA is still on the right path as it plans to roll out the FFS program to the 3200 collecting centers it has with the help of the Unilever Company and other stakeholders. Certification of the KTDA factories by Rain Forest Alliance will also safe guard future tea production in Kenya (KTDA, 2004). However, the income aspects of the adopting farmers need to be addressed. Other challenges were enumerated by key informants included by low support of the schools by young farmers, low farmer enrolments, frequent absenteeism of some members, interruption of some social activities in the local areas, limited time for training trainers, limited funds to compensate trainers and lengthy program which causes a lot of drop outs. These challenges need to be addressed.

3.9 Pests and Diseases

Majority of the farmers (82%) indicated that they did not have any problems with pests in tea production. Of the farmers that experienced the pests aphids and rodents are a problem. Control measures used were rodenticides. Other farmers said that the aphids were killed by rains. Most of the key informants (75%) also indicated that pests do affect tea production however their effect on tea is minimal. The pests observed in farmers' fields were red spider mites, scales, thrips, aphids and crevice mites. Control measures suggested were cultural measures like good nutrition. This supports the view that by and large tea production in Kenya is pesticide free.

Over half of the farmers (54%) indicated that *Armillaria* root rot is a problem in tea production. The control measure of this disease was reported to be uprooting the affected plants and venturing into different enterprises.

All the key informants indicated that diseases encountered in tea were *Armillaria* root rot, *Hypoxylon* wood root and stem canker. Disease control measures suggested were for *Armillaria* uprooting of the tea, for *Hypoxylon* proper pruning and chemicals for stem canker. Other studies have also indicated these diseases affect tea (Otieno, 1997).

3.10 Prices of tea

Majority of the farmers (78%) and all the key informants indicated that low tea prices are a serious problem in tea production. KTDA has reported that low tea prices are mainly due to oversupply of tea in the market, volatile political environment in some of key export markets like Egypt, Pakistan and Syria and depreciating currency in Pakistan (KTDA, 2014). Low prices have in the past led to some small-scale farmers in Nyeri County to uprooting their crop, citing frustrations in payments. Kenya Tea Board and Kenya Tea Development Agency (KTDA), however, moved to arrest the situation and warned errant farmers with legal action, if they uprooted their bushes (Blalock and Promisloff, 2011). Whereas, KTDA claims that Kenyan farmers are among the best paid in the world the sentiments of the farmers surveyed shows the income they get is not enough for their livelihoods.

Some farmers (37%) indicated that nothing can be done concerning prices because marketing of their tea is in the hands of KTDA. This reveals the feeling of helplessness farmers have about tea prices which fuels resentment towards KTDA. Others suggested looking for new markets. The same interventions were expressed by the key informants. KTDA has set up strategies to mitigate these challenges through business and market diversification across the supply chain (KTDA, 2014). A lot still need to be done for the effect of diversification to be felt by farmers. Other farmers suggested government intervention in the tea industry. Government subsidies to farmers are used the world over to protect farmers. This can be introduced in tea production especially when the prices are very low. A small percentage (4%) suggested value addition of the tea. A taskforce commissioned by the Nyeri County government has also recommended value addition of tea as the way forward in the tea sector as barely 5% of the tea in Kenya is sold in value added form (Weru, 2013). Value addition strategies included market and product development support, physical and logistical support, enhancement of Kenya tea brand and compliance with consumer requirement. Benefits of tea value addition include competitive prices, increase in income, creation of cottage industries, diversification of products, knowledge and technology development. Other stakeholders such as Karatina University are spear heading research on value addition of tea (Nganga, 2014).

Farmers also suggested that improvement in tea grades would increase the prices. This is also a critical suggestion since high quality tea attracts high prices. KTDA is trying to address this through introduction of different tea clones and farmer education (KTDA, 2014). For example studies on the impact of KTDA FFSs indicate that leaf rejection at factories has significantly reduced. This was because farmers were taught on quality tea production. This needs to be encouraged to help mitigate low tea prices.

Another mitigating measure though not mentioned by the farmers is diversifying to other enterprises that require little land (much of the land is under tea) but are rewarding income wise. Dairy goats, piggery, rabbits, horticulture and green houses are the new emerging agricultural opportunities in the County. Already some these incentives have been introduced. For example 6,000 tea farmers for the Iriana Tea Factory have acquired hundreds of beehives to help diversify their income and a 150-acre plot of land on which they hoped to erect 12,000 beehives (Weru, 2010).

3.11 Climate

Farmers indicated that low rainfall, extreme cold or heat and frost affect productivity of tea. All the Key informants also indicated that adverse weather reduces yield significantly. Over half the farmers indicated that nothing can be done about the climate. Eleven percent suggested tree planting will help mitigate the adverse effect of the climate. Other farmers (7%) suggested farmers' education. The rest did not know what mitigating measures can be used. Key informants suggested interventions that were mainly based on planting of trees and preserving of existing forested areas through energy saving jikos and renewable energy

sources. Farmers' and key informant responses show low level of knowledge on what can be done to mitigate the effects of adverse climate.

Adaptations to adverse climatic changes are numerous and include crop management practices (choice of fields, planting densities, crop varieties and planting dates), livestock management practices (feeding and animal feeding practices), land use and management (fallowing, tree planting or protection, irrigation and water harvesting, soil and water conservation measures, tillage practices and soil fertility management), livelihood practices (mix of crop and animal production, permanent or temporary migration and agricultural and non-agricultural activities) [Bryan et al, 2011]. Some clones developed by Tea Research of Kenya are also resistant to frost damage and are recommended for those areas that suffer from frost.

3.12 Soil Erosion

Majority of the farmers (72%) indicated that soil erosion is not a problem. Of the farmers that indicated soil erosion was a problem (28%) indicated that it occurred on the sides of the mature tea and in young tea. Control measures such as contour cultivation, terracing and cover cropping were used to reduce soil erosion. Key informants expressed the same sentiments.

3.13 Availability of inputs

Fertilizers are provided by the government on credit to the farmers. Fifty percent of the farmers indicated that fertilizers are available but the amounts given are not adequate in some cases. Thirteen percent indicated that the fertilizers are available but they are brought late. Eight percent indicated that the fertilizers were available without any problems. Eight percent indicated that the fertilizers provided were of low quality.

3.14 Excess Fertilizer use

Eighty eight percent of the farmers indicated that they had no problem with excessive fertilizer use. Key informants indicated the problem does exist and said the Tea Research Foundation of Kenya (TRFK) tests soils periodically and farmer education has also been used to reduce its occurrence.

3.15 Disposal of agricultural chemical containers

Over half of the farmers (54%) did not know of any special way of disposing agricultural chemicals containers. Twenty one percent indicated that the containers should be buried while seven percent indicated that farmers should be educated on container disposal. Another seven percent indicated that KTDA should collect the containers for disposal. Three percent indicated that the containers should be thrown into the latrine or dustbin. Most of the key informants (75%) did not know of special way of disposing chemical containers. Those that knew suggested washing the container 3 times and burying in the ground. Recommended practices include combustion of packaging in licensed incinerator and burying of containers after rendering them unusable (Ayiemba and Nyabundi, 2008).

3.16 Labor

In most tea growing areas labor is manual and only multinationals use tea plucking machines (KTDA, 2014). Most of farmers (68%) said that labor is easily available. However, the price of labor was rated to be high by majority of the farmers (96%) and it ranged from Kshs. 8 to 12 per kilo of tea plucked. Similar sentiments were echoed by the key informants that is labor costs are very high when compared to the proceeds from tea. Farmers need adequate monthly payment to organize harvesting of entire crop. During the monthly green leaf payment, KTDA needs to workout rates that can facilitate the smallholders to remove all crop on the bush. If the farmers are unable to remove all ready shoots, there is overgrowth which translates into losses (Owuor et al , 2011).

3.17 Machine picking

Forty one percent of the farmers do not know about the machine picking. Other farmers indicated that machine picking was not found in the area, machine picking was cheaper than hand picking but gave low quality tea and damages the bushes affecting their ability to

sprout and machine plucking is not recommended for hilly terrain which is found in Nyeri County. Fifty percent of the key informants indicated that machine plucking is the best and has high acceptability. Other advantages of machine plucking were enumerated as reduction in cost of plucking, fast plucking and ease of maintaining the plucking table. Ongoing research indicates that machine plucking does not have adverse effect on tea quality but it significantly reduces costs (TBK, 2011).

3.18 Other Challenges

Other challenges enumerated by the farmers include wastage of time at the collecting center waiting for the clerk or trucks, delay in payments, dusts and smoke from the factories affect the nearby tea plantations, lack of proper clothing during cold and rainy seasons, and non-tallying of tea weight. Challenges indicated by key informants included the fact that 50% of the labour has no formal training, other players apart from KTDA who want to construct factories, lack of farm management services to manage labour, competition from other beverages, political interferences, poor infrastructure and high processing costs due to high prices of firewood. Other studies have similarly enumerated infrastructure, poor extension coverage and governance issues as problems facing tea in Kenya (Owuor et al, 1990; Owuor et al, 2010).

4. CONCLUSION

Challenges that face small scale farmers need to be mitigated for tea production in Nyeri County to go to the next level. These challenges include poor gender relations, low adoption of some aspects of tea husbandry, low prices, adverse weather, pests and diseases and high labour costs. Opportunities in the tea industry are diversification to other enterprises to reduce the risks of low tea prices, value addition, purple tea production, research on effective tea husbandry and clones and KTDA farmers field schools.

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