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## Tea Farming Enterprise Contribution to Smallholders' Well Being In Kenya

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### Abstract.

Poverty reduction among smallholders has remained a major priority for the Kenyan government. Efforts have been geared to have a streamlined agri-business system like emulated by the tea sub-sector. In the smallholder tea sub-sector, farmers are organized to private companies, own factories, engage in produce assembling, processing, contract experts for professional services, have micro-financing institutions serving them, and procure fertilizer from overseas in bulk to distribute it to its members. While the success of the organization and operations are visible the impact of the enterprise returns are unknown. The paper discusses the tea farming enterprise contribution to the well being of the smallholders' tea farmers in central and western highlands of Kenya.

### Introduction

Tea growing in Kenya has expanded rapidly since its introduction in 1903 from India, to become the country's leading export crop earner of about Kshs. 43 billion in 2006. The tea earnings accounts for 4% of the country's gross domestic product (GDP). About 3 million a tenth of the country population relies on tea for employment. The tea industry is composed of the estates (mostly owned by the multinationals) and the smallholder growers. Tea farming in Kenya is in the country's highlands, which has sufficient, well distributed and reliable rainfall throughout the year. The average temperature range between 15-24° C. The rich volcanic soils are deep and well drained with a pH that tends towards acidic (between 4.0-5.0). These are areas of very high agricultural potential where other crops' enterprise include:- wheat, maize, millet, potatoes, oat, barley, pyrethrum, sugar cane, horticultural crops, dairy and sheep rearing could be successfully practiced. The areas were originally equatorial rain forests and hence important watershed for a number of rivers. The areas have high employment potential for family farmers (Jaetzold and Schmits, 1983).

The smallholder produces 60% of total tea produced in Kenya hence main actors in the local auction influencing both the amount and prices offered at the auction (Mwaura *et al.*, 2005). The smallholders are farmers who hold and manage less than eight hectares of tea farms (Nyangito, 2001). The estate sub-sector is owned by 16 companies operating 38 tea-processing factories and produce 40% of total amount of tea produced in Kenya. Kenya Tea Development Agency (KTDA) manages the smallholder tea factories. Smallholders are served by 54 tea processing factories.

Smallholders have more acreage in tea, covering 66% of total area under the crop in 2005 (ITC, 2005). The smallhold growers estimated to be 0.4 million are among the largest in the world and most successful scheme worldwide (Lamb and Muller, 1982). The substantial growth and structural change experienced by the industry was evidently due to the very conducive policy environment that encouraged continued investment in the estates sub-sector which is managed on private basis and the smallholder sub-sector under the management of the government through the Kenya Tea Development Authority.

Although the smallholder tea growers have been ignored by most development agencies by the fact that tea is the leading export crop, higher levels of poverty are prevalent. The Central Bureau of Statistics, 2005 reported cases of people living below rural poverty line (daily incomes of equivalent to US\$ 0.55) to average at 50.3 % of those living in tea growing areas. The large numbers of the smallholder growers need to be addressed to reduce the higher levels of poverty escalation. The high poverty levels in subsistence farming systems in Kenya has been contributed by the increased costs of inputs, higher inflation, low output prices, poor land tenure systems, poor markets, post-harvest losses, poor technologies, aging rural population thus limited physical energies for production due to urbanization and higher dependency ratio (Batiano *et al.*, 2004). Factors contributing to poverty among tea growers in Kenya are unknown and intervention strategy to ameliorate the situation must be based on salient facts, which are reliable and predictive on the future. Collapse of other crops' enterprises through persistent low farm-gate prices for cotton, coffee and sisal, and maize through liberalization (Nyangito, 1999) presents both a

challenge and a lesson for the tea sector. The relevant information that can be used in intervening on poverty among smallholder tea growers is missing and the yardstick to evaluate amelioration of the vice need to be established.

Despite the success of smallholder tea sub-sector, problems started to emerge in the late 1980s due to government interventions and KTDA's institutional organization (Nyangito, 1999). Furthermore, the limited ownership and decision making by smallholders on processing, marketing and distribution of profits at the factory levels failed to provide incentives to produce quality tea and reduce operational inefficiencies in tea collection and processing. The liberalization process implemented in 1999 had the sole aim of removing constraints to the industry's growth. Through the process, the government withdrew from controlling services such as extension, processing and marketing to allow private sector to take over, restructured KTDA to a private entity (Kenya Tea Development Agency) and removed restrictions on foreign exchange to allow exporters to keep earnings in foreign currency (Nyangito, 2001). It was anticipated that the interventions would result in lower marketing margin, higher producer prices and increased productivity (Winter-Nelson and Temu, 2002).

Despite the fact that increased production has been achieved through improved productivity and expansion that has been purported to lead to high profitability (Ronno and Wachira, 2005), poverty escalation is high with queries on the poverty level and factors influencing it remaining unanswered (CBS, 2005). In this study, tea farming enterprise contribution to smallholders well being in Kenya was evaluated.

### **Methodology**

A combination of purposive, multi-stage and simple random sampling technique were used to select 309 smallholder's farmers in 10 Kenya Tea Development Agency managed factories. Selection of factories for the study ensured half were in the East of Rift and the other half in West of Rift. The factory catchments selected for the study in East of Rift were Imenti, Mataara, Ragati, Kangaita and Kiru Tea factories that were in Meru Central, Thika, Nyeri North, Kirinyaga and Muranga districts respectively. While in West of Rift, Kapset, Togat, Ogembo, Kapsara and Mudete in Bureti, Kericho, Gucha, Trans-Nzoia and

Vihiga/Kakamega districts respectively were selected. The survey was carried out between August and October 2005. Information on tea farming was collected through a pre-designed questionnaire, which had earlier been improved in a pilot survey.

The ten sampled areas were to provide information on the tea enterprise expenses and returns, and other socio-economic activities, which would aid in establishing the economic wellbeing of tea farmers in Kenya and identify factors that influence farmers' wellbeing.

### *Conceptual Framework*

A modified cost-return model was used to establish the net welfare or return from tea enterprises after tea related management costs and those for up-keeping the households above the poverty line were deducted from total earnings. Since the study aimed at establishing the well-being of tea farmers, and determine the intervention strategies of improving tea growers returns based on the contributory factors to poverty or well being, it was assumed that farmers rely entirely on tea for their livelihood.

A tea farming household was considered to be poor if returns from tea enterprise were less than its financial requirement to meet basic needs. Household financial requirements were based on the number of adult equivalent and the cost of buying basket of necessities.

The annual cost of basic basket that allows minimum nutritional requirements to be met (set at 2250 calories per adult equivalent (AE) per day) in addition to the cost of meeting basic non-food needs. This amount is set at Kenya Shillings (Kshs.) 14868 per annum (CBS, 2003). The welfare level was net of return from tea enterprise (tea income less operation costs of tea framing) minus the household costs of basic necessities. A positive results indicated household able to meet basic requirements and hence above the poverty line. A negative sum indicated household requirements outstripped returns and hence the household was unable to meet the minimum survival necessities and hence members were considered to be living below the poverty line.

### **Results:**

Tea farming in areas designated as having potential of tea growing is a major enterprise and a core source of income to residents. A large proportion (60%) of tea growers have diversified to other farm enterprises

including dairy, maize and horticultural crops. Tea was the leading family enterprise among three quarters of all farmers. One in every five households had an off-farm source of income that supplemented income from tea. Most farmers (85% of the respondents) lived in the farms where they grew tea and valued it, as it provided continuous monthly returns and a lump sum at the end of every year. Unlike other sub-Saharan smallholders farmers based crops, which experiences unreliable markets and inefficient marketing system (Batiano, *et al.*, 2004), tea has low risk as it has a well-established processing, assembling, marketing and credit systems and farmers are punctually paid for monthly deliveries. A monthly payment of Kshs. 9 is payable for every kilogramme of green leaf delivered with another second payment based on the factories performance in the end of the year. The second payment varies between factories, as teas from various factories attract different prices at the auction and factories operation costs varies. On average the tea prices among the selected factory catchments in 2004-2005 financial year was Kshs 20.10 with a standard deviation of  $\pm 2.93$ .

Small-scale tea enterprises operation costs varied greatly from one farmer to another and hence profitability differed too. Table 1 shows quantitative information of the smallholder tea growers in Kenya.

On average, small-scale tea farmers had 0.39 ha of land under the crop that yielded 3378 kg of green leaf in the year of study. The size of land and the annual total green leaf production varied highly between farmers as indicated by the high values of standard deviations. Variations were also observed on other socio-economic factors and operation costs considered. Average years in tea farming, farm productivity and number of household members were, 24 years, 8581 kg ha<sup>-1</sup>, and 7 persons respectively. Area under tea varied between 0.07 ha to 2.69 ha. Farmers' experience in tea farming varied from 1 year to 54 years. Farm productivity and annual green leaf production ranged from 926 kg ha<sup>-1</sup> to 29640 kg ha<sup>-1</sup>, and 260 kg to 30000 kg, respectively. High differences observed in operation costs affected the total returns from tea enterprise among farmers.

Main tea enterprise operation costs averages were Kshs 6200, 1164, 1228 and 10344 for fertilizer, weeding, pruning and plucking costs respectively. On average every household used 177 kg of Nitrogen per ha yr<sup>-1</sup>. Some farmers failed to apply any fertilizer on

their farms while others were using more than the recommended rate at 494 kg of N ha<sup>-1</sup> yr<sup>-1</sup>. The annual recommended fertilizer rate is 150 kg ha<sup>-1</sup> Nitrogen (Kamau *et al.*, 2005). Some households utilized family labour in weeding, plucking and pruning hence significantly reducing operation costs. High expenses of Kshs 19200, 9500, 120,000 per annum were reported on weeding, pruning and plucking, respectively. A total operation annual cost of Kshs 18,720 was reported per household. Most tea farming expenses (55%) were attributed to plucking costs. Other operations including; fertilizer, pruning and weeding costs contributed 33, 6 and 6 % of the total annual operation costs respectively. Pruning costs were minimal as the operation is done once in 3-5 years depending on plant growth rate. Tea bushes forms a canopy that cover the ground hence hindering weeds growth if right spacing and other culture practices are followed (TRFK, 2006) minimizing weeding frequency hence reducing cost associated with the activity.

High annual returns from tea farming were reported, averaging Kshs 46692 per farmer. A higher deviation was observed with some farmers earning as high as Kshs. 392520 while others experienced a loss of Kshs 27468. The high loss was attributable to higher crop establishment costs before proceeds from the crop are received. Tea is a perennial crop with returns expected 4 years after planting. Labour costs especially in plucking contribute to high operation expenses moreso where supervision is poor. The annual returns shows that tea enterprise enjoys better returns and may have a comparative advantage in Kenyan highlands considering the low adoption of technology among smallholder (Owuor *et al.*, 2002), that have led them to experience low farm productivity with green leaf estimated at 9203 kg ha<sup>-1</sup> unlike the large estates sector that averaged 17652 kg ha<sup>-1</sup> yr<sup>-1</sup> in 2005 (TBK, 2006).

The net returns from tea enterprise was a loss of Kshs. 53,175, implying that on average tea farmers failed to get sufficient return to cater for their families from the tea crop alone that could ensure they live above the poverty line. The net returns from the tea enterprise varied from a net profit of Kshs 265022 to a loss of Kshs 317594 per annum. The high deviation in returns is attributable to differences in socio-economics characteristics including the family size and operational costs. Other factors affecting tea returns and the variation in return include efficiency in

resources allocation and adoption of production technologies.

#### **Characterization of poor and non-poor tea farmers.**

A large proportion of smallholder tea farmers, 82% live below the poverty line with the rest, 18% being considered as non-poor. The poor farmers have smaller areas under tea (0.32 ha), achieve low productivity ( $8233 \text{ kg ha}^{-1} \text{ yr}^{-1}$  of green leaf), have larger families, few growers consider tea as a leading enterprise (40%), few are off-farm employed (3%) and engage in other on-farm enterprises (32%). Table 2 compares attributes associated with the poor and non-poor tea growers based on the set standards of categorization of poor individuals in Kenya (CBS, 2003). Poor farmers expenditures were found to be lower on household's routine expenses as well as investment in tea farming activities. Annual household's routine expenditure for the poor in the year 2005 averaged Kshs 62010 against that of the non-poor of Kshs 105601. Implying that poor households utilized an average of Kshs 8859 per individual in 2005 against Kshs 26400 for the non-poor.

Levels of financial investment in tea management were lower among poor than non-poor farmers. Costs of fertilizer application, pruning, plucking and weeding were Kshs 5027, 1074, 8631 and 1091 respectively among the poor farmers. The annual costs for fertilizer utilization, plucking, pruning and weeding per hectare were Kshs 16757, 26972, 3409 and 3356 for the poor farmers respectively. The non-poor farmers utilized Kshs 46081, 18597, 3721 and 3450 in plucking, fertilizer, pruning and weeding per hectare respectively in 2005. Although non-poor tea acreage was 81% larger than the poor farmers, costs implication for plucking, fertilizer, pruning and weeding were 71%, 11%, 9% and 3% respectively higher per hectare, indicating efficiency among the non-poor. Efficiency could as well be associated with land size where the land holding for the poor were too small for efficient operations.

It was observed that tea farming was profitable among smallhold tea farmers. Deviation exists among smallholders on the amount of income accrued from tea enterprise. Farmers categorized as poor had a low return estimated at Kshs  $92753 \text{ ha}^{-1}$  in 2005. Their counterparts the non-poor achieved a return of Kshs  $219970 \text{ ha}^{-1}$  in the same year. The non-poor achieved more than twice the returns achieved by the poor per

unit area. Although the tea enterprise was observed to be profitable among the smallholder tea farmers, household financial requirements were too high to be catered for by the tea returns. Households' expenses were Kshs 62010 and Kshs 105601 in 2005 among the poor and non-poor respectively, yet returns from tea were Kshs 29681 for the poor and Kshs 127583 for the non-poor. Demands for the households exceeded the finance returns from the tea enterprise. The tea enterprise was even deprived the ability to cater for the poor, when the household financial needs were based on the welfare monitoring survey indicators.

#### **Options in improving tea farmers' welfare**

The study has shown that a large number of tea farmers live below the poverty line based solely on the tea income. The study confirms the results of a previous survey on the welfare monitoring undertaken by Kenyan government (CBS, 2003). The variations between the two studies on the proportion of population living below the poverty line are associated with the time factor and the fact that this study restricted itself to welfare based on tea income. The later study has provided a clear picture of farmers' welfare based on the leading export crop with a history of the well-organized institutions that are envied by other crops' enterprises. The challenge of addressing poverty and improving returns to such an enterprise is colossal, unlike in other enterprises that target to emulate this particular industry in terms of smallholder organization, value-additions, inputs credit and distribution systems, information dissemination and modes and timeliness of paying farmers (Gesimba et al., 2005) and marketing functions implementations (Muturi et al., 2001).

The analysis has shown that a number of avenues exist in improving farmers' welfare by targeting maximizations of returns from tea enterprise. The factors that may be targeted for improved returns of tea enterprise include improved tea productivity, population control interventions and improved green leaf tea prices. By tea growers increasing the levels of investment on their tea farms they will achieve high productivity that will improve their welfare. Another factor, which may not be applicable everywhere due to limitation of land resource, is increasing acreage under tea. Tea farm productivity could be addressed through adoptions of high yielding cultivars and routine tea management practices. Other factors, which will immensely increase yields, is recommendations of the

optimal spacing for various tea types. Already varied spacing regimes that range from having 5383 to 18150 tea bushes per hectare exists with the paucity of justification for such wide variations.

Targeting information to the demand areas will improve extension impact as tea is a perennial crop and a mistake undertaken within a specific time may not be ameliorated without farmers reinvesting in high costs operations. By targeting farmers who would wish to plant tea on the right variety, spacing and land preparation, efficiency in production will be achieved as land utilization would be optimal and cases of *Armillaria* root rot, (a fungal diseases affecting tea) will be controlled (Otieno, 2002).

Efficiency in tea processing, transportation and human resource management will save cost that will be paid to farmers as increased green leaf prices. Improved marketing system for tea through branding, value-additions and diversification of markets will ensure better returns to the farmers. Although the auction tea marketing system has been perceived to serve the industry well, efforts to diversify to more competitive markets (Sabur et al., 2000) need to be considered. Implementation of a value chain analysis of the entire industry activities from research and development, to raw material supply and production, to transport and delivery, would aid in establishing specific areas for interventions in upgrading to enhance profitability.

Diversification to other on-farm and off-farm enterprise will improve the farmers' welfare by increasing his financial base. Efforts to establish the income returns or productivity levels of other options crop enterprises as dictated by agroecological environment, efficiency in resources utilization and the prices need to be in place for optimal household's returns.

Returns from tea are favourable considering the fact that the enterprise recorded high returns of KShs. 46692 from 0.39 ha parcels of land in the study year, with its limitation being to fully cover household needs due to escalated cost of living. Intervention by the government to control high inflation through sound macroeconomics policies will ameliorate the vice.

### Conclusions:

Through the survey tea farmers have been categorized into the poor and non-poor and hence aiding in establishing factors that influences poverty among smallholder tea farmers. Any intervention to

ameliorate the situation may be tested for its worthiness based on the impact it will have on the total returns. If an increase of green tea prices were to be implemented, its impact would be tested and be used to forecast the proportion of farmers that will cross from being poor to being above the poverty line. Introduction of new technologies including clones, management practices; growth stimulating agency and improved extension may be weighed using the same technique for their impact. Increase in the prices of fertilizers, tax introduction and subdivisions of land may provide negative impacts that would be identified using the same model.

Other enterprises returns could be summed up to allow a detailed analysis of the smallholder welfare and predict how every enterprise contributes to his/her survival. Interventions on the best enterprise or groups of enterprise that would improve the farmers' welfare based on available resources and without compromising on the resources efficient could be selected.

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**Table 1:** Characteristics of smallholders' tea growers in Kenya in 2005

Attributes	Average	STD dev.	Min	Max.		
Area under tea (ha)	0.39		0.383	0.07	2.69	
Green Leaf annual production 2004/05 (kg)	3378		3645	260	30000	
Years in tea farming	24		13	1	54	
Farm productivity (kg/ha)	8581		5412	926	29640	
Number of family members	7		4	1	23	
Green leaf prices		20.10		2.93	16.25	26.65
Fertilizer application (Nitrogen/ha)	177		105	0	494	
Cost of fertilizer use	6200		6074	0	53580	
Weeding costs ( <i>average per household</i> )	1164		2466	0	19200	
Pruning costs ( <i>average per household</i> )	1228		1388	0	9500	
Plucking costs ( <i>average per household</i> )		10344		15070	0	120000
Total costs ( <i>average per household</i> )		18720		17747	1000	108800
Tea returns (tea production Returns-Costs)	46692		55886	-27468	392520	
Net profit (Tea Returns- Household requirement)	-53175		78260	-317594	265022	
Off farm employed	20%					
Tea leading enterprise	75%					
Other on-farm enterprises	60%					
Farmer live on the tea farm	85%					

**Table 2.** Categorization of smallholders tea growers based on the poverty status in 2005

Attributes	Average values		
		Poor	Non-poor
Proportion of total	82	18	
Area under tea (ha)	0.32	0.58	
Green Leaf annual production 2004/05 (kg)	2381	8078	
Years in tea farming	23	24	
Farm productivity (kg/ha)	8233	12073	
Number of family members	7	4	
Off farm employed (%)		3	38
Annual (2005) household expenses (Kshs)	62010	105601	
Tea leading enterprise (%)		40	83
Other on-farm employment	32	68	
Fertilizer application (Nitrogen/ha)	174	188	
Cost of fertilizer use	5027	10786	
Weeding costs ( <i>average per household</i> )	1091	2001	
Pruning costs ( <i>average per household</i> )	1074	2158	
Plucking costs ( <i>average per household</i> )		8631	26727
Total costs ( <i>average per household</i> )		15223	39027
Tea returns (Returns-costs)	29681	127583	
Net profit (Tea return – household financial needs)	-77812	65573	