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Cash Crop Farming Among Small Scale Tea Farmers and its Contribution to Food Security of Households in Vihiga County, Kenya

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ABSTRACT

Tea farming is common in Kenya, and most of it is produced by smallholder farmers. Further, there is very minimal data currently on the food security status among households of small-scale tea farmers in Kenya. This study investigated smallholder tea farmers' household food security status in Vihiga County, Kenya. The study adopted a cross-sectional analytical study. A Multistage sampling technique was employed in this study, and a sample of 310 was considered. In the first stage, Vihiga County was purposively selected, while the respondents were randomly selected. Descriptive statistics, such as frequencies and means, were used to describe the data. Most people had 3 acres of land (45.5%), while (3.1%) had more than 6 acres. Cash crops took the highest portion of their land. Most households (49.0%), focusing on children under five, consumed four food groups daily. The DDS was low (4.5 ± 2.1), with only about 15% meeting the minimum requirements for dietary diversity, meal frequency, and adequate diet, while most households >90% took cereals, pulses, vegetables, sugar, and fat. The production from tea was low (104.3 ± 24.7) kg while the income from tea was not reliable, with a kg being paid at 18 KES. However, most of the tea-based income was not used to access food. Most of the tea-based income was not used to access food. The production from tea was low (104.3 ± 24.7) kg while the income from tea was unreliable. Men controlled the tea and any other income, with a few drinking the proceeds. Consumption of cereals, pulses, vegetables, and chicken was okay. However, the consumption of the other food groups was low. The study recommends the empowerment of women so that they make decisions on food production, income, and use and further the review of tea pay policy to ensure payment that is commensurate with input as well as more sensitization of mothers on more allocations of funds to the food use of the available funds for a diversified health diet.

Key Words: Cash crop farming, Small-scale tea farmers, Food security, Households

INTRODUCTION

Food security is a prerequisite for healthy eating and healthy living. Food security exists when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life. [1] Food insecurity remains one of the most significant global impediments to achieving economic development, with about 815 million people (11% of the global population) being food insecure as of 2016. More than 820 million people worldwide are still hungry today, underscoring the immense challenge of achieving the Zero Hunger target by 2030. [2], [3] Hunger is rising in almost all sub-regions of Africa. Sub-Saharan Africa is one of the most food-insecure regions in the globe. The situation represents a humanitarian crisis,

with about 23% of the population being reported as undernourished. Regrettably, FAO states that about 34% of the Eastern African population is undernourished

Food security is impacted by various micro and macro-level elements, including institutional support for farmers and merchants, the price of food, monetary and fiscal policies, and technological advancements.[4] Food insecurity can be a short-term problem or a persistent problem over a more extended period. The accessibility, availability, utilization, and sustainability of food staples are the four factors considered when assessing a nation's level of food security.[5] Economic growth priorities include tactics, tools, policies, and programs to reduce food and nutritional insecurity.

In order to combat food insecurity in Africa, the promotion of export crops was premised on the potential contribution these crops could make to agricultural yields and the earnings of rural farmers. In the expansion of cash crops, they were seen as consumers of water, land, labor, fertilizer, and other inputs. [3] This led to soil degradation, environmental pollution, an increased risk of diseases and pests, and other issues.[6] This was seen as a loss to the land that was being farmed, which raised many concerns and questions for rural farmers. Some cash crops require a reasonably long period to become productive. In addition, rural farmers were concerned about the possibility of price fluctuations in regional markets and a decline in the production of essential food items, both of which could result in food insecurity. [7], [8]

About 2 billion people in the world experience moderate or severe food insecurity. [2] As a result of unfavorable climatic conditions and drought, food insecurity, hunger, and undernourishment continue to be widespread across the African continent, particularly the Horn of Africa.[9] Global agricultural yields have seen remarkable advances over the past half-century, but this has not eradicated these problems. Additionally, the population of Africa is increasing at an alarming rate, which is detrimental to African nations' ability to ensure that there is a sufficient food supply and that it is easily accessible.[10]

The rural economy benefits greatly from cash crops regarding wages and employment prospects, even though these are characterized by relatively significant income volatility.[2] Cash crops encourage agricultural modernization since they raise money for agricultural investments and hasten the establishment of organizations that support greater commercialization. [4] Although traditional cash crops play a substantial role in many African economies, they have lost some significance in recent years from the standpoint of national food security. Many African nations' food import costs have risen over the past ten years, but most of them can still pay for them with their non-agricultural exports, indicating that African economies are diversifying their commercial transactions. Cultivating cash crops raises the standard of living for farmers and agricultural workers, promoting food security.[11]

Additionally, and possibly more significantly, the cultivation of cash crops provides farmers with chances for investment and better farm management, encouraging agricultural innovations and boosting productivity. [12] However, there is a crucial complicating factor: for cash crops to succeed, the associated economic and environmental hazards must be eliminated or significantly reduced. Various risk-coping techniques can be needed for this. In order to maintain their livelihood and food security, many farm households balance the advantages and hazards of producing food crops and cash crops.

In recent years, especially in 2018, Kenya has been facing severe food insecurity problems. Available data indicates that over 10 million people are food insecure, with most living on food. Children are one of the most vulnerable groups leading to sub-optimal nutritional intake in the affected households.[10], [13] It has also been reported that in the context of food insecurity when

adequacy and accessibility of food are impaired, the mother's decision-making for infant feeding is also disrupted. [14]

Kenya is a tropical East African country with a wide diversity of climate and geographic regions, favoring the growth of diversified crops. [5], [15] There are two cash crops: annual crops, such as maize, rice, and vegetables, and perennial crops, such as coffee and tea. The main difference between food and cash crops is that cash crops are typically grown to be sold on the market, whereas food crops are typically considered essential staples for the subsistence of households or animals. [9]

Tea farming is common in several Counties in Kenya. Tea is reported as one of the leading export crops in Kenya. [16] Despite the restrictions on farm sizes, the export income from the tea industry has progressively attracted many farmers' attention. Due to the increase in tea production among farmers, there is an increasing concern about food insecurity among households of tea farmers since the majority have utilized a large portion of their small farms for tea production.[17] Vihiga county is one of these counties where the population produces tea on small farms.

While household food insecurity has been reported among rural populations, a few studies have been explored to determine the household food security of small-scale cash crop farmers in Kenya. This study sought to bridge this gap by investigating household food security in Vihiga County, Kenya.

MATERIALS AND METHODS

This study adopted a community-based cross-sectional analytical study design. A quantitative method was employed. The dependent variables are the child's nutrition status (measured as weight for age, height for age, and weight for height). As measured using DDS, the independent variables are socioeconomic and demographic characteristics: occupation, income level, and household food security.

The study was conducted in Vihiga County, Kenya. The County has five Constituencies; Luanda, Emuhaya, Hamisi, Sabatia and Vihiga. Furthermore, the County has a population of 590,013 and an area of 531 km².[6] The main economic activity of the County is cottage industries, subsistence farming, tea farming, horticulture, livestock farming, wholesale and retail trade, quarrying, and mining.

The target population included all small-scale tea farmers in Vihiga County. In Kenya, large-scale tea farming focuses on larger pieces of land and is mainly owned by companies. Small-scale tea farming is practiced by most of the population due to the small pieces of land.

The sample size was calculated using a formula by Cochran (1992), as shown below;

$$N = \frac{Z^2pq}{e^2} = \frac{(1.96)^2(0.24)(0.76)}{(0.05)^2} = 281$$

The sample size was increased by 10% to cater to non-response to make a total sample size of 310. A multistage sampling technique was used in this study. In the first stage, Vihiga County was purposively selected based on being a high tea producing County with a reported high prevalence of childhood malnutrition (23.5% stunted). [6] In the second stage, the study area was stratified into two different strata to cover varying agro-climate that is, Sabatia and Hamisi constituencies having the most significant number of farmers, 4,915 and 3,341, respectively.[18]

In the third stage, two wards from each stratum were randomly selected from the two constituencies (Wodaga ward from Sabatia and Gisamba ward from Hamisi). In the fourth stage, sample households were selected using systematic random sampling. The local Community Health Volunteers (CHVS) generated the household list. The total sample of households per ward was divided by the required sample to form the nth term. A random table generator was used to determine the starting point. Then the nth term was picked.

The researcher administered a semi-structured questionnaire was administered to the selected households. The questions in the

questionnaire included demographic and socioeconomic characteristics, household food security status, feeding practices, and nutrition status. Pretesting of the questionnaire was conducted on 10% of the expected sample size (31 households). This was also done for one FGD. This was conducted in the neighboring Busali ward in the Sabatia constituency, which was not included in the study. Any adjustments after the study were made to ensure validity and reliability. Five research assistants with a least a diploma in nutrition and dietetics were recruited to assist in data collection.

Household Food security was measured using the Household Food Insecurity Access Scale (HFIAS) tool as recommended by FAO. The HFIAS is a tool that was developed by asking participants about three domains of food insecurity which include; (1) experiencing anxiety and uncertainty about the household food supply; (2) altering the quality of the diet; (3) reducing the quantity of food consumed. The tool consists of nine questions that ask about changes in households' diet or food consumption patterns due to limited resources to acquire food in the preceding 30 days. A score for each question was created, then used to categorize a household as either food secure or insecure.[19] A 24- hour recall was used to assess households' dietary diversity as FAO recommended.

Approval to conduct the research was sought from Kenyatta University Graduate School. Furthermore, it was obtained from both Kenyatta University Ethical Review Committee and the National Council for Science Technology and Innovation (NACOSTI). Informed consent was obtained from each respondent before conducting the interviews. All the data collected from this study was/is held and kept confidential.

STATISTICAL ANALYSIS

Data were coded and entered in the Statistical Package for Social Sciences (SPSS) software, windows version 24. Data on food security collected using the 24-hour recall was analyzed using nutria-survey. Indices on minimum dietary diversity (consuming foods from 4 or more food groups), minimum meal frequency (>4 meals per day), and minimum acceptable diet were derived.

RESULTS

Socioeconomic Characteristics of Smallholder Tea Farmers in Vihiga County, Kenya

Results for socioeconomic characteristics are shown in Table 4.1. Males headed the households at (76.4%). The monthly income in most households (31.8%) was between 15,000-20,000 KES. This is with 6,001-8,000 being spent on food by most households (34.9%). About 22.3% of the households had a monthly income of less than 10,000KES, and only 3.8% earned more than KES 25,001. This showed that there are high rates of poverty in the area.

Table 4.1: Socioeconomic Characteristics of the Parents

		n (292)	%
	Characteristics	N	%
Household head	Male headed	223	76.4
	Female-headed	69	23.6
Reported Household monthly income	<10,000	65	22.3
	10,001-15,000	86	29.5
	15,001-20,000	93	31.8
	20,001-25,000	37	12.7
	>25,001	11	3.8
Monthly expenditure on food	<4,000	63	21.6
	4,001-6,000	82	28.1
	6,001-8,000	102	34.9
	8,001-10,000	31	10.6
	>10,001	14	4.8

Decision making Among Households in Vihiga County

The study investigated the decision-making process (Table 4.2). The dominant role of men is present on individual, family,

community, and national levels. Ordinarily, men are held accountable for all the decisions made in a family. In this study, men make most decisions, with 65.4% deciding what is to be grown, 76.4% deciding on management of the income, and 5.5%, deciding on what is to be cooked. Women mainly made decisions on what was to be cooked at 82.5%.

Table 4.2: Decision-making Among Households in Vihiga County

		n (292)	%
Main decision maker on what is to be grown	Father	191	65.4
	Mother	31	10.6
	Both parents	66	22.6
	Other relatives	4	1.4
Main decision maker on the management of the income	Father	223	76.4
	Mother	22	7.5
	Both parents	43	14.7
	Other relatives	4	1.4
Main decision maker on what is to be cooked	Father	16	5.5
	Mother	241	82.5
	Both parents	33	11.3
	Other relatives	2	0.7

Land Size and Land Use

The study investigated how the land size and how it was used (Table 4.3). It is observed that most people had 3 acres of land (45.5%), and (3.1%) had more than 6 acres of land. The piece of land was divided for homestead use and animal use. Cash crops took the highest portion of their land.

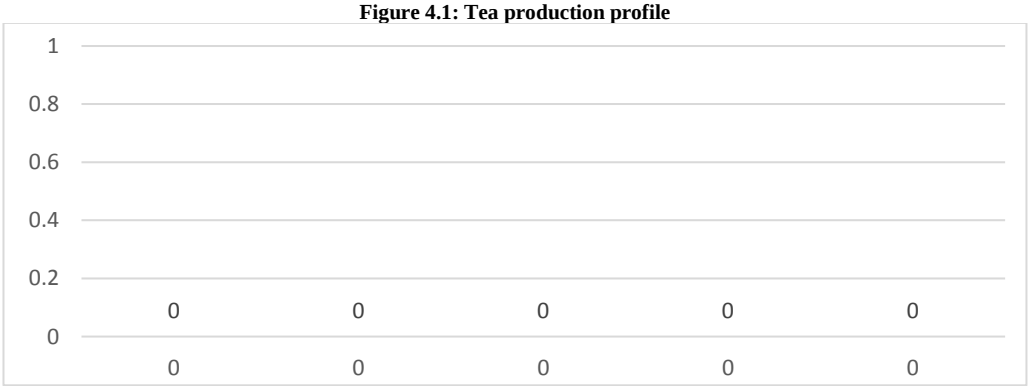
Table 4.3: Land Size and Land Use

Land size (acres)	n (292)	%
<1.4	12	4.1
1.5 -2.4	62	21.2
2.5 -3.4	133	45.5
3.5 -4.4	45	15.4
4.5-5.4	31	10.6
>5.5	9	3.1
	Mean land allocated in acres	SD
Homestead	0.25	0.01
Animals	0.25	0.01
Food crops	0.50	0.01
Cash crop (Tea)	1.00	0.10
Others	0.25	0.01

Tea Production Profile

The tea production profile was investigated (Figure 4.1). Most households (33.6%) produced between 101-150 Kgs per month, with each kg fetching 18 KES. This indicates that the production does not coincide with the average acreage under tea.

Figure 4.1: Tea production profile



Household Food Security Status of Smallholder Tea Farmers in Vihiga County

The study investigated various aspects of Dietary Diversity. They include the number of meals per day. The study investigated

various aspects of Dietary Diversity. They include the number of meals per day. Most children (49.0%) consumed four different food groups per day. The DDS was low (4.5 ± 2.1).

Table 4.4: Dietary Diversity Score

Dietary diversity score	n (292)	%
3	17	5.8
4	143	49.0
5	101	34.6
6	22	7.5
7	9	3.1

Consumption of the Various Food Groups

The various food groups consumed were assessed, as shown in Table 4.8. Most households took >90% took cereals, pulses, vegetables, sugar, and fat.

Table 4.4: Consumption of the Various Food Groups

Proportion taking adequate	n (292)	%
Cereals	273	93.5
Pulses	261	89.4
white tubers and roots	37	12.7
Dark Green Leafy Vegetables	246	84.2
Other Vegetables	247	84.6
Fruits	114	39.0
meat	87	29.8
Eggs	235	80.5
Fish	189	64.7
Milk and Milk Products	269	92.1
Fats	290	99.3
Sugars	287	98.3

DISCUSSION

The decision-making among women is low, similar to a study by Mukoya & Mulinya and Dzanku. [6], [14] They are the primary decision maker on what is to be cooked in a household at 82.5%. A study in Ghana indicated that means to make decisions more on food, thus affecting the quality of diets consumed in a household.[14]

It is observed that most people had 3 acres of land (45.5%), and (3.1%) had more than 6 acres of land. The piece of land was divided equally for homestead use and animal use. Cash crops took the highest portion of their land. This is similar to a study by Boedecker, Termote & Kennedy, showing low production of food crops at the expense of tea which is a cash crop.[20] Lands were small, 2.3±0.5 This is similar to a study by Kihima and Ekabten showing small pieces of land due to continued land demarcation. [18], [21] Land porting for various uses is a challenge. The decreasing prices of tea have led to the production and marketing of local crops requiring low inputs, such as sweet potatoes. [22] A study by Dzanku highlights that income affects the food security status in a household.

A study by Oduor, Termote, & Kennedy shows that the main crops grown are maize, beans, bananas, cowpeas, and avocado were the most popular. [23] While by Mutai et al. highlights the growth of maize, beans, and traditional vegetables. [22] Food production is low due to a more significant proportion of land being occupied by tea.[19] embracing tea production with the thought of more income led to a drop in the number of bags per acre from 21.5 bags to 15.2 bags between (2014-2018).[24] Tea management increases women's workload, affecting crop production and child care (FGD, 2021), similar to the finding by Mukoya and Mulinya. [6] Most households (33.6%) produced between 101-150 Kgs, with each kg fetching 18 KES. This is in line with a study by Wabwire that noted low tea production in households that fetched low income. This agrees with a study by Bitama, which noted that income from cash crops was low and insufficient to cater to household needs. [9]

The study investigated various aspects of dietary diversity. They include the number of meals per day. Most children (49.0%) consumed four different food groups per day. The DDS was low (4.5 ± 2.1). These findings are similar to those by Cherop in Vihiga, which shows that average dietary diversity scores for children were 4.25±0.97.[25] Other findings by Odini indicate that food security is still low despite many efforts.[8] Similarly, studies by Boedecker, Termote & Kennedy and Alpízar et al., shows low DDS.[20], [26]

CONCLUSION

Cash crops continue to play an essential role in the economies of both countries and in rural farmers, specifically concerning food security. Tea is a crop resilient to shocks and

accumulates survival resources for rural farmers thanks to its consistent income and resistance to climate-related hazards. Tea is a strategically important cash crop for the nation regarding its ability to earn foreign currency, and it also plays an important role in the national economy. Because tea is a perennial plant, cultivating it is a long-term investment with a long return period. It is a source of income for small-scale tea producers in their retirement years. Most small-scale tea farmers' households are headed by males, have low incomes, and spend most of their income on food. The production from tea was low (104.3 ± 24.7 kg while the income from tea was not reliable, with a kg being paid at 18 KES. Though tea farming occupies a lot of family land, the income is low. Most households of small-scale tea farmers in Vihiga County are food insecure. Income from tea does not translate to household food accessibility. Most of the tea-based income was not used to access food. Most men controlled the tea and any other income, with a few drinking the proceeds. The households among small-scale tea farmers in Vihiga County were food insecure.

Declaration by Authors

Ethical Approval: Not Applicable

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