

**PROFITABILITY OF GINGER FARMING TO SMALLHOLDER GROWERS IN
TANZANIA - CASE OF SAME DISTRICT**

ABSTRACT

The study aimed on estimating the profitability of ginger farming to the smallholder's growers in Tanzania. A cross sectional research design was adopted. The sample size of 244 respondents was obtained through purposive and non-purposive sampling techniques. The study used both quantitative and qualitative methods for data analysis. Statistical Package of Social Sciences (SPSS) and Excel software were used to analyze the data.

The data revealed that ginger production is more profitable, with the gross margin of TZS 8,050,000 per acre. Returns to labour for ginger production revealed to be TZS 44,475. The data further, revealed that majority of respondents (71.3%) reported that their income accrued from business were between TZS 1,000,001 to TZS 5,000,000 whilst minority (1.7 %) reported that their income were above TZS 10,000,000 per annum.

Farmers presented the major problems in the subsector to have been affecting ginger farming were price (54.5%), inadequate capital (27%). Others mentioned **factors** poor transportation, drought and unavailability of laborers. The higher returns to labour observed in ginger farming enterprise could have been contributed to adoption and use of labour saving technologies such as oxen-plough and use of improved seeds. The income from ginger contributes significantly to the household income. Hence, it is important to create public awareness on the potential for the

LIST OF ACRONYMS

BOT	Bank of Tanzania
CDOs	Community Development Officers
DAICOs	District Agricultural Irrigation Cooperative Officers
DPLOs	District Planning Officers
ESAFF	Eastern and Southern Africa small scale Farmers' Forum
EU	European Union
FAO	Food and Agriculture Organization
FAOSTAT	Food And Agriculture Organization Statistics
GDP	Gross Domestic Product
IPCC	Intergovernmental Panel On Climate Change
ITC	International Trade Centre
LDCs	Least Developed Countries
LRRI	Land Rights Research & Resources Institute
MAFS	Ministry Of Agriculture And Food Security
NBS	National Bureau of Statistics
NEMC	National Environmental Management Council
NSGRP	National Strategy for Growth and Reduction of Poverty.
SPSS	Statistical Package for the Social Sciences.
TATEPA	Tanzania Tea Packers
TMA	Tanzania Meteorological Agency
TOAM	Tanzania Organic Agriculture Movement
URT	United Republic Of Tanzania
VEOs	Village Executive Officers
MAFS	Ministry of Agriculture and Food Security and Cooperatives
MVIWATA	Mtandao wa Vikundi vya Wakulima Tanzania

VDD	Vegetable Development Directorate
-----	-----------------------------------

1.0 Introduction

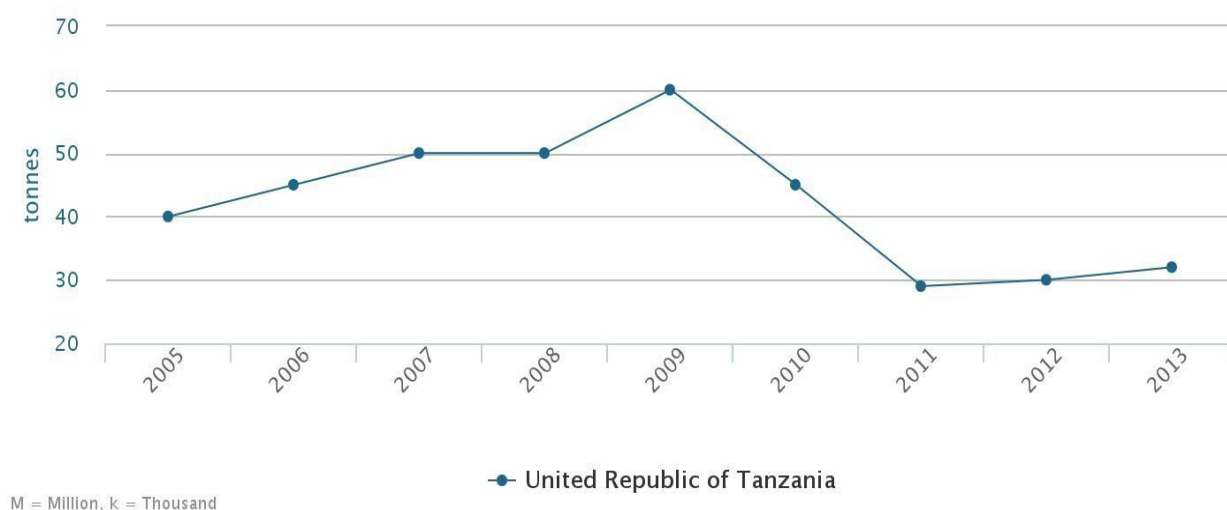
Agriculture is the key sector of the economy and contributes immensely to poverty reduction especial on rural areas income, food security and is one of the pillars of implementation National Strategy for Growth and Reduction of Poverty or ‘*Mpango wa Kukuza Uchumi na Kupunguza Umaskini*’ (“*MKUKUTA*”) in swahili (URT, 2016). Contribution of Agriculture and agribusiness is still immense in the Tanzanian economy contributing USD 13.9bn to its GDP around (30%), 95% of the food and about 12% of national export earnings (ibid). As reported as the 2012 National Census, 67.1% of Tanzania’s total population (43.6 million) lived in rural areas and employed in agriculture equal to 29.2 million people and approximately 5.8 million households.

More than half of the labor force in the agriculture sector is women and over 15 million smallholder farmers in the country, more than seven million of whom are women (Nyomora *et al.*, 2012). Agriculture in Tanzania is dominated by smallholder farmers (peasants) cultivating an average farm size of between 0.9 and 3.0 hectares each with limited access to modern technology, machinery and inputs (Mmasa, 2012). Similarly these farmers work on subsistence basis and can be pushed easily onto poverty by *weather fluctuations (drought or floods), biotic stress and other external shocks notably food price fluctuations poor access to information, innovations, value added initiatives, improved varieties and good quality seeds*. This lead to insufficient returns as compared to production costs. Agricultural sector continue to record a smaller growth rate of average of 4% and surprisingly decline to 2.3 percent in 2015 compared to 3.4 percent in 2014 (ESAFF and MVIWATA, 2016).

In 2001, the government approved the Agricultural Sector Development Strategy (ASDS I) with a view of among other things, promoting spices farming. This was one of the possible interventions of developing agricultural sector (URT, 2003; MAFS, 2004) and which in turn would address some of the above identified constraints. This measure was expected to contribute to agricultural growth, attainment of poverty reduction objectives of the National Strategy for Growth and Reduction of Poverty (NSGRP) and to the Tanzania Development Vision 2025. Crop diversification. Ginger is one of the important spices produced in many parts of the country including: Coast, Tanga, Mbeya, Ruvuma, Morogoro, Kilimanjaro, Kigoma and Kagera regions (MAFS, 2011). Ginger production in Tanzania, is dominated by small holders who use a little or no agricultural inputs at all.

Tanzanian production of ginger amounted to approximately 60 thousand tonnes in 2008/09, which is considerably more than production levels of the years before and dramatically decrease in two consecutive years (Figure 1) (FAO, 2015). Then attain constant production from 2011 to 2013 (FAO, 2015). The probable reason of the trend could be low prices and poor agronomical practices. The improvement of income is an incentive for increasing crop production by the smallholders whereas the increase in price of the crop produce is an incentive for an optimal smallholder resource allocation. The end result is a profitable farming in the smallholder sub-sector and hence, improving in the standard of living of the smallholder farmers (Fones, 1987). Therefore most of literatures have been empirically indicate the benefits, constraints and the major determinants of ginger production activity.

Figure 1: Shows Ginger Production 2005-2014 in Tanzania



FAOSTAT, 2015

The value of Tanzania's exports has risen up from \$8.46 billion recorded in December 2013 to \$8.81 billion for the year ended December 2014 due to the good performance in exports of manufactured goods and travel receipts. The monthly economic review of the Bank of Tanzania (BOT) suggests that, a significant increase of 33.8 percent was recorded in the export value of goods such as edible oil, textile apparels, plastic goods, fertilizers and paper products. The collective value of these goods consequently rose to \$1.43 billion (BOT, 2012).

The empirical evidence shows that few researches have been conducted to assess the profitability of ginger production using Gross Margin Analysis in Tanzania specifically in Same District. By employing a Gross margin analysis technique this study therefore intends to make an analysis of

ginger production activities to rural households farmers in Same District.

Based on previous studies above, it can be seen that, ginger farming has attracted serious concern from Government. Although there are both successful and unsuccessful cases of in ginger farming, it can be hypothesized that ginger farming arrangement has a positive effect on benefits for smallholder's farmers. Therefore, a following overall research question can be tested in this study. The overall research question is: What is the output per unit area under ginger farming? Therefore, there is a need to investigate the profitability of ginger farming to the smallholder's growers.

2.0 Literature Review

Ginger is cultivated in India, China mainland, Nepal, Nigeria and Thailand other big producers are Japan, Indonesia, Australia, and West Indies islands (FAO, 2015). India is the largest producer and consumer of ginger in the world. Indian ginger is produced in the states of *Orissa, Kerala, Karnataka, Arunachal Pradesh, West Bengal, Sikkim and Madhya Pradesh*. Kerala is the largest ginger producing state, accounting for 33 per cent of the total production in India (FAO, 2011), globally, the annual imports of culinary herbs and spices are in excess of US\$ 2.0 billion with an annual growth rate of 8.5%.

However, import markets for spices are concentrated with European Union (EU) and United States (US), purchasing more than half of the total world exports (Jaffee, 2004; ITC, 2001). Between 1995 and 1999, Tanzania ranked the third among LDCs by exporting 5% of LDCs' total spice exports. Madagascar was the largest LDC exporter (72%) followed by Comoros (6%), but in total, LDC exports fulfilled only 5.5% of the global import demands (ITC, 2001).

Ginger is cultivated throughout the mid-hills, foothills, and in some plain areas of Nepal. The Eastern Development Region has the highest share of ginger in terms of area of cultivation, production and productivity each with 31.5 percent (area), 36.8 percent (production) and 13.65 percent (productivity) respectively. The Western Development Region and Midwestern Development Regions produce 24.9 percent (area) and 17.9 percent (production) respectively. The Central Development Region has a share of 10.9 percent (production) whereas Far Western Development Region has the lowest production volume share with 9.5 percent in total (VDD, 2009/10). In Nepal, ginger is the topmost spice crop both in terms of area of cultivation and production volume. In year 2009/10, the total area of ginger cultivation was 18,042 hectares (ha) while the total production quantity was 210,790 metric tons (MT).

On average, about 25 to 30 kg is consumed by the producing households. 85 percent of the total production is estimated to be marketed by the producers either as fresh new rhizome or mother rhizomes after maintaining the stock for next year plantation. The producers retain 30-35 percent of the total production for seed purpose but at the later date part of this stock again enters the market (CADP, 2008). Ginger is consumed in most of the households as spices. Some domestic manufacturers including pharmaceuticals use ginger in their products. Ginger is also one of the main ingredients for pickle industries in Nepal.

Many other researchers, such as Dang Kim Son *et al.* (2005), Pham Quang Dieu *et al.* (2004), Tran Cong Thang *et al.* (2005), Nguyen Do Anh Tuan *et al.* (2005) and (30 cases in 2005), looked

into cases of CF and provided general remarks that CF could potentially be an effective way to draw the poor into commercialized agriculture. Saigenji and Zeller (2009) investigated the effect of contract farming on production and income of tea farmers in north-western Vietnam. They found out a positive impact of contract farming in tea production in Moc Chau district, which in terms provided a higher technical efficiency and slightly higher income to households. Cognisant, the trading of ginger is mainly governed by Indian importers, as about 99 percent of the total product is exported to India (ITC, 2007). There is greater complaint from traders towards farmers for supplying unclean and ungraded product.

Ginger is an important spice crop traditionally grown in the mid-hill areas of Nepal. This sector contributes to 0.59 percent of total exports with an export value of about 403 million NPR (Nepali Rupees) in FY 2008/09 (TEPC, 2010). It is estimated to be cultivated by over 66,000 families in five regions of the country, and due to its high value it has a greater impact on smallholder farmers. Globally, Nepal is fourth in ginger production which translates to about 11.5 percent of the world's production (FAO, 2008). Nepal mostly exports ginger to India in fresh form and partly in traditionally dried form as *Sutho*.

Ginger was introduced in Same District over ten years ago. The current yearly production is around six thousand metric tons. A third of its population is involved in ginger production. They also grow some cardamom coffee and cinnamon. The crop is increasing yearly at an average of 46%. In 2005/2006, six thousand tons were produced from six hundred hectares. The yield per hectare is for the low farmers as farmers are only getting 10 tonnes per ha instead of a possible 20

tonnes. Approximately 90% of the ginger is cultivated organically only using farm yard Manure for inputs (MAFS, 2011).

2.1 Analytical/ Theoretical Model of the Study

This study analysed the cost and return in ginger production to obtain the net income trend in general in order to evaluate the extent to whether it impact to the income generation to rural ginger growers farmers in Same district. The analysis was fundamentally base on the following model;

$$GM = \sum_{i=1} (TR - TVC) \dots\dots\dots (ii)$$

TR = Total sales or revenue per annum

TVC = interest paid + other indirect cost

Thus the net income was obtained as follows:

$$Net\ income = GM - (FXC + r + e) \dots\dots\dots (iii)$$

Whereby;

GM Gross margin

TR Total revenue

TVC Total variable cost

FXC Fixed cost

r Interest paid on loan repayments

e Other indirect cost

Σ Summation of

3.0 Research Methodology

The data used in the study were drawn from a survey of 252 household heads in same district in April 2016. Same district was selected because is the first largest producer of ginger in Kilimanjaro region. Ginger was introduced in Same District over ten years ago. The current yearly production is six thousand tons. A third of its population is involved in ginger production. They also grow some cardamom coffee and Cinnamon. There is Mamba Ginger Growers Rural Cooperative Society in Same District, owned inactive factory that would observe all ginger produced in the area, and 70 per cent of the country's ginger production, purchased by the cooperative at 2,500/- Tsh up from the previous prices of between 200/- and 500/- per kilogram. Multistage sampling technique employed to the sample from the study area. The technique was chosen because it takes into consideration the representation from divisions, wards and villages scattered in a wide geographical area.

From each division, three wards were purposively chosen from the respective sampling frame, and from the list in each selected ward, two villages were purposively selected to get a total of six (6) villages namely Sambweni, Mamba, Myamba, Goha, Mweteni, Vugwama and Mpinji. Therefore, the targeted study population is 31,100 people from three wards; Mamba Miamba (13,168 people); Mpinji (8,453 people) and Bwambo (9,479 people) (NBS, 2012). The sample

frame of the study was selected in Mamba Miamba Wards, Mpinji and Bwambo wards which comprise the total of 13,168 people in the study area in the total population of 269,807 (NBS, 2012).

The researcher applied three types of sampling procedures namely stratification sampling, systematic random sampling and judgmental sampling. The sample size was determined using stratification techniques. From each stratum 0.0078 of the stratum size was required. Every unit in a stratum has same chance of being selected. In other words, the population was grouped according to their strata such as selected wards.

Using this systematic household heads were selected skipping every 5th household in the village list. We conducted individual interviews for the randomly selected household heads using semi-structured questionnaires. *Then* purposive sampling technique enables the researcher to choose respondents basing on the fact that, they have desirable characteristics related to the issue being studied (Kothari, 2004). The mentioned officers were selected by the virtual of their positions because they were well informed on contract farming.

3.1 Model Specification

To facilitate the realization of objective the researcher used a Gross Margin Analysis in order to assess whether ginger farming has been profitable or not

3.1.1 Gross Margin Analysis (GMA)

Most often, new technologies in smallholder agriculture are aimed at increasing farm productivity, with a subsequent increase in income which is one of the immediate objectives of

the overall farmer's enterprise. However, the costs associated with new technologies and new production as well marketing arrangements might hinder the adoption (Johnsen, 2003). Thus, it was found useful to compare the gross margins of ginger.

The enterprise before and after the inception of the contract farming so as to establish whether or not ginger farming is profitable. By using discounting technique, ginger gross margin and returns to labour for 2014/2015 will be discounted at 5% (market interest rate), to obtain the present value which was compared with the average gross margins and returns, to the labour in the study area before and after the contract farming. To define the concept of gross margin, we first have to distinguish between variable and fixed cost. Variable costs are those cost that increase or decrease as output changes; while fixed costs do not change as output change (Cramer *et al.*, 2001). Common examples of variable costs in crop production include seeds, fertilizers, and pesticides. The most important fixed costs in agricultural production are owned land, family labour, farm buildings, farm machinery, and implements.

$$GM = TR - TVC \dots \dots \dots (1)$$

Where; GM = Average gross margin (TZS/ha)

ATR = Average Total Revenue (TZS/ha)

ATVC = Average Total variable costs (TZS/ha)

4.0 Presentation and Discussion of the Findings

4.1 Land Tenure Characteristics

This section presents. This section intended to explore respondents' land size, parcels size and land acquisition by smallholder farmers. Under the Land Act 1999 and the 1995 National Land Policy, land is “not owned” but is vested in the Presidency and availed to users through a mechanism which is centred on the Minister responsible for Lands, Commissioner of Lands and the land administration system revolving around that office. Under this system, the land user temporarily owns the land rights and any improvements to the land. Land rights can either be granted or deemed to have been granted, and certificates are issued and registered to prove the identity of the rights owner (Lugoe, 2008). It is important to note that even though all land is regarded as public land, the 1999 Land Act and Village Land Act, which became operational in 2001, created three categories of land: (i) general land, (ii) reserve land and (iii) village land (LRRRI, 2011).

Basically, there are two ways in which a person can own or acquire land in Tanzania: (i) through “granted right of occupancy” and (ii) through “customary right of occupancy”. Both of these two ways are legally restricted to Tanzania citizens (LRRRI, 2011). However, a third way of acquiring land, that is, through investment, accommodates land acquisition by non-citizens (Mangasini et al., 2014).

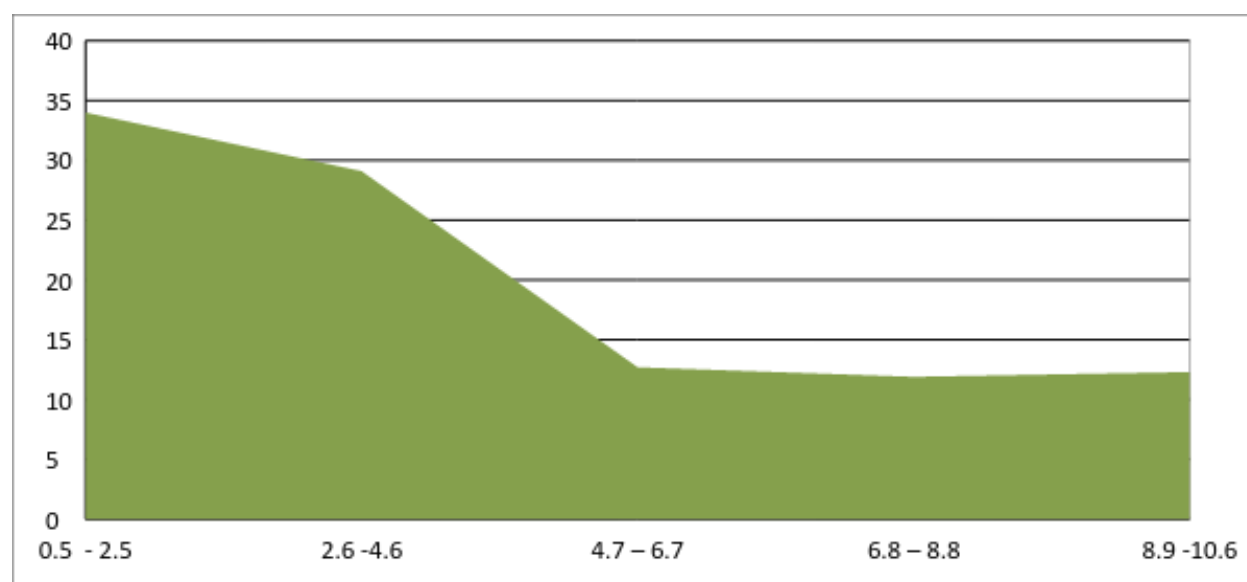
As general ruling, women can access land through male connections and exercise only secondary or inferior right which are susceptible to be disposed due to broken relationships, divorce or

disconnection. This revealed the limited access of women farmers to land attributable to higher rent paid. Some are excluded to ownership on the ground of cultural (norms and taboos) problems of land tenure system which prevents many of them from taking title of ownership.

However, in most African societies, land is allocated to adult male through inheritance and little variation is expected within village if land is equally accessed. Similarly, Jayne *et al.* (2003) reported unequal land distribution within villages in some of African countries (Zambia, Kenya, Rwanda, Mozambique and Ethiopia). On contrary, Lipton (2005) reported equal land access within village in some communities.

The researcher wanted to know the land size of respondents with an idea that can influence on ginger production. The results were as shown in Figure 1.

Figure 2: Percentage Distribution by Land Size



Source: Survey Data, 2016

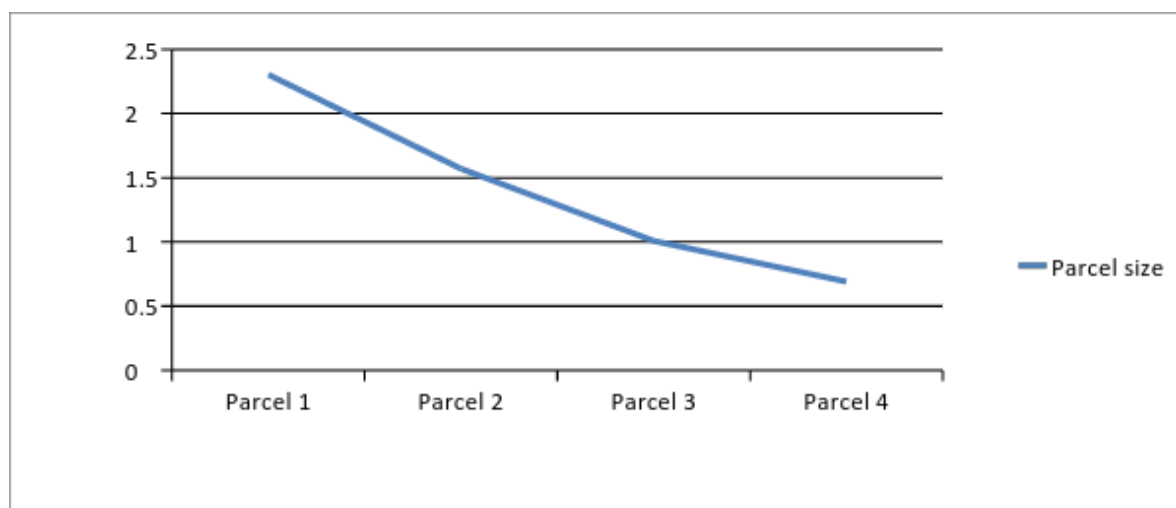
Figure 1 indicated that farmer's total size of land under ginger production substantial number of farmers owned an average of 0.5 – 2.5 acres (34%), 29% 2.6 - 4.6 acres. This data appealed that that this land is under parcels due to nature of same district. The household survey – considering all three communities together – indicates that the percentage of people engaged in farming. This means that farming has become more significant. As the focus on farming and, the overall *in situ* livelihood diversification decreased.

4.2 Parcel Sizes

The consultant determined the parcel sizes owned by farmers and its effect to agricultural resource planning. The data shows that majority of producers own one to four parcels with sizes between 0.5 acre to 2.5 acres and usually the first parcel is large than the subsequent ones (Figure 2). Land fragmentation is prevalent in both Districts.

All these problems hindered them from having a contiguous land that can be cultivated with tractor and tractor drawn implements (mechanized agriculture) and impeded farm productivity (Mmasa, 2013; Ibekwe *et al.*, 2012; Onumadu, 2009).

Figure 3: Shows Percentage Distribution of Respondents and Parcel Size

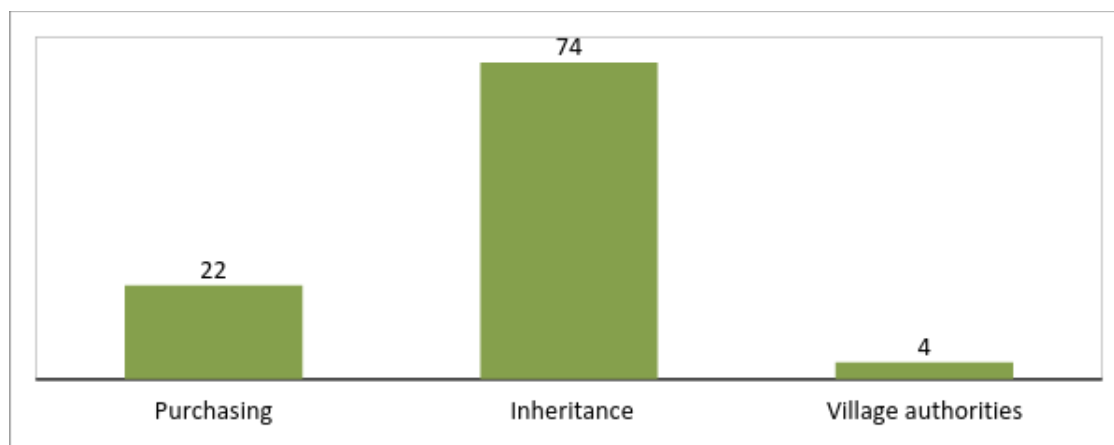


Source: Survey Data, 2016

4.3 Land Acquisition

The researcher wanted to know the land tenure with an idea that it can its influence on ginger production. The results were as shown in Figure 3.

Figure 4: Percentage Distribution by Land Tenure



Source: Survey Data, 2016

Land acquisition is the pre-condition for any crop production including tobacco in the study area. Tobacco farmers acquire land in three major modes namely inheritance, purchasing and offer

from the village authorities. From Table 3, it can be seen that the majority (74%) of sample farmers acquired land inheritance, 22% through purchasing and 4% acquired land by offer from the village authorities. The average total area under cultivation owned by respondents was 1.5 ha. This is above the average landownership and occupation in accordance with the villagisation programme of 1960s and 1970s, which requires a household to have a homestead plot of about 0.5 ha (NEMC, 1998).

4.4 Profitability of Ginger Farming to the Smallholders Growers

In order to assess whether ginger farming has been profitable or not, budgeting techniques were used to establish gross margins for ginger crop enterprise under 2015/2016 growing season. In order to assess whether ginger farming has been profitable or not, budgeting techniques were used to establish gross margins for ginger crop enterprise in this current growing season.

Table 1: Gross Margin and Returns to Labour for Ginger Production Per Acre

Farm activity	^aMan-days
Farm clearing	40
Fertilizer (FYM)	20
UREA	10
Irrigation (2-times per week) *6 months	48
Planting	10
Harvesting (in piece meal)	40
Transportation	20
	22

Storage	20	
Total	208	
Materials		Tsh.
Fertilizer (FYM)	1000tins	600,000
UREA costs	50Kg	50,000
Seed	100Kg	1,800,000
^bTotal Costs of Physical Inputs		2,450,000
Labour cost	208days	1,040,000
Total cost		3,450,000
^c Average yield	7000Kg	
^d Average price		1500
Gross returns		10,500,000
Gross margin		8,050 ,000
Return per man-day		44,475

Unit- Farm size = 1acr

1 Ha = 2.5 Acre

Source: Same District Council (SDC) (2016)

^e Man-days: Labour requirement as obtained from secondary data

^b Total costs for physical inputs as computed from secondary data

^g Average yield for three consecutive seasons computed from secondary data

^h Average price for three consecutive seasons as computed from secondary data

From Table 1 the results suggest that ginger production is more profitable, with the gross margin of TZS 8,050,000 per acre. Returns to labour for ginger production revealed to be TZS 44,475. The higher returns to labour observed in ginger farming arrangement could have been contributed

to adoption and use of labour saving technologies, use of improved seeds, the use oxen-plough. In addition, the yield of 7,000 kg/acre recorded in in average for three years farming season is another reasons for the higher returns to labour obtained from ginger enterprise. *These results justify the rejection of the research question that ginger farming in Same-District is not profitable.*

However, when family labour is valued at the prevailing market wage for hired labour, the average cost for labour for ginger production was found to be Tsh. 1,040,000 per acre (208 mandays/acre x TZS 5000/mandays). This brings total production costs to TZS **3,450,000** per acre. From Table 4 when total costs are deducted from total revenue, ginger farmer in the study area remains with TZS 4,600,000 which is very huge profit margin. Since social price for labour is the output foregone in other parts of the economic activity as a result of employment in the ginger production, farmers particularly in the study area have to spend their labour in ginger production since ginger is the only cash crop with reliable market and climatic suitable in those areas.

4.5 Transport Costs and Annual Income Generated From Ginger Production to Household

4.5.1 Transport cot from homestead/storage place to the marketing areas

The researcher also wants to show that transport cost also has significant impact on the production of ginger and hence household income. The results were as shown in Table 2.

Table 2: Percentage Distribution on Transportation Cost From Home/Store Up To The

Marketing Centre (each in TZS/Kg)		
Costs (Tsh/kg)	Frequency	Percent
50 -100	68	27.9
101 -150	111	45.5
151- 200	59	24.2
201 -250	6	2.4
Total	244	100.0

Source: Survey Data, 2016

Table 2 revealed various transport cost from the ranges TZS. 50/= to TZS. 250/= each per kilogram of ginger, the transportation cost is very important to be determined because it has impact on the ginger production, also the cost various depending on the location of the farm and season, During rainy season the road becomes rough therefore the transportation cost increase. Furthermore, It was noted that the maximum transport cost incurred is Tsh 250/= while the minimum transport cost incurred is Tsh. 50/= with the average transport cost of TZS. 150/= per/kg of raw ginger.

4.5. 2 Ginger price

The researcher also wants determine price of raw ginger and its significant impact on the production level of ginger and hence household income. The results were as shown in Table 3.

Table 3: Percentage Distribution on Average Price of Ginger

Variable	Av. selling prices Tsh/Kg
----------	---------------------------

Mean	1606.6
Minimum	1000.0
Maximum	2200.0

Source: Survey Data, 2016

The tables 4 shows the selling price of the ginger per kilogram, In Same district the selling price are subjected to fluctuation depending on the time one sells his or her products, According to the survey the ginger prices may increase up TZS 3000/= per/kg during off season and may fall up to TZS 1000/=per/kg during the season where the supply will be very high leading to the fall in the price. Therefore in Same the average price of ginger per/kg was TZS. 1600/= this information is very useful as it helps to calculate the revenue received by the ginger farmer and hence being able to calculate the profit margin of the ginger product.

4.6 Source of Credit to Finance Ginger Farming

The researcher was interested to identify the present source of credit of ginger farmers as might affect production of ginger and hence household income. This information is important because the researcher want to examine the profit margin of each ginger farmers therefore their sources of revenue is very important in determining that level of the profit each farmer is obtaining. The results were as shown in table 4

Table 4: Percentage Distribution by Source of Credit to Finance Ginger Farming

Sources	Frequency	Percent
Revenue from selling of last season and	178	73

loans		
Income from driving motorcycle	42	17
Carpentry	15	6
Employed	9	4
Total	244	100

Source: Survey Data, 2016

The data revealed that women farmers depend on the informal financial sector particularly Self-Help Groups (SHGs) and individual money lenders for credit. The SHGs include farmers groups like Association and Marketing Cooperatives Societies (AMCOS), Village Savings and Loan Association (VSLA), Rotating Savings and Credit Associations (ROSCAs) and other local arrangements. Farmers in the area possessed relatively low property rights and are rated low by providers of farm credit (Mngale, 2016). Minority obtain loan from formal sources Civil Society Organizations (CSOs).

Table 4 shows that majority of respondents 73% of ginger farmers depend on the revenue from the last season sells revenues and loans as their source of income to finance ginger farming operations, while 17% depends on the income received by driving motorcycles, whilst 6% depends on carpentry activities and the rest of the respondent are employed as public offices (4%). One can conclude that the farmers have no reliable sources of credit to improve ginger production this lead to no outstanding debts as all of the debts were cleared during this selling season 2015/16 from informal sources.

4.7. 4 Value of loan taken by ginger farmers

The researcher was interested to determine the value of loan credited to ginger farmers as might affect production of ginger and hence household income. The results were as shown in Table 5.

Table 5: Percentage Distribution on the Value of Loan Credited

Value of loan credited (Tsh)	Frequency	Percent
100000 – 199999	31	12.7
200000 – 299999	32	13.1
300000 – 399999	11	4.5
Total	244	100

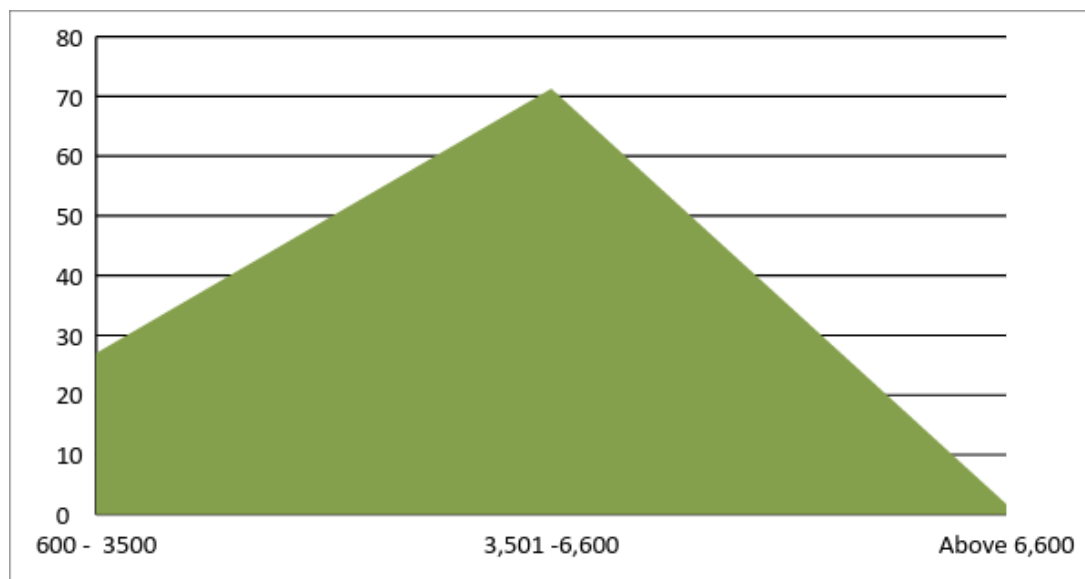
Source: survey Data, 2016

Table 5 reveals that 12.7% of the ginger farmer did take the loan between the Tsh. 100000 to 199999, while 13.1% of the ginger farmer did take the loan between 200000 - 299999 and 4.5% took between 300000 - 399999. The information is important because it helps to determine the amount that has influence on the profit each farmer is obtaining. The amount of taken to were very small due to fear of uncerternity to invest in agriculture. It was observed that the farmers allocated part of the loan to buy fertilizer, pesticides and labour charges. Moreover, it was noted that farmers spend TZS 1,040,000/= (ref Table 1).The information is very useful as it provide the clear picture of total cost incurred by the farmer in the production of ginger.

4.7. 5 Output Obtained From Ginger Farming

The researcher was interested to assess the output to small-scale ginger growers with an idea that it was influenced by Ginger farming. The results were as shown in Figure 4.

Figure 5: Percentage Distribution of Ginger Income Among Farmers



Source: Survey Data (2016)

The study assessed income accrued from the sector. The finding revealed that majority of respondents (71.3%) reported that their output were between 3,501Kg to TZS 6,6000Kg and (27%) respondent explained that their output ranges from 600Kg to 3500Kg whilst minority (1.7 %) reported that their output were above 6600Kg per annum (Figure 4). *The results further underlined that ginger output contribute significantly to the household livelihood.* Compared to output of other agricultural crops like maize and other informal sectors.

5.0 Conclusion, Policy Implication and Recommendations

5.1 Conclusion as per objectives

Ginger production is more profitable business one to engage. The crop have high returns to labour, the higher returns to labour observed in ginger farming arrangement could have been contributed to adoption and use of labour serving technologies, use of improved seeds, the use oxen-plough.

In addition, the yield recorded is another reasons for the higher returns to labour obtained from ginger enterprise.

5.4 Recommendations

- i. Encourage ginger farmers to increase land under cultivation. Smallholder farmers own small parcels of land but cultivate only small portions. Smallholder farmers need to be assisted to expand the area under cultivation. This may help transform the current farming system from smallholder farming to larger scale.
- ii. To define a more constructive role for the “*Chama cha Msingi cha Wakulima wa Tangawizi Mamba*”
- iii. Discourage farm gate prices by establishing selling points which also offer value addition and storage facilities. These efforts will likely act to increase the prices received by farmers for ginger production

REFERENCES

Adesina, A.A and Djato, K.K (1996). Farm size, relative efficiency and agrarian policy in Cote d'Ivoire: Profit function analysis of rice farms. *Agricultural Economics* 14: 93-102.

Aikaeli, J. (2010). "*Determinants of ural Income in Tanzania: An Empirical Approach*", research on Poverty Alleviation, Dar es Salaam.

Babbie, E. (1990). *The Practice of Social Research*. Wadsworth Publishing Company., New York, USA. 65pp.

Bank of Tanzania (2005). Economic bulletin for quarter Ended 31 December 2012.

Baradyana S. & Ame M.(2009). Business Research Methods teaching manual

Bijman J., (2008). Contract farming in developing countries an overview. Wageningen UR.

Borg and Gall (2003). *Educational Research: An Introduction*, 7th Edition. United States of America.

CADP (2008), Final Report, Product Chain Study Ginger, MoAC, DOA, CADP, Biratnagar,

Nepal.

Collier, P (2008). *The Bottom Billion, why the poorest Countries are failing and what can be done about it*. Oxford University Press, UK.

Cramer, G. L, Jensen, C.W. and Southgate, D.D. (2000). *Agricultural Economics and Agribusiness*. Wiley and Sons. Inc., New York. 925pp.

Dang Kim Son, Nguyen Minh Tien (2005). Review of 3-Year Implementation of Decision 80/2002/QD-TTG of the Prime Minister on Policies Encouraging Agricultural Sales through Contract Farming, Report to the Prime Minister, Ministry of Agriculture and Rural Development, Hanoi (mimeo).

ESAFF and MVIWATA (2016). Agricultural Budget Analysis in Tanzania “kitini cha sera – Na. 1/2016”

Export Promotion Centre (TEPC) (2008). Government of Nepal Ministry of Trade and Supplies Export potential assessment in Nepal [<http://www.tepc.gov.np/>] site visited on 20/03/2016.

FAO (2008). FAOSTAT data. Food and Agriculture Organization, Rome. [<http://www.fao.org/stat/stat.external.fao.org/default.jsp>] site visited on 25/3/2016.

Fones, S.M (1987). Role of price policy in stimulating agricultural production in Africa. Issue

paper No. 2, Swedish University of agricultural Sciences. 13pp.

Food and Agricultural Organization (FAO) (1997). *Improving Agriculture Extension: A Reference Manual*. (Edited by Swanson, B. E; Bentz, R.P and Sofranko, A.J) Food and Agriculture Organization, Rome, Italy. 220pp.

Food and Agricultural Organization (FAO) (2001). Contract Farming: Partnership for growth [<http://www.fao.org/ag/ags/AGSM/contract/cftabcon.pdf>] site visited 4/02/2016.

Food and Agricultural Organization FAO (2008a). *The State of Food and Agriculture 2008 Production Year Book vol.57*. FAO, Rome.

Guan Zhengfei and Alfons Oude Lansink (2006). Source of Productivity Growth in Dutch Agriculture: A Perspective from Finance. *American Journal of Agriculture* 88 (3): 644 - 656.

Gyimah-Brempong, K. (1991) 'Export Instability and Economic Growth in Sub-Saharan Africa', *Economic Development and Cultural Change*, 39 (4) 815-828.

Ibekwe, U. C. Orebiyi, J. S. Henri-Ukoha, A. Okorji, E. C. Nwagbo, E. C. and Chidiebere- Mark, N. M. (2012) Resource Use Efficiency in Cassava Production in South East Nigeria. *Asian Journal of Agricultural Extension, Economics & Sociology*. 1(1): 16-21.

Intergovernmental Panel on Climate Change (IPCC): 2007: Summary for Policymakers. In

Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Q. M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. p 1- 28

Isinika, A.C and Mdoe, N. S. Y. (2001). *Improving Farm Management Skills for Poverty Alleviation: Case study of Njombe district. Research on Poverty Alleviation (REPOA) Report No. 01.1.* Mkuki and Nyota Publication, Dar-es- salaam. 57pp.

ITC (2001). *Product Profile: Spices and Culinary Herbs*. UNCTAD Discussion Document. Brussels. Pp. 2-11.

ITC (2007). Export potential assessment in Nepal: Implemented by the International Trade Centre (ITC), Market Analysis Section in collaboration with the Trade and Export Promotion Centre (TEPC) of Nepal.

Jaffee, S. (2004) *Delivering and Taking the Heat: Indian Spices and Evolving Product and Process Standards*. Agriculture and Rural Development Discussion Paper, World Bank. Washington DC.

Jayne, T. S., Takashi, Y., Michael, T. W., David, T., Rui, B., Antony, C. and Ballard, Z. (2003). Smallholder income and land distribution in Africa: implications for poverty reduction strategies.

Food policy Volume 28(3) 253-275.

John, P. Doll and Frank Orazem (2nd Ed) (1984). *Production Economics. Theories with Applications*. John Wiley & sons, New York. 672pp.

Johnsen, F.H. (2003). Using Gross Margin Analysis in the TARP II – SUA Project. In: *Impact: Lessons Learnt from Farmer- Oriented Research Newsletter*. Sokoine University of Agriculture. 4 (1): 19-21 pp.

Koester, U., Schafer, H. and Valdes, A. (1999). ‘External Demand Constraints for Agricultural Exports: An Impediment to Structural Adjustment Policies in Sub-Saharan African Countries’, *International Food Policy Journal*, 14 (3) 274-283.

Kothari.C.R. (2004).*Research Methodology: Methods and Techniques*. Second Revised Edition.. New Delhi, India. New Age International (P) Limited, Publishers.

Lipton, M. (2005). *What Priorities for Improved Agricultural Technology?* Presentation at the Future Agricultures Consortium on achieving pro poor growth through agriculture: The challenges. London: (2) 109-211

Love, J. (1992) ‘Export Instability and the Domestic Economy: Questions of Causality’, *Journal of Development Studies*, 28 (4) 735-742.

LRRRI. (2011). *Accumulation by land dispossession and labour devaluation in Tanzania: The case of biofuel and forest investments in Kilwa and Kilolo*. Dar es Salaam: Hakiardhi, Ecoprint Ltd.

Lugoe, N. F. (2008). *A century of government regulated land access in Tanzania*. Paper for the video-conferencing workshop on land administration in Africa (Searching for Alternative Approaches), 12-15 May 2008. Available online at www.dilaps.or.tz.

Malik, A. A., & Mohammed, A. (2012). Technical Efficiency of Beekeeping Farmers in Tolon-Kumbungu District of Northern Region of Ghana. *Journal of Development and Agricultural Economics*, 4 (11), 304-310.

Mangasini A. Katundu; Mwanahawa L. Mhina; Arbogast G. Mbeiyererwa and Neema P. Kumburu (2014). *Socio-Economic Factors Limiting Smallholder Groundnut Production in Tabora Region. Research Report No. 14/1. REPOA, Dar es Salaam, Tanzania. 53pp*

Ministry of Agriculture and Food Security and Cooperatives (2004). *Agriculture as the Backbone of The Economy of Tanzania. A Paper Presented at The Convocation General Meeting of The Open University of Tanzania by The Minister of Agriculture and Food Security*. Dar es Salaam, 14th October, 2004. 44pp.

Ministry of Agriculture Food Security and Cooperatives (2008). *Final Report on Agriculture*

Mmasa (2013). Women Participation In Agriculture In Tanzania – Challenges and policy recommendations - Tanzania Country Level Knowledge Network - CLKnet Policy Brief No 8: : 2013 CLKnet - Policy Brief No:8 <http://clknet.or.tz>.

Mmasa,J.J., Msuya,E. and Mlambiti,M. (2012). Social Economic Factors Affecting Consumption of Sweet Potato Products: An Empirical Approach; Research on Humanities and Social Sciences ISSN 2222-1719 (Paper) ISSN 2222-2863 (Online) Vol. 2, No.8.

Mugenda, O.M. &Mugenda, A.G. (1999).*Research Methods: Quantitative and Qualitative Data*. Nairobi: Act Press.

Murray, D. (1998) ‘Export Instability: Price, Quantity, Supply, Demand?’, *Economic Development and Cultural Change*, 27 (1) 61-73.

Mutayoba, V. (2005). Economic Analysis of Vanilla Production and Marketing: A case study of Bukoba district, Kagera Tanzania. Dissertation for Msc Degree at Sokoine University of Agriculture, Morogoro, Tanzania. 86 pp.

Mwakalobo, A.B.S. (2000). Productivity and Allocation Efficiency in Smallholder Coffee Farmers in Rungwe District. [<http://www.fluc.org/iaup/sap>] site visited on 9/01/2016.

National Environmental Management Council (NEMC) (1998). *An Environmental Profile for Kilimanjaro Region, Tanzania*. 215pp.

NBS (2012). Tanzania population and housing census 2002. [<http://www.nbs.go.tz/tnada/index.php/catalog>] site visited on 30/3/2016.

Nyomora, A., Kanyeka, Z. and Nduguru, A. (2012). Supporting Tanzania's Cocoa Farmers. Research Report No. 3. REPOA, Dar es Salaam, Tanzania. 43pp.

Onumadu, F.N. (2009). Analysis of factors affecting Cocoyam Production in Umuahia North L.G.A of Abia State, Nigeria. *Journal of Agriculture and Social Research (JASR)*. 9(1): 149.

Patton, M. Q. (2002). *Qualitative research & evaluation methods* (3rd ed.). Thousand Oaks, CA: Sage., Fort Lauderdale, Florida USA. Nova Southeastern University.

Pham Quang Dieu et al. 2004. Contract farming system as an approach for agricultural development and rural industrialization: the case study of dairy production and processing in Ha Tay Province, Vietnam-Netherlands Research Program, Hanoi.

Porter, G. and K Phillips-Howard (1997), Comparing contracts: an evaluation of contract farming schemes in Africa, *World Development* 25 (2): 227-238.

Ramaswami B., Birthal P.S., Joshi P.K., (2006). Efficiency and distribution in contract farming: The case of Indian poultry growers. MTID Discussion Paper 91, International Food Policy Research Institute, Washington DC.

Reardon T., Timmer C.P., Berdegue J.A., (2003). The rapid rise of supermarkets in Latin America and East/Southeast Asia: implications for domestic and international markets for fruits and vegetables. Eds A. Regmi, M. Gehlhar. Global Markets for High Value Food Products, Agriculture Information Bulletin, USDA-ERS.

Reardon, T. and Farina, E. (2001) ‘The Rise of Private Food Quality and Safety Standards: Illustration from Brazil’, in Buzby, J.C. (ed.) *International Trade and Food Safety – Economic Theory and Case Studies*, USDA Agricultural Economic Report #828.

Saigenji Y., Zeller M., (2009). Effect of CF on productivity and income of small holders: The case of tea production in northwestern Vietnam <http://purl.umn.edu/51681>. Services Bulletin 145,

Simbua, E. F and Ndunguru, B. J (2001). Large scale Tea production in Tanzania: Role of Entrepreneurship and Research toward enhancing profitability. In: *Proceedings of The Fourth Scientific Conference of the Agricultural Economics Society of Tanzania* (Edited by Ntengua, S.Y. Mdoe *et al.*), 4 - 6 August 2001, Morogoro, Tanzania. 34 – 49pp.

Tanzania Meteorological Agency (TMA) (2016). Personal communication during Expert

Interviews on 16th March 2016.

Towsend, R.F, Kirsten, J and Vink, N. (2003). Farm size, Productivity and Returns to Scale in Agriculture: A case study of Wine Producers in South Africa. *Journal of Agricultural Economics* 19: 175 – 180.

Tran Cong Thang, Pham Quang Dieu et al. 2005. Participation of the poor in Tea Value Chain, M4P/ADB, Hanoi.

Trochim, W (2006). *Research Methods: Knowledge Base*. Atomic Dog publishing, Ohio, U.S.A.
United Republic of Tanzania (URT). (2011b). Mkukuta Annual Implementation Report 2010/11. Dar Es Salaam, Tanzania: Ministry of Finance.

United Republic of Tanzania URT (2003a). *National Sample Census of Agriculture*. Ministry of Agriculture, Food Security and Cooperatives, Dar es Salaam, Tanzania. 371pp.

United Republic of Tanzania URT (2003b). *Agricultural Sector Development Programme*. Framework and Process Document, Dar es Salaam, Tanzania. 99pp.

URT (2016). National Budget Speech – 2016/17 Fiscal Year

VDD (2066/67 BS), Annual progress report of Potato, Vegetables and Spices development

program, Vegetable Development Directorate, Khumaltar, Lalitpur (in Nepali).

Wellman, J.c and Kruger, S.J (2005). Research methodology 3rd Edition Cape Town Oxford University Press.

William, S.M. and Dale Colyer (1982). *Costs and Returns from tobacco production in Tabora Tanzania: International Agricultural Research Report*. IAF publication. No.81. West Virginia University, Morgantown.43pp.