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ECONOMICS OF IMPROVED CASSAVA PRODUCTION TECHNOLOGIES IN KWARA STATE

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Abstract
This study examined the economics and profitability of improved cassava production technologies in Kwara State. A multi-stage sampling technique was adopted for this study. The result shows that the socio-economic characteristics of the respondents revealed that 43.75% of the farmers made the modal age group between 41-50 years. 71.25% of the respondents were male and each of them has at least primary education, 72.50% of the farmers were married, 46% of them had an average of 6 year experience in cassava production, 68.75% of the respondents have 4.9 hectares while 23.75% has less than 1 hectare of farm size. In the area of capital source for production: 45% of the farmers sourced their capital through cooperative societies, 26.25% source for capital through personal savings, 21.25% made their source through money lenders, while only 8% obtained loans through commercial banks. The respondents reported the following as their major constraints which was rated in percentage (%), which slowed down the growth and development of their production/farming in the area of study; these were inadequate source of fund (capital) and high interest rate (23.75%), poor transportation facilities (13.75%), high cost of tractor hiring services (12.50%), inadequate access to land for farm use (11.25%), less impacts of extension services (7.50%), and poor pricing for the products i.e lack of ready market (6.25%). The Gross Margin (GM) for the farming was ₦27, 754.00 with the benefit/cost ratio at ₦2.40. This however revealed that the improved cassava farming is profitable in the study area; for every ₦1 invested there was a return of ₦2.40 kobo. The study recommended that Government should provide low micro-credits, functional extension services, provision of rural infrastructure and subsidized tractor hiring service with adequate maintenance of farm machineries.

Keywords: economics, cassava, improved production technologies, profitability analysis, constraint.

INTRODUCTION

The need for increasing Nigerian agricultural productivity is becoming necessary as human population in the country is increasing at a geometric ratio as reported by NPC, (2018). Food security and poverty alleviation in Nigeria is achievable if successfully promoted and sustained through use of improved agricultural technologies. Regrettably, the rising cost of these technologies (machineries) and or scarcity of spare parts coupled with poor technical know-how are major challenges faced by the agro-industries.

Despite the several policies of Nigerian government on agriculture and allied-sectors, the demand–supply gap for agricultural produce and its value chain still persists. However, the potential for investment in crops such as cassava, rice, maize, cowpea, melon, sorghum, millet, etc. and their development in Nigeria cannot be overestimated. This is why both indigenous and foreign investors are seriously investing in cassava sub-sector.

In recent years, adoption of improved technologies (mechanization) has long been proposed as an important channel that could propel Nigeria to increase her level of productivity in meeting the food needs of her rising population. More so, trends in mechanization world widely have shown that there are strong correlations between economic growth and agricultural mechanization (*Mrema et.al., 2008).* Agricultural mechanization is the use of machinery to perform tasks or to assist humans in performing their tasks. This involves the use of modern implements such as motorized equipment like, tractor, plough, harrow, ridger, and planter as well as the use of agro-chemicals such as insecticides, herbicides, fertilizers and improved seeds in planting. The use of machinery and timeliness of mechanized activities is thereby advocated for, to increase the production efficiencies with adequate routine practices and good output.

Cassava (manihot spp.) is one of the most important tropical root crops. Its starchy roots are a major source of dietary energy for more than 500 million people. It is known to be the highest producer of carbohydrates among staple crops. It plays a major role in mitigating Nigeria's food crisis because of its efficient production of food energy, tolerance to extreme stress conditions and suitability to various farming and food systems.

According to the United Nations Food and Agriculture Organization (FAO), cassava ranks fourth as a food crop in the developing countries, after rice, maize and wheat. It can be stored in the ground for several seasons, thereby serving as a reserve food when other crops fail. Cassava is also increasingly used as an animal feed and in the manufacture of different industrial products. According to Nyerhovwo (2004), among the starchy staples, cassava produces about 40% more carbohydrates than rice and 25% more than maize per unit land area. This makes cassava the cheapest source of calories for both humans and animals. Every part of the cassava crop is useful, including its leaves which are a significant source of proteins, minerals (iron and calcium) and vitamins (A and C) when consumed (Dixon et al., 2003; Philips et al., 2004; FAO, 2004). Its peel is used as livestock feed and the tubers as an industrial raw material for HQCF and starch used in the food industry. Its peeled roots can also be processed into other food products such as garri, fufu, tapioca, and lafun etc.

According to FAO estimates, 172 million tonnes of cassava was produced worldwide in 2000; Africa accounted for 54%, Asia 28%, Latin America and the Caribbean 19% of the total world production. In 1999, Nigeria produced 33 million tonnes, making it the world's largest producer; similarly, a total of 16.8 million hectares was planted with cassava throughout the world in 2000; about 64% of which was in sub-Saharan Africa.

Moreover, Nigeria's position as the world's largest producer of cassava is not disputed (IFAD, 2010). FAO (2009) also reported that annual production of cassava is put at over 43 million metric tons from a cropped area of about 4 million hectares and average yield of 12.93 tons per hectare. Currently, Nigeria is the largest producer of cassava in the world with an estimated annual output of 54.8 million metric tonnes (about 70% of the world production) and the remaining 30% was shared by Thailand, Indonesia, Brazil, and Ghana (Top Ten World Cassava Producing Countries, 2016).

Conversely, this increasing trend notwithstanding, Ezedinma et al., (2007) noted that cassava production in the country is still dominated by smallholder farmers with mean cassava field area of 0.42 hectare per farmer. The wide spread cultivation of cassava according to Okigbo (1980) can also be attributed to its ability to adapt to poor soils, easy propagation by stem cutting, resistance to droughts, and relative high yield even without fertilizer application.

Notably, cassava production served as a means of livelihood for millions of Nigerians from unemployment to employable populations including the poor respectively. This is evident in one of the reports that over 450,000 farm families are directly involved in the cassava commodity system either in production, utilization, processing, packaging, marketing and transportation. The COSCA (1991) noted that cassava production was a profitable venture, but the profit margin depended on the variety planted by the farmer. This was corroborated by Bokanga and Tewe (1998) who also noted that optimal yield in cassava, and its profitability depends on rightly used application of fertilizers (timely routine maintenance and use of improved cassava technologies). Nwachukwu et al., (2008) also noted that cassava production enterprises could be more competitive with farmers attaining yields of over 20 tons per hectare if they can embrace improved agronomic practices, as well as high yielding, pests and disease resistant varieties. Youssouf Camara et.al, (2009) compared the profitability of cassava-based production systems in three West African countries (Nigeria, Ghana and Cote D'Ivoire) concluding that cassava production systems were profitable enterprises, but with varying gross margins. However, the economics of cassava production as both food, feeds and industrial products/utilization revealed that they are all profitable (Anyaegbunam et al., 2008).

Considerably, the major concerned for cassava production in the study area revolves around the ability of smallholder farmers to provide food, and any possible surplus for their families, make incomes to send their children to school and provide basic health care and shelter for their families, among other things.

Therefore, to examine the profitability of improved cassava farming in kwara state; there is need to consider the economics and profitability of its production among its producers; to describe the socio-economic characteristics of the farmers**;** make estimate cost and returns associated with cassava production; and outline constraints facing the farmers in the area of study.

Methodology

The Study Area

This study was conducted in Kwara state, Nigeria. The State is located in the North-Central geographical zone, and has a land mass of about 32,500 square kilometers (Km^2). It is situated between the coordinates 6.50^o and 11.50^o North latitudes of the Equator and longitudes 2.80^o and 7.50^o East. The average temperature varies between 27^oC to 35^oC. The rainfall pattern follows a tropical type, with mean annual rainfall varying between 1000mm and 1500mm. The raining season usually starts in early April and ends towards end of October, while the dry (harmattan) season starts in November and ends in March. The vegetation cover is rain forest in the southern part, and gradually tends to reduce to Guinea Savannah as one move towards the northern part of the state. The

state is cohabited by four major ethnic groups including Yoruba, Nupe, Fulani and Baruba (KWSG Diary, 2010).

The state has an Agricultural Development Programme (ADP) with four (4) agricultural zones with their headquarters located at Kaiama for zone A, Patigi for zone B, while zone C and D are located at Igbaja and Malete respectively. The study was carried out in zones C and D which comprises of 12, out of 16 local government area of the state. This however, constitutes over 80 percent of the entire population of the state.

A 3-stage sampling technique was adopted for the study. The first was the purposive selection of two (C and D) out of the four agricultural zones, these two zones (C and D) are noted for cassava production. In the second stage, 8 LGA out of the 12 LGA within the two zones were randomly selected. The third stage witnessed the random selection of 10 villages from the two zones using the Kwara ADP Cassava Producing Household Listing as the sampling frame i.e. 5 villages from each of zone C and D. Finally, eight (8) cassava farmers from each of the 10 villages were randomly selected to give a total of 80 cassava producers**.** Kwara State Agricultural Development Project provided the sampling frame from the list of registered cassava producers maintained in the Rural Institution Development (RID) Department (KWADP, 2008).

The source of data for the study was basically primary. Data was collected from the 80 respondents using structured interview schedule as instrument. Kwara State ADP field workers from the studying zones were trained as research enumerators, and they assisted in administering the instrument. The data collected were analyzed using simple descriptive statistics such as frequency, mean, and percentages. The major constraints to improved cassava production technologies were also identified.

RESULTS AND DISCUSSION

The socio-economic characteristics of the respondents presented in table 1 revealed that: the mean age of respondents was 41 years while the modal age group of the farmers was between 41-50 years (43.75%). This implies that the respondents in this age range are likely to be more energetic and willing to take risks in cassava production (FMARD, 2013). This implies that cassava producers were ageing, and therefore there is need for active and productive youth to engage more in improved cassava production technologies. (71.25%) of the respondents are male**,** this indicated that improved cassava production is energy demanding from pre-planting, post-planting to maturity stage and thereafter harvesting stage. The results further revealed that 71.25% of the farmers had at least primary education; this is in line with results of study carried out by Abiola and Omoabugan (2001) who reported that close to half of the farmer's population has formal education. Since, education is weapon of change this agrees with the findings of Henri-Ukoha, *et.al*., (2011) who emphasized that education is an important factor to facilitate the adoption of improved technology by increasing the farmer's knowledge and understanding of new farm practices in other to boost food production. The study also revealed that the average household size of the respondents was 7, which implies that family labour is available for the improved cassava production technologies and subsequently reduces the amount spent on hired labour; thereby increasing the profitability level of mechanized cassava enterprises. (72.50%) of the farmers were married. 37% of respondents had an average of 6 years' experience in mechanized cassava production and this tends to reduce waste and maximize their returns. This is in agreement with the findings of Bakut (2013) who asserted that farmers with long years of farming experience would be conversant with the constraints and this would increase their level of acceptance of new ideas as means of overcoming their production constraints. 68.75% of the respondents have between 2 and 7 hectares of farm size while 23.75% has less than 1 hectare. This

indicates that cassava production is more prominent in the study area, these findings agreed with the study of Okunola and Adekunle, (2000). In the aspect of sourcing for funds: 45% of the farmers sourced their fund through cooperative societies; 26.25% through personal savings; and 21.25% through money lenders; while only (8%) obtained loans from commercial banks. The result also revealed the following major challenges faced by the farmers on improved cassava production technologies: inadequate credit facilities (23.75%), high cost of transportation (7.50%), high cost of labour (2.50%), inadequate extension service provider (13.75%), inadequate land (11.25%), high cost of agricultural inputs (10%), poor pricing for the tubers (6.25%), high cost of hired machinery and maintenance (12.50%), inadequate government policy (3.75) and poor infrastructure (8.75%) such as accessibility to good roads, light, water, clinic, recreation centre etc.

Table 1: Distribution of Respondents by Socio-economic Characteristics of the Improved Cassava Farmers

Variables	**Frequency**	**Percentage**
Age (years)		
< 30	7	8.75
31-40	23	28.75
41-50	35	43.75
51-60	12	15.00
>60	3	3.75
Total	80	100.00
Gender		
Male	57	71.25
Female	23	28.75
Total	80	100.00
Marital status		
Single	11	13.75
Single mother	5	6.25
Married	58	72.50
Widow	6	7.50
Total	80	100.00
Household size (No)		
3-5	19	23.75
6-8	40	50.00
9-11	12	15.00
>12	9	11.25
Total	80	100
Farm Size (ha)		
<1	19	23.75
2-4	43	53.75
5-7	12	15.00
>8	6	7.50
Total	80	100

Educational level		
None formally	23	28.75
Primary education	31	38.75
Post primary education	17	21.25
Tertiary education	9	11.25
Total	80	100.00
Farming experience		
1-3	24	30.00
4-6	37	46.25
7-9	14	17.50
>10	5	6.25
Total	80	100
Source of funds		
Personal savings	21	26.25
Money lenders	17	21.25
Cooperative societies	36	45.00
Bank Loans	6	7.50
Total	80	100.00
Production constraints		
Inadequate land	9	11.25
High cost of transportation	11	13.75
Poor extension services	6	7.50
Lack of capital	19	23.75
High cost of labour	2	2.50
High cost of hired machinery and maintenance	10	12.50
Poor pricing and marketing of the products	5	6.25
High cost of agro-chemicals	8	10.00
Ineffective government policy	3	3.75
Ineffective infrastructural development	7	8.75
Total	80	100.00

Source: Field survey, 2016. Table 1

The Table (1) and charts (figure 1-9) that follow shows the relationship among the socioeconomic characteristics of the respondents on improved cassava production technologies amidst the dwindling oil revenues and the economic downturn of the country. However, the summary of the variables were presented with bar charts such as age, gender, marital status, numbers of household, farm size, education, years of farming experience, source of funds and the production constraints respectively.

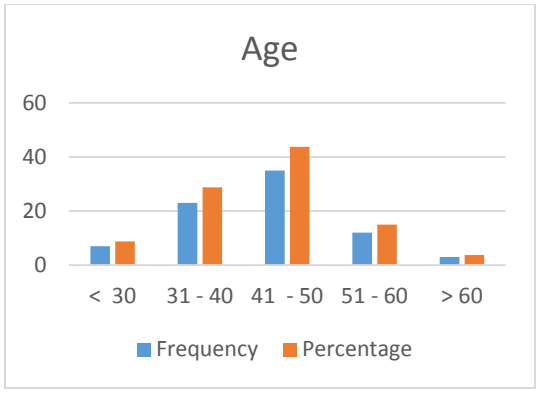

Fig. 1: Age

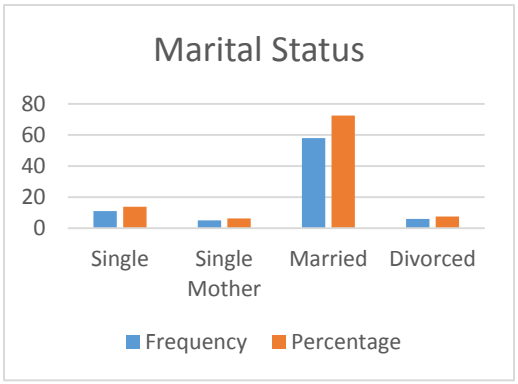

Fig. 2: Marital status

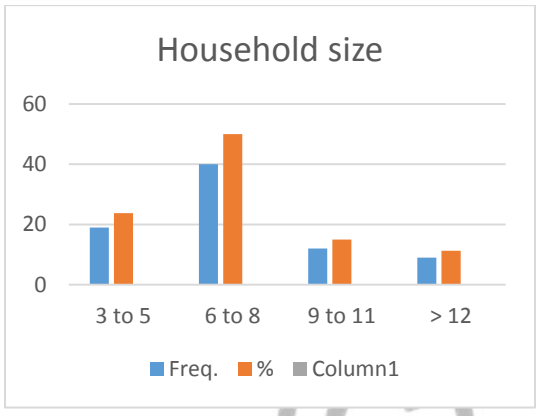

Fig. 3: HHS

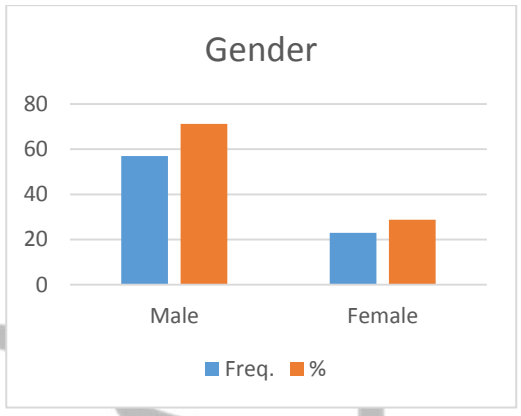

Fig. 4: Gender

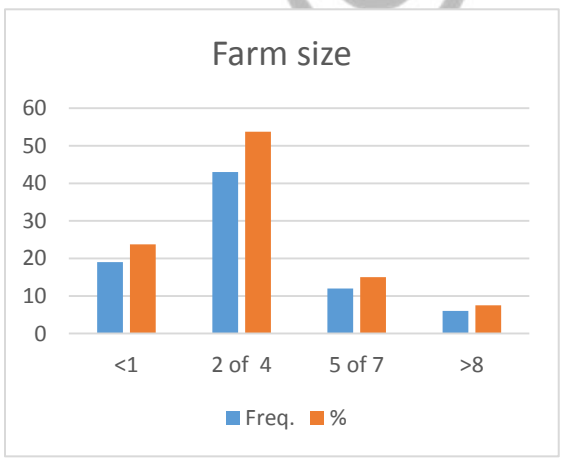

Fig. 4: Farm size

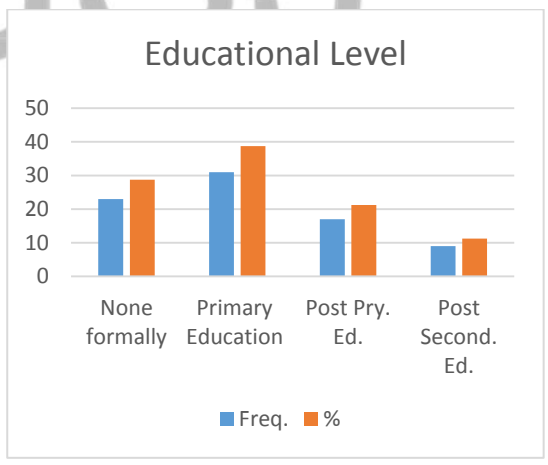

Fig. 5: Education level

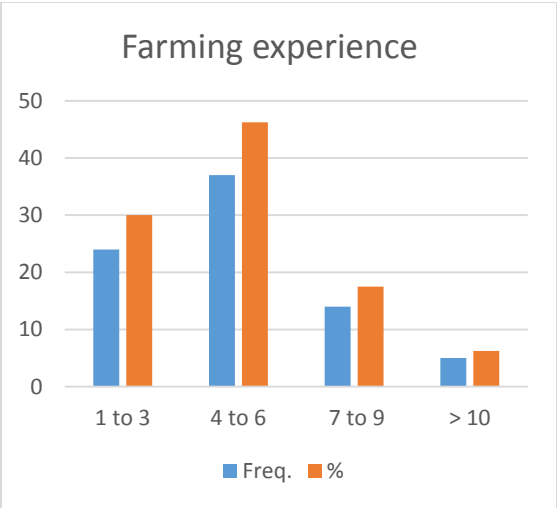

Fig. 7: Farming experience

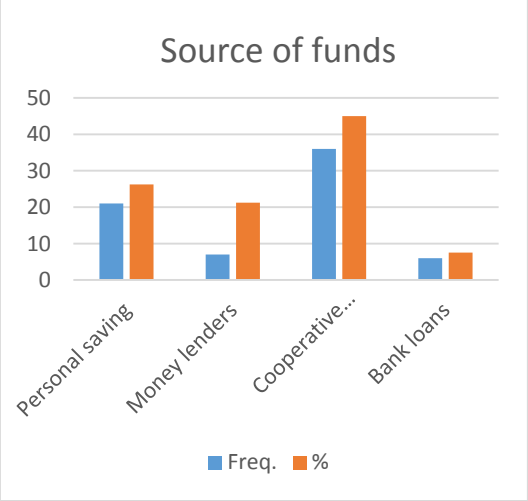

Fig. 8: Source of fund

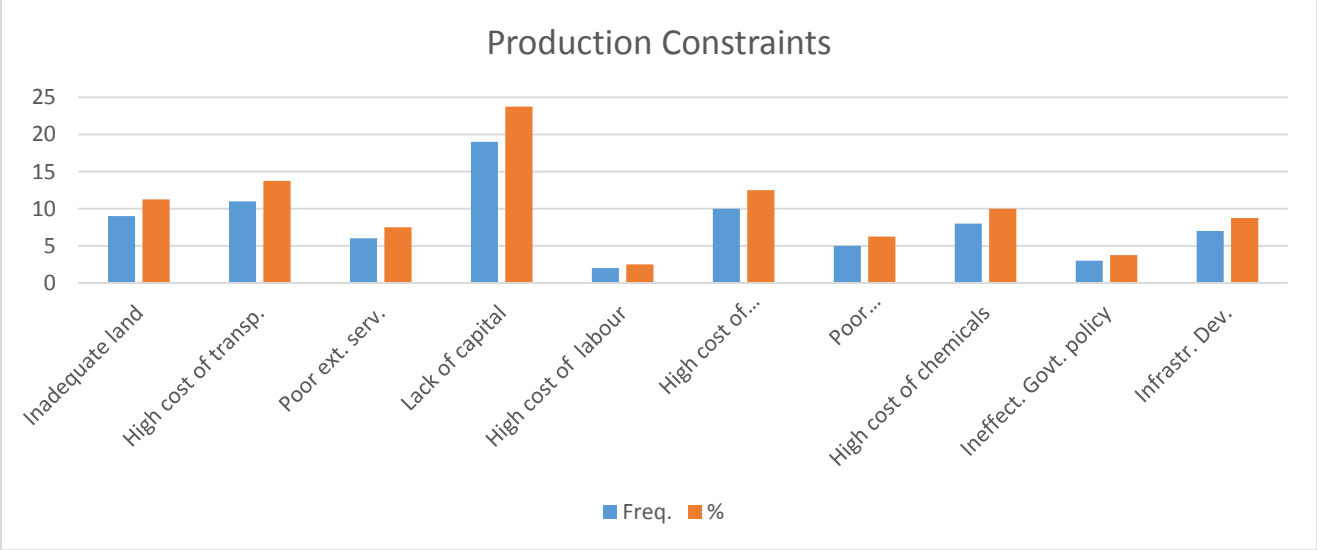

Fig.9: Production constraints

Table 2: Analysis of Cost and Returns of Improved Cassava Production Technologies

The gross margin analysis of cost and returns of improved cassava production technologies on one-hectare of farm land was presented in table 2. The total variable cost (TVC) was ₦198, 746 (inclusive of land preparation, labour operations and inputs; while the total revenue (TR) was ₦477, 500. This covered sales of 14 tons of cassava tubers and the proceeds from the sale of cassava stems. The Gross Margin (TR - TVC) was ₦27, 754:00 while the benefit/ cost ratio was ₦2.40. This shows that improved cassava production is profitable in the study area and for every ₦1 invested in its production there will be a return of ₦2.40.

The charts (figure 10&11) also reveals the summary of the gross margin analysis/ turnover of improved cassava production technologies in the study areas.

Table 2: Analysis of Cost and Returns of Improved Cassava Production

Variable Cost	**Unit**	**Qty**	**Unit Price(₦)**	**Value (₦)**
A. Land clearing/preparation.	md	Lumpsum	75,000	75,000
Ploughing/ridging	ha	lumpsum	27,500	27,500
Total				102,500
B. Inputs				
Cassava cuttings (stem)	bundles	60	350	21,000
Herbicides	litre	6	1,300	7,800
Fertilizer	bags	4	6,900	27,600
Total				56,400
C. Labour/Operations				
Planting&fertilizer application	md	1	9,000	9,000
Herbicide applicant	md	3	2,000	6,000
Supplementary weeding	md	4	1,500	4,500
Harvesting	md	4	1,500	6,000
Transportation /fuel	p/up	29L	145	4,205
Opportunity cost of variable inputs@20%				6,641
Total variable cost (TVC)				198,746
D. Output/returns				
Cassava tubers	tons	14	32,500	455,000
Cassava stems	blds	75	300	22,500
Total revenue				477,500
Gross margin (E-D)				27,754
Benefit/cost ratio (E/D)				2.40

Source: field survey, 2016.

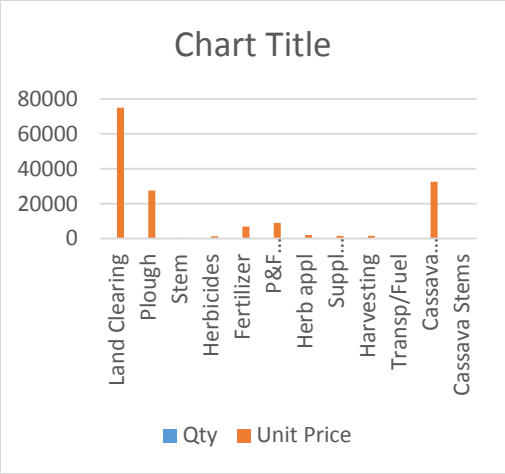

Fig. 10

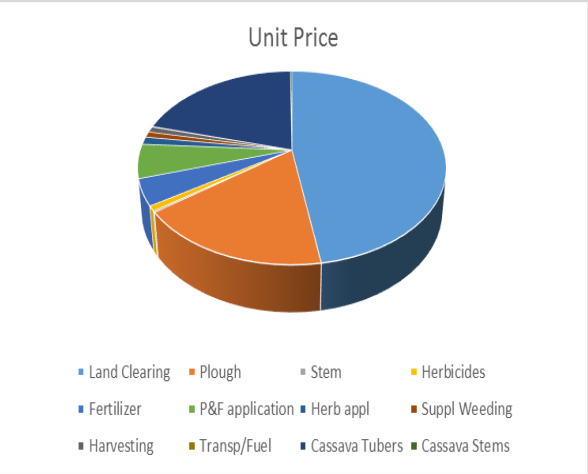

Fig. 11

CONCLUSION AND RECOMMENDATIONS

The existence of cassava as a crop for addressing poverty alleviation, food security, job creation and enhancing rural income cannot be overemphasized in Nigeria with the adequate use of appropriate tools for cassava production. There are prospects for high revenue generation and profitability if tuber yields and productivity are increased, and hitherto, scale of operation expanded to meet global competitiveness. Hence, mechanization of agriculture will therefore increase the agricultural production in Kwara State. Therefore, use of the improved technologies should be encourage in other to increase the agricultural productivity of the farmers and income without increasing rural unemployment. However, the findings of this study has revealed that:

a. The adoption of improved cassava production enterprises in zone C and D of Agricultural Zones of Kwara State (Malete and Igbaja) engaged fairly literate farmers (71.25%) of both genders;
b. The improved cassava technologies operated mostly on a small scale, ranging between 2 and 7 hectares;
c. Most farmers were in the active productive age bracket between 40 and 50 years;
d. Improved cassava production enterprises are profitable, though the revenue generated and income margins are of average value and;
e. Improved cassava production enterprises are faced with some constraints such as lack of credit facilities, high cost of hired machineries and maintenance, high cost of transportation, inadequate extension services, and inadequate infrastructures, poor pricing and marketing of the products.
Based on the findings from the study, it is recommended that:

1. Farmers should be encouraged to access micro-credit in order to increase their scale of production. The fiscal policy should address high interest rate; reduce complexity and stringent conditionality's for accessing loans;
2. Government should boost extension delivery in order to increase uptake and utilization of high yielding varieties of cassava cuttings (stem).
3. Promotion of improved cassava production enterprises and other farm inputs like agro-chemicals, stems (cuttings) and fertilizer should be made available to farmers at affordable prices. **For instance, under the present Agriculture Promotion Policy (APP), the Government could bear up to 30**

percent subsidy for the critical inputs and hence encouraged to implement to the latter the proposed inputs procurement and distribution arrangement under the programme;

4. Government should put in place sustainable buy-back policy that will encourage cassava production and price stabilization; also re-establishment of select commodity market board/ committee to look into price regulation (i.e. pricing) and finally policy to adopt;

5. Government and other donor partners should make massive investment in subsidizing improved cassava production technologies/equipment in order to encourage diversification in processing, package, storage, marketing and value chain options in the downstream sector;

6. Farmers should be encouraged to form themselves into viable Cooperative Groups or Associations in order to facilitate access to farm inputs and soft loans from government and other commercial banks.

7. Finally, provision of basic infrastructures like electricity, water, basic health facilities, accessible roads and filling stations will not only improve the standard of living of rural farmers and their counterparts i.e. tractor operators, but will also help them to adopt appropriate machine that use diesel and solar energy.

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Nigeria is blessed with 98 million hectares of arable land and additional 2.5million hectares of Irrigable land, out of which 83 million hectares are suitable for cultivation but with only 30 to 34 million hectares presently under cultivation. The nation has one of the best agro-ecology to grow variety of crops (Ashaye, 1983; Oni, 1996; FMA, 2001; EEPC, 2003, Oriola, 2009). However, it has been reported that the country has not been able to take best advantage of her climatic conditions, the large expanse of land and ever increasing teaming population to make her sufficient in food production, despite the fact that variety of crops thrive well with maximum yield in different Eco zones of the country. Nigeria is one of the food-deficit countries in sub-Sahara Africa, (Arthur, 2009). A country is food-secure when a majority of its population has access to food of adequate quantity and quality consistent with decent existence at all times (Reutlinger, 1985; Idachaba, 2004). Oriola (2009) asserted that food security entails producing food that will go round every citizen both in quantity and quality. In order to achieve this, agricultural production needs to be enhanced with adequate knowledge of the environment, climatic conditions, and appropriate mechanization among others. The Nigerian agriculture is plagued with drudgery, aged and ageing farmers. Unfortunately, these small-holding farmers, who depend on manual labour to carry out their various farming operations, cannot produce enough food for the increasing population of this nation. Toye (1983) submitted that in a situation where some nations have turned desert land into agricultural paradise, Nigeria has no business remaining a starving giant in terms of food production. In other to corroborate above claim, Adebayo (1983) asserted that manual labour predominates Nigerian agriculture, from tillage to harvesting and processing. He further added that for meaningful agricultural development, there was need to replace manual labour with modern farming techniques (planter, harvester,).

Notably, Apprehension for the sustainability of the smallholder farmer and their low farm productivity has long dominated food policy discussions about Sub-Saharan Africa (*Woodhouse, 1989).*

According to FAO estimates, 172 million tonnes of cassava was produced worldwide in 2000. Africa accounted for 54%, Asia 28%, and Latin America and the Caribbean 19% of the total world production. In 1999, Nigeria produced 33 million tonnes, making it the world's largest producer while a decade after, in 2016 cassava production rose to approximately 54.8 million metric tonnes (Top Ten World Cassava Producing Countries, 2016). A total of 16.8 million hectares was planted with cassava throughout the world in 2000; about 64% of which was in sub-Saharan Africa……

In recent years, cassava has gained a global attention as an important root crop in Africa. This is because climate variability does not affect its productivity (Agwu, *et al.,* 2012). Every part of cassava crop is useful, including its leaves which are significant source of protein, minerals (iron and calcium) and vitamins (A and C) when consumed (Dixon et al., 2003; Philips et al., 2004; FAO, 2004). Its peel is used as livestock feed (fodder feeds) and as an industrial raw material for flour and starch making used in food industry; while its peeled roots can be processed into various values added by-products such as: garri, fufu, flour, starch, chip, ethanol etc. Nigeria's position as the world's largest producer of cassava is not disputed (IFAD, 2010). FAO (2009) also reported that annual production of cassava is put at over 43 million metric tons from a cropped area of about 4 million hectares and average yield of 12.93 tons per hectare. Currently, Nigeria is the largest producer of cassava in the world with an estimated

annual output of 54.8 million metric tonnes (about 70% of the world production) and the remaining 30% was shared by Thailand, Indonesia, Brazil, and Ghana.
However, this increasing trend notwithstanding, Ezedinma et al., (2007) noted that cassava production in the country is still dominated by smallholder farmers with mean cassava field area of 0.42 hectare per farmer. The wide spread cultivation of cassava according to Okigbo (1980) can also be attributed to its ability to adapt to poor soils, easy propagation by stem cutting, resistance to droughts, and relative high yield even without fertilizer application. Notably, cassava production served as a means of livelihood for millions of Nigerians from unemployment to employable populations including the poor respectively. This is evident in one of the reports that over 450,000 farm families are directly involved in the cassava commodity system either in production, utilization, processing, marketing and transportation. The COSCA (1991) noted that cassava production was a profitable venture, but the profit margin depended on the variety planted by the farmer. This was corroborated by Bokanga and Tewe (1998) who also noted that optimal yield in cassava, and its profitability depends on rightly used application of fertilizers (timely routine maintenance and used of improved cassava technologies/ and timely used of mechanization technology). Nwachukwu et al., (2008) also noted that cassava production enterprises could be more competitive with farmers attaining yields of over 20 tons per hectare if they can embrace improved agronomic practices, as well as high yielding, pests and disease resistant varieties. Youssouf Camara et.al, (2009) compared the profitability of cassava-based production systems in three West African countries (Nigeria, Ghana and Cote D'Ivoire) concluding that cassava production systems were profitable enterprises, but with varying gross margins. However, the economics of cassava producing as both food, feeds and industrial products/utilization revealed that they are all profitable (Anyaegbunam et al., 2008). However, economics analysis of mechanized cassava production as poverty reduction, food security and employment generation likewise feeds formulation and industrial utilization are therefore revealed that they are all profitable in kwara state. Much of the concern for cassava production in the study area revolves around the ability for smallholder farmers to provide food, and any possible surplus for their families, make incomes to send their children to school and provide basic health cares for his families, and their environment or its communities. Apprehension for the sustainability of the smallholder farmer and their low farm productivity has long dominated food policy discussions about Sub-Saharan Africa (*Woodhouse, 1989).*
In recent years, the consumption of cassava has risen tremendously in Nigeria because of the rapidly increasing urbanization and the great demand for easy, affordable and convenient foods by the non-farming urban populations.

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Cassava (Manihot spp) is an important crop widely cultivated in Sub-Saharan Africa (SSA). It plays a major role in alleviating Nigeria's food crisis because of its efficient production of food energy, tolerance to extreme stress conditions and suitability to various farming and food system. Cassava is known to be a poverty fighter in Africa. The cash income from cassava proves more open than the other major staples because of its low cash input cost (Nweke 2004); Compared with other major staple crops, cassava performs well across a wide ecological range, it therefore benefits farmers across different zones. According to Nyerhovwo (2004), among the starchy staple, cassava gives carbohydrate production which is about 40% higher than rice and 25% more than maize with the result that cassava is the cheapest source of calories for both human and animal **consumption**.

In recent years, the consumption of cassava has risen tremendously in Nigeria because of the rapidly increasing urbanization and the great demand for easy, affordable and convenient foods by the non-farming urban populations.
Regardless of the high level of involvement of Nigeria in agriculture, acute shortage of food as a result of low productivity remains a major problem (Oni, 2008). In 2013, 83 billion naira was allocated to the agricultural sector out of the over four trillion naira budget proposal, this was just 1.7% of the budget. In 2014 and 2015, it was allocated 1.47% and 0.89% of the budget respectively, a far cry from the 10% agreed by African Union member States to commit to agriculture at the Maputo declaration on agriculture and food security (Federal Ministry of Agriculture and Rural Development, 2015). Hence, the loss of food sovereignty and dependence on food importation is making the country quite vulnerable to fluctuations in global crisis. The vision of Nigeria to have physical and economic access to food on a continuous basis has therefore continued to remain a mirage (Rahji and Fakayode, 2009). Over forty percent of households across all agro-ecological zones in Nigeria face the problem of severe food insecurity (Maziya *etal.,* 2004). Therefore, agriculture remains the "new Oil" as it is projected to lead the Nigeria economy in the next three decades of production after oil and gas and mining, etc.

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Cassava is the most important tropical root crop. Its starchy roots are a major source of dietary energy for more than 500 million people. It is known to be the highest producer of carbohydrates among staple crops. According to the United Nations Food and Agriculture Organization (FAO), cassava ranks fourth as a food crop in the developing countries, after rice, maize and wheat. The leaves are relatively rich in protein and can be consumed**. Cassava can be stored in the ground for several seasons, thereby serving as a reserve food when other crops fail. Cassava is also increasingly used as an animal feed and in the manufacture of different industrial products**. According to FAO estimates, 172 million tonnes of cassava was produced worldwide in 2000. Africa accounted for 54%, Asia 28%, and Latin America and the Caribbean 19% of the total world production. In 1999, Nigeria produced 33 million tonnes, making it the world's largest producer while a decade after, in 2016 cassava production rose to approximately 45 million metric tonnes (Top Ten World Cassava Producing Countries, 2016). A total of 16.8 million hectares was planted with cassava throughout the world in 2000; about 64% of which was in sub-Saharan Africa……

The power that farmers have available to them to perform production functions is a factor in determining output. The three main sources for agriculture power utilized in Sub-Saharan Africa are human, animal and mechanized. When farming intensities increase, the number of tasks performed increases, as does the energy required for each of the tasks, hence the need for

adaptation of mechanical technology (*Pingali, 2007*). Farm productivity is directly related to the farm power available (availability), which implies that significant increases in agricultural production can only be achieved through increasing power-based mechanization (*Kienzle, Hancox, & Ashburner, 2010)*.

Cassava (Manihot spp.) is a remarkable staple food crop that is widely grown in tropical and sub-tropics environment. For the past four decades, cassava is one of the most staple food for both rural and urban population; **it grows excellently during drought**, combat hunger and malnutrition, alleviate poverty and significantly promote food security in Africa, Nigeria inclusive. Cassava is one of the crop largely produced not only serve as food for consumption but also to provides raw materials for industries (starch, textiles, fuel, confectionery and bakery just to mention a few), as well as foreign exchange earner. The recent transformation of cassava from a low profile into an industrial raw material, coupled with the new cassava revolutionary policies of the Federal Government of Nigeria have resulted in a serious abundance in the demand for cassava and cassava-based products (cassava sub-sector) locally as shown is importance. **Cassava processing is desirable because of its high water content (60-70 percent) and toxicity. Processing reduces the bulkiness and facilitates transportability of processed products. It removes the cynogenic glycocides thus enhancing edibility and nutritive quality (Okigbo 1980). Processing increase the shelf life and stabilize product prices thus guaranteeing higher prices for farmers.**

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Therefore, to examine the profitability of improved cassava farming in kwara state, there are needs to study the economic analysis of its production technology among its producers and to describe the socio-economic characteristics of the farmers**;** make estimate cost and returns associated with cassava production; and outline constraints facing the farmers in the area of study.