

SOCIO-ECONOMIC CHARACTERISTIC AND INNOVATION TECHNOLOGY OF KOLANUT PRODUCTION IN OGUN STATE

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Abstract

Kolanut production was characterized by price fluctuations through spaces and time in Nigeria due to instability of global economy. This is linked to the large numbers of farmers and intermediaries who acts between the primary producers, middle-men and the consumers. The study was carried out in Sagamu Local Government Area (LGA) of Ogun State. Lack of meaningful farming activities prevents the farmers from transiting into commercial kolanut farming which stimulates production increases. The general objective of this study is to describe the socio-economic characteristics of kolanut production and factors influencing the kolanut farmers using primary data sourced from 120 farmers. Data analytical tools included descriptive statistics, farm budget analysis (net farm incomes) and gross margin; while the constraints were rated on a 4-point Likert type scale to determine their severity. The results revealed that kolanut farming yielded positive outcomes in the study area. The study revealed that majority of the farmers are males (75.83) percent while (24.16) percent were females; modal group is between 31-60 years with a mean age of 57. Majority of the farmers have formal education (75.83) percent; with a minimum average family size of nine (9) per households while (70.0) percent were married. (45.83) percent sourced their fund from personal savings; (75.0) percent owned land while (43.3) percent belongs to cooperative groups; an average annual income of ₦450,500 farmers and net profit of ₦490, 950; making a substantial income available for use in expanding their production. The study recommended an accelerated improvement in scaling up of kolanut enterprises by extending buy-back policy to more states; organizes workshops and field trips for farmers; incorporate them into virile cooperatives groups and initiates adult literacy programmes to enhance production and productivity in order to make kolanut more attractive at the local and international market.

Keywords: kolanut farming, gross margins, cost and returns, constraints.

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Introduction

Agriculture is a major contributor to Nigeria's GDP and small-scale farmers which played a dominant role in this contribution (Rahji and Fakayode 2009); but their productivity and growth rate are being delayed by limited access to credit facilities (Odoemenem and Obinne 2010). It is

the main source of economic gains and livelihood for most Nigerians. However, agricultural sector is made up of four sub-sectors which are crop production, livestock, forestry and fishing. Technology innovation is the ability to create or develop new products, processes or new industries in response to changing economic environment (Kim, 1997). Therefore, Ikpi *et al* (2002) show that where farmers have to adopt a new technology that shifts time from their processing to home production activity sector, the probability and rate of adoption of such technology are higher.

Technologies are viable only when they are used by farmers. No matter how well new technologies work on research stations, if farmers do not use them, their development would have been in vain (Sandra *et al*, 1989). Kola is an important economic cash crop to a significant proportion of Nigerian population who are involved in kola farming, industrial utilization, trading, marketing and transportation. Therefore, the place of kolanut production and innovation technology before the dependence of the economy on petroleum cannot be over-emphasized (Akinbode, 1982). Kolanut is the fruit of the Kola tree; a genus of trees native to the tropical rain-forest of Africa. Over forty varieties, of which four species are commonly and widely cultivated and edible can be found in West Africa (Lovely, 1980) and the popular ones are kola Nitida; Cola Acuminata; Cola Vertiaillata and Cola Anomala. Only the first three have relevance for kola trade in Nigeria. Kolanut are second in importance as a commercial crop to Cocoa in the Southern part of Nigeria (Adejomo, 2014). It is used as a masticatory stimulant by Africans which has numerous uses in social, religious, ritual, and ceremonial functions by the natives in the forest region of Africa (Asogwaet *al.*, 2006).

In recent years, the commodity has gained a significant attention during ceremonies related to marriage, child naming, and installation of chiefs, funeral, and sacrifices made to the various gods of African mythology (Daramola, 1978 and Opeke, 1992); and even in daily entertainment of important visitors where it is being offered as a valuable gifts. Hence, the consumption of *Cola acuminata* (*kola of social and traditional significance*) known as *abata nutsis* greatly cherished by the Yoruba of South-west and Northern part of Nigeria while South-east prefers the *Cola nitida* (*kola of commerce*). In addition to the economic and social importance of kolanut, it enjoys special favour with the people of Northern-Nigeria who have accepted *Cola nitida* as a stimulant substitute for alcoholic drinks because of Islamic belief on alcoholic drinks. Therefore, there is also increasing demand for its usage in pharmaceutical industries and in production of soft drinks, wines, and candies (Beattie, 1970 and Ogunuga, 1975). Its uses have inevitably created a high demand in excess of its production (Oladokun, 1985).

Kolanuts are widely cultivated in Nigeria. Large quantities of the nuts are exported to Europe and North America, it also contains about 2 percent of caffeine and chewed by many people as stimulant. It is used in the manufacture of dyes and cola group of beverage drinks where they are used chiefly for flavouring cola drinks such as Coca-Cola, Pepsi-Cola, Afri-Cola, Sena-Cola to a mention a few which are refreshing or stimulating substitutes for tea or coffee (Irvine, 1956). Beverages such as kola wine, kola cocoa and kola chocolate-a type of chocolate containing cacao and kola powder in cocoa butterfat (Opeke, 1992); and one interesting sounding concoction called "Burroughs and Wellcomes Forced March Tabloid" were once tried in Britain, but they were short lived (Tindall, 1998). Kolanuts also have medicinal and socio-cultural values and uses. A Kolanut tree is sacred and its sacredness is used in divinity as it can explain the oracle. It is an evergreen

tree, the genus includes about forty species. It has glossy green leaves, violet striped flowers and star-shaped fruits. The seeds are taken from the pod as their outer coat or cover is removed. They are chewed while fresh or dried.

Ndagi, *et al.*, (2012) also stated some of the challenges of kolanut production which is low yields, lack of information on improved technology, pests and diseases infestation, lack of intervention from the government, processing, packaging and transportation. In recent times, farmers still hold kolanut production in high esteem, and there is vast area of land which could be used for kolanut production. In Adejomo (2012) study, he reveals that there is a significant positive impact of kolanut production on employment creation, poverty alleviation, industrial development and socio-cultural values. He further revealed that kolanut as an important stimulant and a source of feed to animals. In a period of global economic recession, Kolanut production is used for socio-economic revival, revamping and rejuvenation. In conclusion, the research works further posited that kolanut production if well encouraged, it will have a multiplier effect, serving as a liberator from unemployment quagmire, which is one of the banes and major clog in the wheels of development, especially in the African continent (Oluwalana, *et al.*, 2017). The trend in decline still continues till present as the bulk of the agricultural products consumed in the country are imported with little coming from the subsistence system of farming majorly practiced in the country. Alademirin and Odusina (2009) in Makinde, *et al.*, (2013) also corroborated that as Nigerian economy fortunes have turned in cycle, much attention is being paid to rehabilitation of estate plantation and the development of new ones, and that most estates plantations are being put up for outright sale or long management lease to private investors/enterprises.

This neglect culminates into scarcity of kolanut in the market as the production and supply has been inadequate. Considering this fact, there is no doubt that the potential uses and importance of kolanut can be both a saver and earner of considerable foreign exchange for Nigeria, more income for kolanut farmers, and serves as employment or wealth creation for the Nigerian youths. A few substantial quantities are exported to other African countries as well as to Europe and North America which generate the necessary foreign exchange earning to the government (Akinbode, 1982). It employs a greater percentage of the people as kolanut farmers, assemblers-processors, bulking agents, wholesalers, exporters, importers and retailers.

Furthermore, Komolafe *et al.*, (1970) and Ajiboye (1995) reported that Nigeria produces about 120,000 tonnes of kolanut annually and mostly found in the south-western region of the country which covers Ogun, Oyo, Osun, Ondo, Ekiti, and Lagos state. Invariably, Ogun state produces the largest amount of Kolanut in the country devoting about 65,000 hectares of land and producing 80,000 MT of the crop in 2010/2011 (National survey on Agricultural Exportable Commodities, 2013). More so, the production of Kolanut is influenced by soil fertility and the ability of any soil to replace nutrients absorbed by crops depends mainly on the clay type, mineral composition of the fine fraction and soil fraction in topo-sequence.

Ogun State as a case study like the rest of Nigeria (Ashaye, *et al.*, 2017) has inefficient allocation of inputs, low returns on farmer's investment and government's support. In order to remove this biasness in kolanut production in Nigeria, this however necessitated for this study. Therefore, the objective of this study is to describe the socio-economic characteristics of the respondents in Ogun

state; to estimate the cost and returns of kolanut farming; and to identify the major constraints of Kolanut production in the study area.

Methodology

Description of the Study Area

This study was carried out in Sagamu Local Government Area of Ogun State, Nigeria. The state has land mass of 16,409.26km², with a population of 3,728,098 people; while Sagamu Local Government Area has a total population figure of 253,421 people (National Population Commission, 2006); this has been leap-frogged to about 4.5million with over 360,000 farm families. It has a mean annual temperature of 32°C; with a relative humidity (RH) of 95%. The state has 4 Agricultural Development Programme (ADP) zones namely: Abeokuta, Remo, Yewa and Ijebu. The study area is located in the tropical rain forest region which is known for the production of tree crops mainly timber, cocoa, kola, citrus, rubber, oil palm, etc. The arable crops grown mostly as mixed crops include maize, yam, cassava, melon, cocoyam, rice, sugar cane and leafy vegetables.

The study area is an important commercial and industry area. Apart from agriculture a considerable number of people of Remo-land have shown interest in kolanut trading; daily, periodic and night markets which serves as outlets for agricultural produce and other goods within and outside. The State has 20 Local Government Areas (LGAs) with its administrative capital at Abeokuta. The predominant occupation of the people in Ogun state are farming, hunting, trading, goldsmithing, tailoring, oil palm processing, processing and milling of rice, palm wine, weaving, carving, transportation, agro-allied and cement industries, oil and gas and manufacturing companies with over three hundred and fifty (350) spring-ups industries.

Sampling Techniques/ Analytical Technique

A multi-stage sampling procedure was adopted in this study. In the first stage, Sagamu Local Government Area (LGA) was randomly selected from Remo (Ikenne) Agricultural zone. The second stage involved a random selection of five communities such as Agbowo, Sabo, Igodo, Odelemo and Simawa within the LGA. In the third stage, 24 kolanut farmers were randomly selected from each of the five (5) communities; making a total of 120 respondents. Field trips were also made to complement the information gathered through the questionnaires. The choice of the communities was because of the predominant kolanut farming in the area. Primary data were collected using structured interview schedule as instrument. Ogun State Agricultural Development Programme (OGADEP), Cocoa Research Institute of Nigeria (CRIN) Ibadan, Journals, Agricultural Development Programme (ADP)/Extension Agents, Research reports, Publications, Proceedings and market surveys provided the sampling frame while others were administered from the instruments of the kolanut farmers.

Descriptive statistics and Net profit model (farm budgetary analysis) were carried out on the retrieved questionnaire from the respondents. Descriptive statistics was used to analyze and compare the socio-economic characteristics of the kolanut farmers and production scale in the study area which include age, sex, educational status, years of kolanut farming experience, family size, marital status, farm size,, land ownership status, access to credit, group membership; while production inputs, harvesting, labour for processing, sorting and grading, packaging, storage,

transportation and the revenue generated from sales of kolanut, etc.; were presented in form of frequency tables, percentages, means and standard deviations. Nine (9) constraints to kolanut farming were identified and captured.

Net Profit Model: Farm budgeting analysis was constructed to determine the profitability of kolanut production. This is the difference between the gross revenue and total cost of production. The total cost of production is the total expenses incurred during the production period; which includes variable and fixed costs. However, this is used to determine the net farm income and the profit obtained in study area

Thus;

$$NP = TR - TC,$$

Where

NP=Net Profit,

TR=Total Revenue,

TC=Total Cost of Production i.e. (Fixed Cost + Variable Cost)

TC= TVC+TFC

Results and Discussion

The summary statistics of socio-economic variables involved in kolanut farming were presented in the table 1.

Socio-economic characteristics of respondents

The age distribution of respondents as shown in Table 1 revealed that respondents within the age bracket of 31-60 years formed the majority (92.5%). With the mean age of 57 years, this can be deduced that the bulk of the respondents fall in the economically active age bracket, which can have a positive implication on kolanut output. The findings imply that good number of kolanut farmers were in their productive and economically active age which means there is willingness to take risk in adopting modern technologies and spread of innovation practices than the old ones in the age category. The age ranges of the respondents from 18-30 years fall within age bracket of 7.5%. This agrees with statement by Olowosegun-Sanni (2004); Egbe and Eze, (2014) that young people are more likely to adopt innovations, which therefore served as better agents of innovation transfer in their economically active age.

Table 1 further showed the gender distribution of respondents; the data summaries revealed that majority (about 75.8%) of the respondents were males while about 24.16% were female. The results indicated that kolanut farming was dominated by males probably because they have herculean tasks of males and equally, by their more energetic nature, which better fitted to do than female counterparts. This finding is in line with report by the World Bank (1993) which states that most females find it very difficult to cope with labour-intensive works compared to their male counterparts. This is a further corroboration of what was stated earlier that kolanut productions were male-dominated activities in the study area. This active productive age is in line with United Nation Department of Economics and Social Affairs which stated that numbers of men and women in the world is roughly equal, that is, out of 1,000 People; 504 are men (50.4%) and 496 are women (49.6%); (UNDESA, 2019) and (World Population Prospects, 2019) respectively.

Furthermore, marital status of respondents as shown in Table 1 revealed that a larger proportion (70.0%) of respondents were married while the remaining was either singles (8.3%) and widowed (19.2%). This indicated that majority of the kolanut farmers were mature persons who had access to the opinions and advises from their spouses in making a critical decision in kolanut production as postulated by Mafimisebi *et al.* (2014b). Table 1 further revealed the *production trends and farming experience of the respondents which revealed that* majority (95.0%) of the respondents had between 6-15 years of experience in kolanut farming activities while 5.0% had less than five (5) years. This revealed that the respondents' years of experience is above the mean value; while mean years of experience in kolanut farming was 10. This further assumed that kolanut farmers in the study area were quite experienced in production. This also connotes that they are likely to be very knowledgeable and self-motivated in kolanut production.

This however is in line with the previous researchers' findings which reported that years of experienced, highly influenced decision-making by farmers (Mafimisebi *et al.*, 2014b). The results in Table 1 revealed the educational level of the kolanut farming is about 24.1% of the respondents (1-3) years had no formal education (i.e. less than 1); 58.3% of the respondents had spent 4-6 years in primary education school; 15% of the respondents had spent 7-9 years in post-primary education; while only 2.5% of the respondents were graduates of tertiary institutions. In summary, the results revealed that majority (58.3%) of the respondents ended their education at the primary school level. This generally low level of formal education may affect farmers' willingness to adopt innovations which may positively impact on their farming, owing to the inability to read and write (Mafimisebi *et al.*, 2014b). Most of the farmers were illiterate to semi-illiterate; that is, they had at least one form of education. This implies that closed to half of the farmer's population has formal education as reported by Abiola and Omoabugan (2001).

This finding corroborates with Ohen *et al.* (2013) that majority of farmers in Southern-Nigeria were without appreciable level of formal education. *Table 1 further revealed the distribution of respondents by household size which shows that respondents with family size 5-8 were in the majority (60.0%) with average family members of 9. Household size ranged from 1-4 have 41.3%; while the least ones have the family size of 5.8% respectively. This connoted that farmers can possibly engaged some of their household members in kolanut production and other activities. One implication of a large household size is that a huge proportion of income may be spent on consumption which may restrict farm business expansion and reduce the high level of output. The fact that farmers' propensity to commercialize their production declines with increasing numbers of household members has been reported by Lapar et al. (2003).*

The results of distribution of respondents by land size revealed that 97.0% had between 1ha and above 4.9 ha while only about 2.5 % have more than 10 ha for farming activities. From this result, it can be hypothesized that kolanut farmers in the study area operated on medium to large size which may by itself induced production expansion. Randela *et al.* (2008) further opined that increased of land productivity and that the size of land is important because transactions costs are largely fixed costs that can be spread across more volume of outputs on large farms. The distribution of respondents by forms of land ownership showed that majority (75.0%) of kolanut farmers did not own the land used for kolanut cultivation. This is because they benefitted from the policy of leasing of 5 ha of land and above to farmers by government. This can however enhance

and increased their output. This result conformed to earlier report from distribution of respondents by land size in this study where majority (75.0%) owned more than 5ha of land; which about 25.0% of the respondents owned the land cultivated to kolanut through either inheritance or purchase.

The results in Table 1 revealed that about 45.8% of the respondents had access to credit in the last growing season while about 56.7% had no access to credit in the same period. This implies that kolanut farmers mostly depended on their personal and relations capital to finance their farming activities. As a result of this, the production capacity of the farmers is likely to be conditioned by the magnitude of their personal capital base which may, to some extent, determine their level of participation. These findings were consistent with Adenegan *et al.* (2013) and Hlongwane *et al.* (2014) who reported that majority of smallholder farmers had no access to credit which hindered their production. Results of summary statistics further showed that about 56.7% of the respondents did not belong to any associations/groups, while about 43.3% do. Involvement in associations/groups is one of the key determinants of good output as it gives farmers the opportunity for increased strength/ power which enables selling their produce at remunerative prices and satisfactory profit (Adenegan *et al.*, 2013).

Group/association membership is also of assistance in getting relevant information on price, price trend and other farming conditions (Adenegan *et al.*, 2013). Result of distribution of respondents by annual income is also displayed in Table 2. From the table, it is revealed that about 57.5% of the respondents earned between ₦300,000-₦500,000 per annum; about 26.6% earned between ₦100,000-₦300,000 while about 15.8% earned above ₦500,000 per annum. The average annual income of the respondents was about ₦450, 500. It can be hypothesized that farmers in the study area made substantial income from kolanut farming. This income level, if judiciously used, is capable of bringing about kolanut acreage expansion thereby increasing their level of kolanut returns. Samuel *et al.* (2015) opined that with increased income, the farmer could save more and acquire assets useful in aiding both their cultivation and participation which led to further income based.

Table 1: Socio-economic Characteristics of Kolanut Farmers in the Study Area

Variable	Frequency	Percentage
Age		
<20	3	2.50
21 – 30	6	5.00
31 – 40	30	25.00
41 – 50	42	35.00
>50	39	32.50
Mean = 56.6yrs		
Gender		
Male	91	75.83
Female	29	24.16
Total	120	100
Marital Status		
Single	10	8.30
Married	79	65.80
Widowed	23	19.20
Divorced	3	2.50
Single parent	5	4.16
Total	120	100
Educational Level		
No formal education	29	15.00
Primary education	69	71.67
Secondary education	17	11.67
Tertiary education	5	1.67
Experience in production (years)		
<5	6	5.00
6-9	65	54.17
>10	49	40.83
Household size		
1 – 4	7	5.83
5 -12	72	60.00
>12	41	34.16
Income (N'000)		
>100, 000	10	8.33
101, 000-300, 000	69	57.50%
301, 000-500, 000	32	26.67%
>500, 000	9	15.83%
Farm size (Ha)		
1.00-1.99	18	15.00
2-2.99	22.50	49.16
3-3.99	27	22.50
4-4.99	13	10.83
>5	3	2.50
Land ownership status		
Owned	90	75.0
Not owned	30	25.0
Group membership		
Group membership	Group membership	Group membership
Yes	52	43.3

No	68	56.7
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Source: Field survey (2018).

3.2 Net Profit Model (Farm Budgetary Analysis)

The results on Table 2 revealed that gross revenue realized from the kolanut farming was estimated as ₦591, 500. 00; Total variable cost (TVC) was estimated as the minimum and maximum such as the cost of labour for processing, cost of labour for harvesting, cost of labour for supplementary weeding, and cost incurred on kolanut transportation of the respondents which are ₦10, 587.50 and ₦84, 700 respectively with the estimated mean variable cost as ₦295, 750; fixed cost (depreciation of fixed assets) which includes the cost of go-to-hell, cutlasses, baskets, files, hoes, etc. was estimated as ₦15, 850; while the gross margin was estimated as ₦506, 800 for a production cycle. This means that kolanut farming in the study area made profit even though the cost of production was considerably high. Net profit was estimated as ₦490, 950 which show that kolanut production is profit-driven business in the study area.

Table 2: Estimated Cost and Returns of Kolanut Farming in the Study Area

Items	Mean estimate in Naira (₦)
Cost of Labour	7, 000
Cost of Transporttion/fuel	29, 000
Cost of supplementary weeding	4, 500
Cost of Agro-chemicals	5, 400
Cost of fertilizer	28, 800
Cost of Harvesting	3, 000
Cost of Sorting and Grading	3, 500
Cost of Packaging and Storage	3, 500
TVC	84, 700
GR	591, 500
GM	506, 800
Fixed Cost (depreciation of fixed assets)	15, 850
Net Profit	490, 950

Source: Field survey (2018).

Estimated Cost and Returns of Kolanut Farming in the Study Area

Table 3: Analysis of Constraints to Kolanut Farming (₦120)

S/N	Constraints	4 Very severe	3 Severe	2 Not severe	1 Indifferen t	Σ	\bar{x}	Ran k	Remark s
1	High Cost of Transportation	28(23.3)	80(66.7)	7(5.83)	5(4.2)	371	3.36	1	Very Severe
2	Poor road condition	35(29.2)	60(50)	22(18.3)	3(2.5)	367	3.05	4	Severe
3	Inadequate capital	72(60)	20(16.7)	27(22.5)	1(0.83)	403	3.09	3	Very Severe
4	High cost of Labour	61(50.8)	40(33.3)	14(11.7)	5(4.2)	397	3.31	2	Very Severe
5	Less Impacts of Extension	50(41.7)	30(25)	28(23.3)	12(10)	358	2.98	6	Severe
6	Poor Pricing for Products	16(13.3)	91(75.8)	11(9.2)	2(1.7)	361	3.00	5	Severe
7	Government Policy	20(16.7)	50(41.7)	42(35)	8(6.70)	322	2.68	8	Not Severe
8	Pests and Diseases	18(15)	31(25.8)	58(48.3)	13(10.83)	294	2.45	9	Not Severe
9	Poor Storage Facilities	42(35)	5(4.2)	69(57.5)	4(3.33)	325	2.70	7	Not Severe

Source: Field Survey (2018). Parentheses are in percentage.

Analysis of Constraints to Kolanut Farmers

Table 3 shows analysis of the severity of constraints to kolanut farming in the study area using a 4-point Likert-type scale. It was computed by summing the scores (frequency multiplied by magnitude of constraints and determine the mean (\bar{x}) which were then ranked. Results in table 3 revealed that high cost of transportation, high cost of labour, lack of credit facilities (non-availability of loan) which falls in the category of “very severe” with respective mean score of 3.36, 3.31 and 3.09. Poor road networks, poor pricing for the products and poor extension services with respective mean scores of 3.05, 3.00 and 2.98 were in the category of “severe”, while poor storage facilities, government policy and pests and diseases were considered “not severe” with mean scores of 2.70, 2.68 and 2.45 respectively.

The response regards impact of extension services in table 3 poses a surprise as extension farmer’s ratio in Nigeria is noted to be as high as 1:2,500 (Ilevbaoje, 2004) and in recent years as 1: 3, 000. Perhaps, the kolanut farmers may have underestimated the importance of extension in increasing their production, processing, packaging, grading and transportation. A similar surprise was also expressed by the response of the kolanut farmers regarding availability of grading, packaging,

processing, distribution pattern and penetration, as most farmers interviewed sourced their seeds/seedlings locally (unimproved/less graded/packages). This however, has negative implications on quality of kola nut production and grading.

Conclusion and Recommendations

Kolanut production as a cash crop, can be used to address the food insecurities; enhancing rural and foreign income. Therefore, there are prospects for high revenue generation and profitability if the farmers were more committed in use of improved technologies for upgraded productivity as well as to increase their scale of operation expanded in order to meet the global competitiveness. The findings of this study showed that;

- a. Kolanut farming enterprises in the study area engaged fairly literate farmers (75.8%) of both genders.
- b. Most farmers are in the active productive age bracket of between 30 and 50 years above.
- c. Kolanut farming is faced with 'very severe' constraints; high cost of transport, labour, capital, poor road condition and poor pricing for the products.

To mitigate the constraints identified in the study, the following recommendations were made:

1. Kolanut farmers should engage in value addition activities such as processing and sorting of kolanut for manufacturing such as textiles, etc. and industrial utilization such as pharmaceutical, beverages, soft drinks, confectioneries etc. before selling so as to increase their scale of operation and additional income to improve their livelihood;
2. Government and other stakeholders should boost extension delivery in order to increase uptake and utilization of high yielding varieties such as fertilizers, Ramets, pesticides, tractors, etc. to enhance production and productivity in order to make kolanut more attractive at the local and international market;
3. Government should put in place sustainable buy-back policy and subsidies that will encourage kolanut production, processing, packaging, storage, marketing and transportation of the products for the global competitiveness,
4. Kolanut farmers should be encouraged to form themselves into viable cooperative groups or associations in order to facilitate access to farm inputs, innovations, grading and access to single-digit micro-credit or loans facilities; and
5. Therefore, government and research institutes should endeavor to embark on enlightenment campaign for more kolanut production, marketing, and consumption patterns, manufacturing and industrial utilization among other things etc.

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