



# ASSESSMENT OF PROCESSING METHODS, WAYS AND FORMS OF GARCINIA KOLA SALES IN OGUN, ONDO AND EDO STATES, NIGERIA

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## ABSTRACT

This study was on assessment of Processing methods, forms and ways of sales of *Garcinia kola* in in Ogun, Ondo and Edo State, Nigeria. The objectives were to examine socio-economic characteristics of the respondents; evaluate the different processing methods of *G. kola* sold in study area; analyse the forms and ways in which *G. kola* is sold in the

## Introduction

*Garcinia kola* is a medicinal plant which is exclusively tropical in distribution, and many people in Africa used it for medicinal purposes (Ajayi and Echi, 2016). It belongs to the kingdom Plantae, order Malpighiales, family Clusiaceae, genus *Garcinia*, species *kola* and binomial name *Garcinia kola* (Ekene and Erhirhie, 2014). *Garcinia kola* is found in West and Central African sub regions in the humid coastal areas and rainforest vegetation distributed from Congo to Sierra Leone. Mostly Nigeria and Cameroon (Cheek 2004; Agyili et al 2007). Throughout the tropics, there are more than 600 species in the genus *Garcinia*; one is the mangosteen, only 16 species are in West Africa (Agyili et al. 2006). In Nigeria, *G. kola* is traditionally domesticated in the southern part of the country and commonly used for the treatment of illness like cough and high blood pressure (Adebisi 2004). *G. kola* is respectively known as “Orogbo”, “Akuilu” and “Namijingoro” in Yoruba, Igbo and Hausa languages of Nigeria and it is common in South Western States and Edo State (Otor 2001). A large part of forest economy in Nigeria has



study area. The data for the study was obtained using structured questionnaire administered to 133 respondent selected using multistage sampling technique. Descriptive statistics such as charts, frequency and percentages were used to evaluate the data. The results of the demographic characteristics indicate that 61.7 % of the respondents were female, 61 % were married and 65% confirmed *G. kola* cultivation/harvesting was their home-based business. The result on the Processing Method Used reveals that larger percentage of the respondents processed *G. kola* before selling (with 6.0% processed it by cutting the pulp fresh and 41.0% keeping it outside to decay) while 32.0% dispose it raw without processing it. Among those who processed *G. kola*, 36.9 % of them process *G. kola* for the purpose of preservation only while 28.6 % processed *G. kola* in order to prevent damage of the seed. When Selling, the larger percentage of the respondents (99.0%) prefer selling it processed and within 2-4 months, and they sell it by themselves directly to the consumers (83.0%) or to middlemen. It is recommended that the Federal Government should explore the potentials of NTFPs such as *Garcinia kola* by employing technology to develop and optimize the value chain and to make it more attractive for the younger generation to come in as this would help in discouraging deforestation.

**Keywords:** Southern Nigeria, socio-economic characteristics, processing, *G. kola*, sold

always been constituted by forest product other than timber and wood. These forest products are often called non-timber forest products (NTFPs) which contributes as much if not more, to national product in many countries (Sunderland and Ndoye, 2004). In addition to this, Renuka (2000), revealed that *G. kola* is an important NTFP tree crop second only to timber, it serves as a source of rural and urban livelihood in West and Central Africa. They are not only the chief raw material for traders in various parts of the world, but they also have great social benefits as a source of livelihood for the people residing near the forest areas.



Similarly, Chinyere *et al.* (2013) reported that the plants bark, seeds and stem are usually used in the treatment of throat infections, acute fever and inflammation of the respiratory tract. The seed for example is used in the treatment of headache, prevent and relieve colic, gastric disorder, chest cold and cough (Anegbeh *et al.*, 2006). Apart from being used for folklore remedies, it is chewed by many people because of its bitterness and astringent. Bioactive components of the seed according to vast evidence, serve as alternative medicine for the treatment of some immune-destructive diseases as well as ailments such as malaria, hepatitis (Maňourová *et al.* 2018). *Garcinia kola* as stated by Osunemena (2012) every part of the plant has been found to have medicinal value and thus, referred to as a “wonder plant”. The species, often called bitter kola, refers to as “false kola” or “male kola”.

*Garcinia kola* tree is an economically high valued tropical tree that produces *Garcinia kola* seeds which are readily available in West and Central Africa in large quantity. It is a multipurpose tree crop in Southern Nigeria, cultivated in home gardens and widely consumed due to its edible and medicinal seeds. *Garcinia kola* to generate income, it has to be qualitative and utilizable. The quality, value and utilization of the seed are determined by the methods of processing.

With the decline in employment opportunities from industries, the unemployed alternatively source income by harvesting these products from the nearest forest (Adepoju and Salau 2007). This research, therefore, seeks to explore methods of processing, and ways and forms of sale of *Garcinia kola* and the socio-economic characteristics of the farmers.

## OBJECTIVES

The broad objective of this research is to assess the various methods used by farmers in processing *G. kola* in Ogun, Ondo and Edo State, Nigeria. While the specific objectives were to:

- I. describe the socio-economic characterises of the respondents in the study area;
- II. examine the different processing methods *G. kola* in study area and
- III. analyse the ways and forms of selling *G. kola* in the study area.



## **METHODOLOGY**

The study was carried out in southwest zone of Nigeria involving two states of Ogun and Ondo; and south-south zone of Nigeria in which one state of Edo is considered due to the production of that crop in that area. Ogun state is located between Lat.  $7^{\circ}00'7.000''N$ , Long.  $3^{\circ}35'3.583''E$ . The population of Ogun is 3,751,140 with a total land mass of 16,980.55 km<sup>2</sup> (NPC 2010). The state is within the humid tropical climatic zone, mainly characterized with high rainfall and high relative humidity (rainfall 105-128 mm). The mean annual temperature is 26 °C which varies a little over time. The state has tropical rainforest found in the coastal areas near the Ogun Waterside, part of Egbado South such as Shagamu, Ijebu Ode, Ijebu Igbo and Odogbolu (Akanni 2000). Ondo state is located Lat.  $7^{\circ}00'10''N$  Long.  $5^{\circ}05'00''E$  with a population of 3,446,877 and a total land mass of about 15,195.18 km<sup>2</sup> (NPC 2010). It geographically lies entirely in the tropical belt, it is covered with luxuriant vegetation with rain forest in the south and sub-savannah forest in the northern fringe. The annual rainfall differs from 2,000 mm in the southern areas to 1,150 mm in the northern areas, the temperature ranges from 21° C to 29 °C (Adisa, 2011). Edo state is located lat.  $6^{\circ}30'00''N$  long.  $6^{\circ}00'00''E$ . According to World Encyclopaedia (2018) it geographically lies on a rolling coastal plain crossed by rivers in an area of tropical rain forest. About 40 % of the region is forest reserve. The population of the state is approximately 3,233,366 with a total land mass of 19,819.28 km<sup>2</sup> (NPC 2010). The annual rainfall ranges between 1750 to 2000mm and the average daily temperature is about 27 °C.

## **Sampling and Data Collection**

Multistage sampling technique was used for the selection of respondents during data collection for the research. In the first stage: Purposive sampling was used for the selection of study site. The location is situated within three states of southern Nigeria that is Ogun, Ondo and Edo states respectively, because the site is the location of *G. kola* abundance in the country. In the second stage: For the selection of target respondents and their communities, snowball sampling technique was adopted. Although most of the inhabitants are Yoruba by tribe but some Hausa tribe migrated from the northern part of the country and settled



there. Therefore, the tribe leader of the Hausa people was contacted to link the researcher with *G. kola* farmers from each of the selected community for the research. One hundred and twenty-six (126) respondents from fourteen different communities in the study area were contacted, seventy-eight (78) respondents from Ondo State, twenty seven (27) from Edo state and twenty-one (21) from Ogun state. However, seven (7) respondents were contacted from Wuse market, Abuja which is out of the initial study area which gives a total of 133 respondents. This is because most of the *G. kola* traders are found there. This helped to add some information on market and storage, making the total of 133 respondents for the research.

### **Analytical Techniques**

Descriptive statistics was used in grouping socio-economic characteristics of the respondents and also used to achieve objectives i and ii, while Analysis of variance (ANOVA) was used to achieved objective iii.

## **RESULT**

### **Demographic Characteristics of the Respondents (n=133)**

This section presents the socio – economic characteristics of the 133 respondents interviewed from Ogun, Ondo, Edo and Abuja. Nigeria.

#### **Gender and Age**

On gender of the respondents, Figure 1 reveals that majority of the respondents (61.7 %) were female while only 38.3 % were male. This implies that female constitute majority of *G. kola* farmers in the study area.

The age ranges of the respondents was studied and the result in Figure 2 shows that 3.0 % of the respondents were less than 20 years, 10.5 % were within the age range of 20-30 years, 25.6 % were within the age bracket of 31-40 years, 34.6 % were within age range of 41-50 years and 26.3 % were above 50 years. The result implies that majority of the respondents were within the age bracket 41-50 years of age.

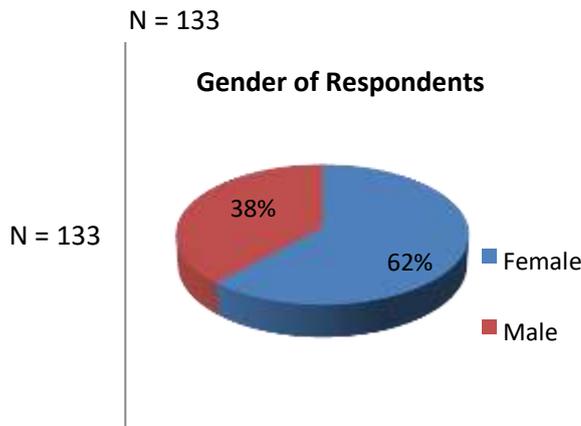


Figure 1. Gender of Respondents.

Source: Field Survey 2018

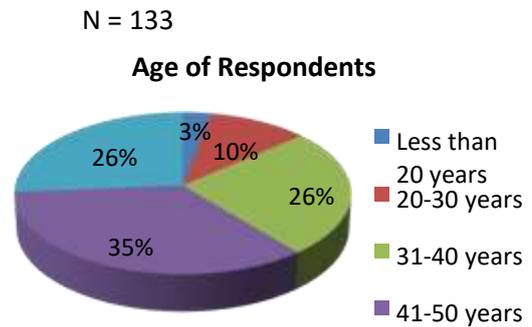


Figure 2. Age of Respondents.

### Marital Status and Educational Level

Figure 3 indicates that 81 respondents constituting about 61% were married, whereas, only 12 respondents (9 %) were single. The other respondents constituting to 30 % were either divorced or widowed. Hence, the result on marital status implies that majority of *G. kola* farmers are actually married or were married at certain point in time.

Figure 4 shows the level of education of the respondents. The result reveals that 42(31.6 %) had informal education, while 44 (33.1%), 40 (30.1 %) and 7 (5.3 %) had primary, secondary and tertiary education respectively. This implies that all the respondents are educated to some certain degree. However, very few are educated up to the level of tertiary education.

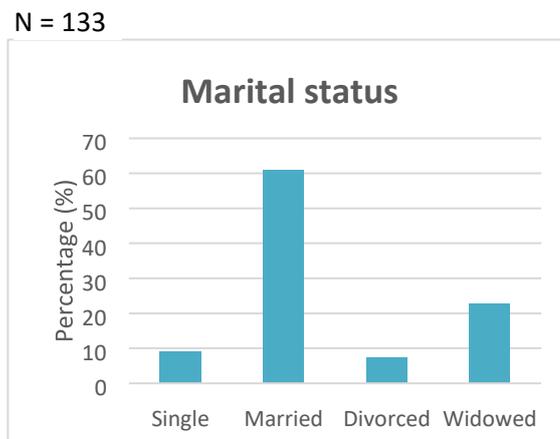


Figure 3. Marital Status of Respondents

Source: Field Survey 2018.

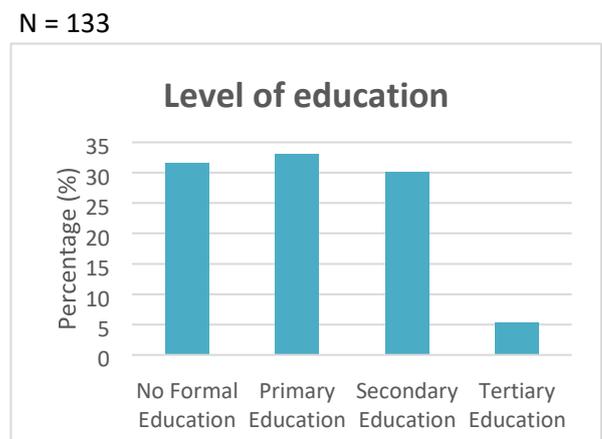


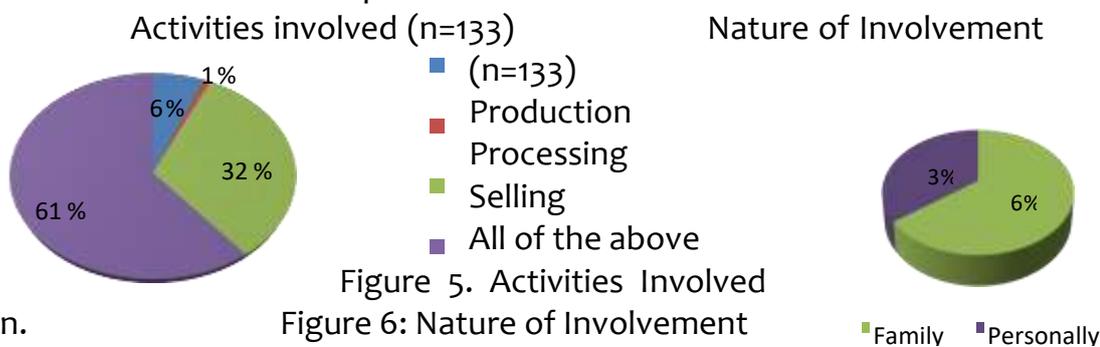
Figure 4. Level of Education of Respondents



### Activities Involved In and Nature of Involvement

Figure 5 reveals that most of the respondents indicated that they are into production, processing and selling *G. kola*. The result also reveals that less than 1 % of the respondents indicated interest only in processing *G. kola*, while 6 % indicated they are involved in only production activity. The result reveals that the actual farmers and processors of *G. kola* are less in number compared to those who are involved in selling the product.

On the nature of how the respondents got involved in activities of *G. kola*, the result as presented in Figure 6 reveals that majority (64.7 %) of them got involved in *G. kola* value chain because it is their family business. However, 35.3 % of the respondents revealed that they got involved in *G. kola* activities because of personal interest.



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Figure 6: Nature of Involvement

Source: Field Survey 2018.

Source: Field Survey 2018

### Cooperative Membership Status

Figure 7 reveals that most of the respondents do not belong to any cooperative society. This indicates that majority of the respondents are operating on their own.

n = 133

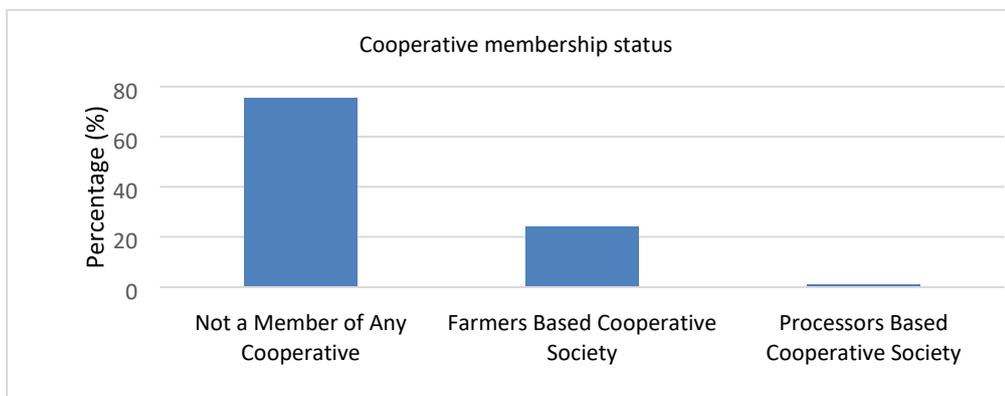


Figure 7 . Cooperative Membership

Source: Field Survey 2018



### Years of Experience in Storage/Process

The result from Figure 8 reveals that majority of the respondents 62 (46.6 %) have been in the business of storage/process of *G. kola* for over 20 years. Also, the result reveals that about 40 % of them have joined the business not long ago.

Figure 8 reveals the methods used by respondents for processing *G. kola*. The result indicates that the respondents who kept *G. kola* outside and allowed it to decay are the majority (41 %). Quite significant a number of them do not process the *G. kola* at all.

### Different Methods of Processing of *G. kola* Used in the Study Area Fruit Processing Method Used

The result as indicated in figure 9 reveals that 6.0 % of the respondents processed by cutting the pulp fresh, 41.0% kept it outside and allowed to decay, 21.0% processed it using both method while 32.0% dispose it raw without processing it.

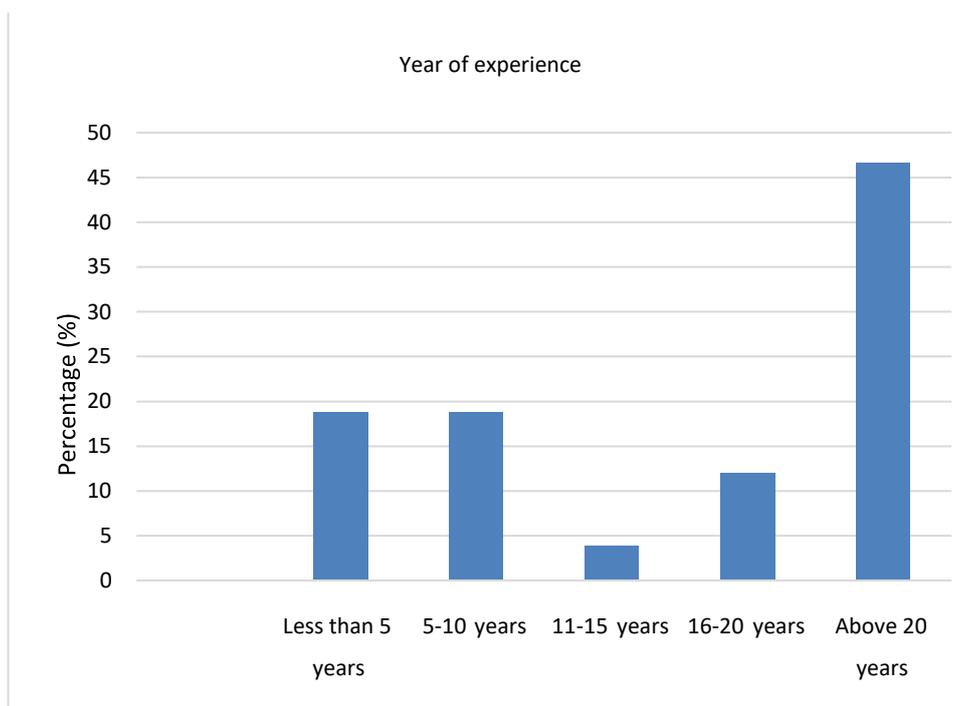


Figure 8 respondents year of experience in Storage/process

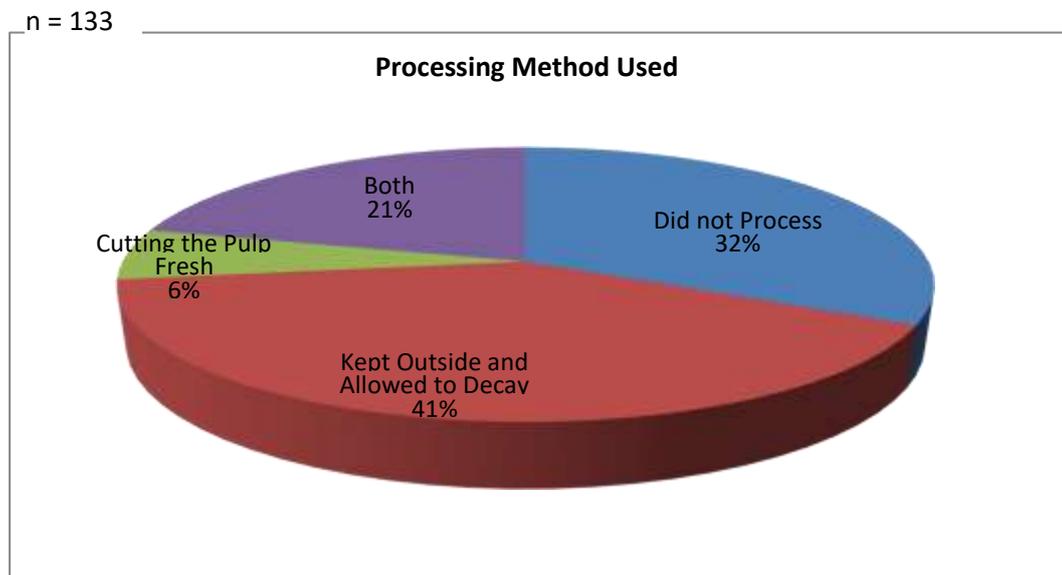


Figure 9. Processing Method Used.

Source: Field Survey 2018

### Reasons for Processing

As revealed in Figure 10, large number of respondents 46 (36.9 %) indicated that they process *G. kola* for the purpose of preservation only. 38 (28.6 %) processed *G. kola* in order to prevent damage of the seed. However, considerable number of the respondents 43 (32.3 %) indicated that they do not carry out any processing activity at all. The result also reveals that only 1 (0.8 %) respondents indicated processing *G. kola* with the purpose of increasing the nutrient content of the seed.

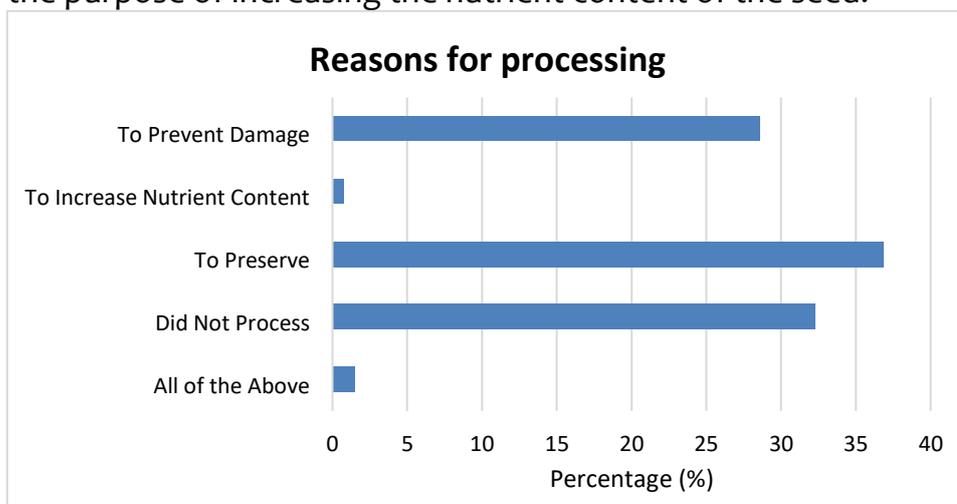


Figure 10. Reason for Processing *G. kola*.

Source: Field Survey 2018

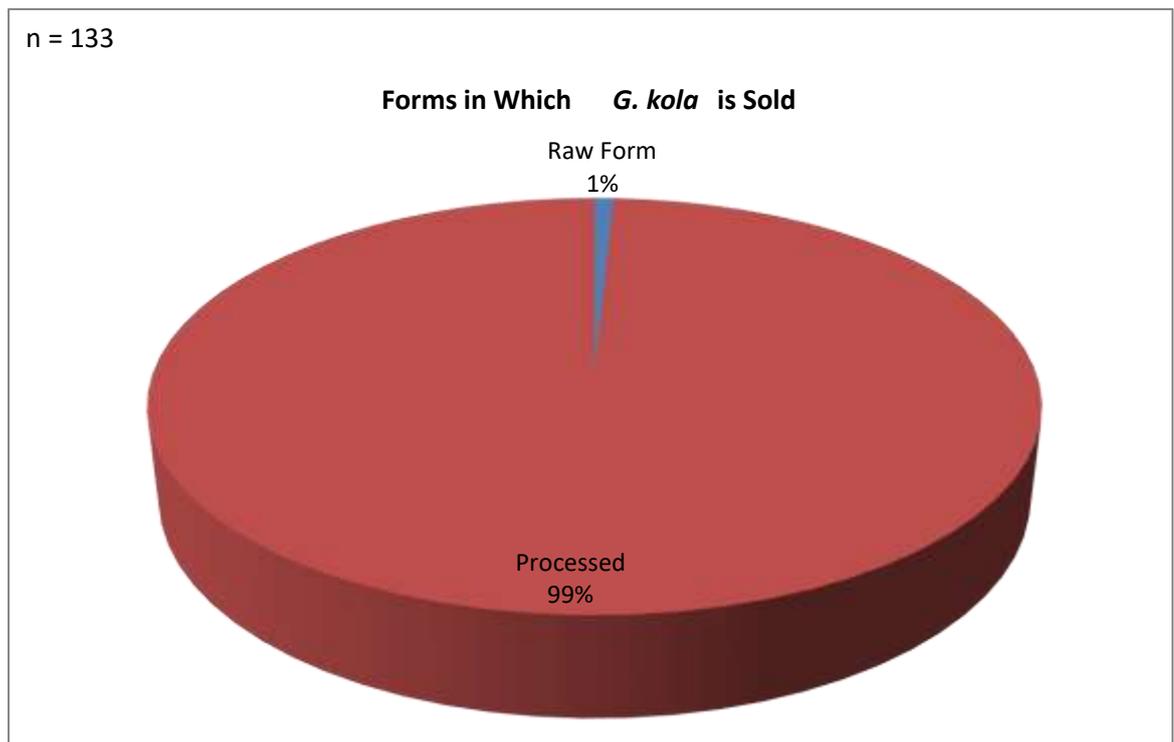


## Ways and Forms of Selling *G. kola* in the Study Area

### Forms of *G. kola* in which it is Sold

Figure 11 shows the form in which *G. kola* is sold. The result reveals that majority (99.0%)

of the respondents indicated preference to selling it in processed form while 1.0% sell it in raw form. This is describe in figure 11.

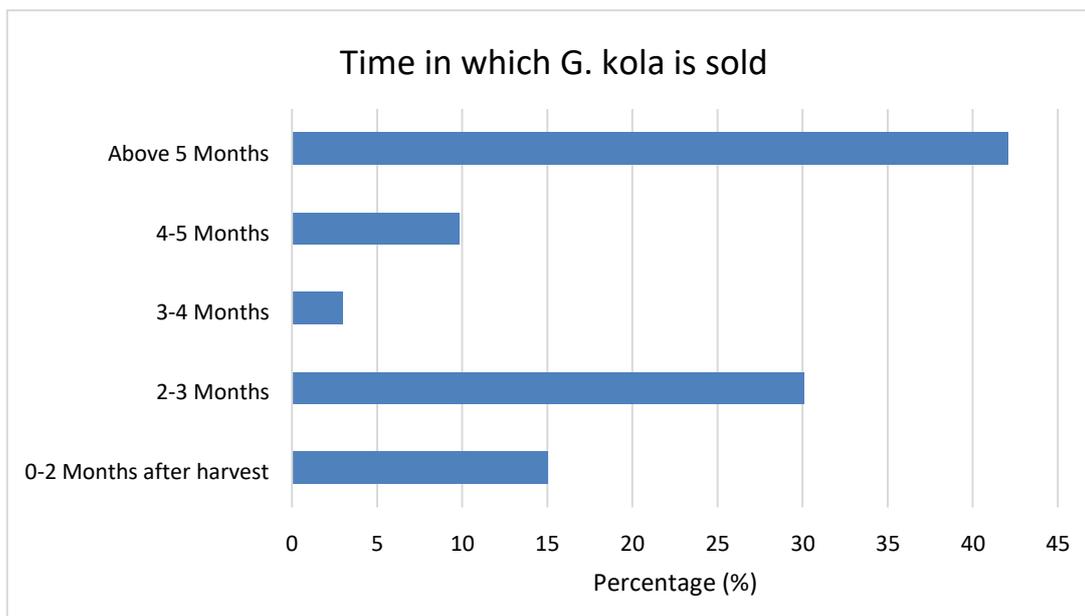


**Figure 11.** Forms in w hich *G. kola* is Sold.

Source: Field Survey 2018.

### Period within which *G. kola* is Sold

On the period within *G. kola* is sold, Figure 12 reveals that 20 (15.0 %) respondents sold within 0-2 months of harvest, 40 (30.1 %) sold 2-3 months after harvest, 4 (3 %) sold within the period of 3-4 months of harvest, 13 (9.8 %) sold over a period of 4-5 months after harvest, while 56 (42.1 %) which constitute the majority of the respondents sold their product after 5 months of harvest.

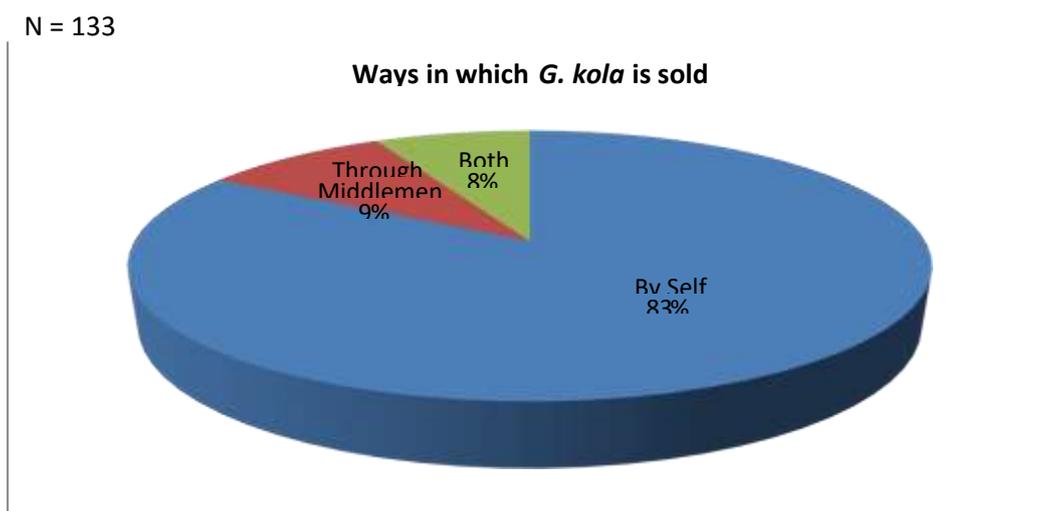


**Figure 12.** Time Period within which *G. kola* is Sold.

Source: Field Survey 2018

### Ways in which *G. kola* is sold

Figure 13 captured ways in which *G. kola* is sold. The result reveals that 83.5 % of the respondents which constitute the majority of the respondents, sale *G. kola* directly by themselves. 9.0% reported selling through middlemen. 7.5 % of the respondents reported employing both methods.



**Figure 13.** Ways in which *G. kola* is Solds.

Source: Field Survey 2018.



## **CONCLUSION**

From the results, it can be concluded that *G. kola* farmers in Ogun, Ondo and Oyo states of Nigeria process *G. kola* by cutting the pulp fresh or by keeping it exposed before selling it either by themselves or by selling it to the middle men in the market. The main reasons for the processing was for preservation and to prevent the seed from damage. Some farmers prefer selling *G. Kola* raw.

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